



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

November 4, 2014

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.: 05000325/2014004 AND 05000324/2014004**

Dear Mr. Gideon:

On September 30, 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 October 14, 2014, with you and other members of your staff.

NRC inspectors documented four findings of very low safety significance (Green) in this report. Two of these findings involved violations of NRC requirements. Additionally, NRC inspectors documented one Severity Level IV violation with no associated finding. Further, inspectors documented two licensee-identified violations which were determined to be of very low safety significance in this report. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2.a of the Enforcement Policy.

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

If you disagree with the cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region II, and the NRC Resident Inspector at the Brunswick Steam Electric Plant.

In accordance with 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, 324/2014004
w/Attachment: Supplemental Information

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Letter to William R. Gideon from George Hopper dated November 4, 2014.

SUBJECT: BRUNSWICK STEAM ELECTRIC PLANT - NRC INTEGRATED INSPECTION
REPORT NOS.: 05000325/2014004 AND 05000324/2014004

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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.: 05000325/2014004, 05000324/2014004

Licensee: Duke Energy Progress, Inc.

Facility: Brunswick Steam Electric Plant, Units 1 & 2

Location: 8470 River Road, SE
Southport, NC 28461

Dates: July 1, 2014 through September 30, 2014

Inspectors: M. Catts, Senior Resident Inspector
M. Schwieg, Resident Inspector
A. Vargas, Reactor Inspector (Section 1R08)
D. Bacon, Senior Operations Engineer (Section 1R11)
M. Meeks, Senior Operations Engineer (Section 1R11)
A. Nielsen, Senior Health Physicist (Section 4OA6)

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

Enclosure

SUMMARY OF FINDINGS

IR 05000325/2014004, 05000324/2014004; 07/01/14 – 09/30/14; Brunswick Steam Electric Plant, Units 1 & 2; Maintenance Effectiveness, Post Maintenance Testing, Identification and Resolution of Problems, and Other Activities.

This report covers a three-month period of inspection by resident inspectors and regional inspectors. Four findings of very low safety significance (Green) were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, issued June 19, 2012, "Significance Determination Process" (SDP). The cross-cutting aspects were determined using IMC 0310, "Aspects Within the Cross-Cutting Areas," effective January 1, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy dated January 28, 2013. The NRC's program for overseeing the safe operations of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Rev. 4.

- SLIV. An NRC-identified Severity Level IV (SLIV) non-cited violation (NCV) of very low safety significance of 10 CFR 72.150, Instructions, Procedures, and Drawings, was identified for the failure of the licensee to have adequate procedures to ensure the design basis peak fuel cladding limit would not be exceeded during outer transfer cask draining operations. Specifically, on August 25, 2014, Licensee Procedure IFS-NGGC-0016, ISFSI DSC Sealing Operations, did not include a 24-hour waiting period between flushing and draining the annulus region of the cask before moving the cask to the storage facility, to ensure that the fuel cladding temperature limits are not exceeded.

The inspectors determined the failure to have an adequate procedure to ensure the design basis peak fuel cladding limit would not be exceeded during draining operations was a performance deficiency. Consistent with guidance in Section 2.2 of the NRC Enforcement Policy, Independent Spent Fuel Storage Installations (ISFSIs) are not subject to the SDP and, thus, traditional enforcement will be used for these facilities. The inspectors determined the violation was more than minor because, if left uncorrected, the failure to allow a proper cooldown of the fuel after flushing, prior to draining to move the cask, could lead to a more significant safety concern in that fuel damage could occur. Consistent with the guidance in Section 2.6.D of the NRC Enforcement Manual, if a violation does not fit an example in the Enforcement Policy Violation Examples, it should be assigned a severity level: (1) Commensurate with its safety significance; and (2) informed by similar violations addressed in the Violation Examples. The inspectors found no similar violations in the Violations Examples. Since the licensee waited 24 hours prior to the final drain down, the violation was determined to be of very low safety significance (Severity Level IV). Cross-cutting aspects are not assigned to traditional enforcement violations. The licensee documented this issue in the Corrective Action Program (CAP) as NCR 705130. (Section 40A5.1)

Cornerstone: Initiating Events

- Green. A self-revealing Green finding of Licensee Procedure OPM-XMR001, ITE Substation Transformers, was identified for the failure to have an adequate procedure to perform preventative maintenance on the Common Bus C 4160/480V Transformer. Specifically, between May 6, 2009 and March 23, 2012, the licensee failed to incorporate Procedure Revision Requests (PRRs) 312951 and 334482 to add core ground testing of the Common C transformer, resulting in the transformer failing and a Unit 1 manual reactor SCRAM. The licensee replaced the transformer to Common Bus C. The licensee entered this issue into the CAP as nuclear condition report (NCR) 519193.

The inspectors determined that the failure of the licensee to have an adequate procedure to perform preventative maintenance on the Common Bus C transformer was a performance deficiency. The finding was more than minor because it was associated with the equipment performance attribute of the Initiating Events Cornerstone and affects the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the failure to perform preventative maintenance on the Common Bus C transformer resulted in the transformer failing and a Unit 1 manual reactor SCRAM. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not cause a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. The finding does not have a cross-cutting aspect since the performance deficiency is not indicative of current plant performance. The PRR was initiated on May 6, 2009. (Section 1R12.1)

Cornerstone: Mitigating Systems

- Green. An NRC-identified Green finding of Licensee Procedure AD-PI-ALL-0100, Corrective Action Program (CAP), was identified for the failure of the licensee to identify and correct a condition adverse to quality with the Unit 2 standby liquid control (SLC) control room level indicator. Specifically, between February 25, 2012, and August 17, 2014, the licensee failed to identify and correct three clogged SLC tank level indicators before the indicators failed. The licensee's corrective actions included cleaning out the SLC tank level indicator bubbler and evaluating the adequacy of the preventative maintenance associated with this indicator. The licensee entered this issue into the CAP as NCRs 704327 and 704593.

The inspectors determined that the failure of the licensee to identify and correct the clogged SLC tank level indicators before the indicators failed was a performance deficiency. The finding was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, this resulted in the instrument reading a higher tank level than actual due to the flow restriction in the bubbler tube, and the inoperability of the instrument. Using IMC 0609, Appendix A, issued June 19, 2012, the

SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating structure, system and component (SSC), the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the technical specifications (TS) allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, and did not screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event. The finding has a cross-cutting aspect in the area of human performance associated with the work management attribute because the licensee failed to implement a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. The licensee failed to have the work process include the identification and management of risk commensurate to the work and the need for coordination with different groups. Specifically, the licensee failed to identify and manage the risk of the SLC tank level indicator bubbler clogging issue. [H.5] (Section 4OA2.2)

Cornerstone: Occupational Radiation Safety

- Green. A Green self-revealing NCV of TS 5.7.1 was identified for the failure to post a high radiation area (HRA). Specifically, on September 25, 2014, the licensee failed to post the Unit 2 high pressure coolant injection (HPCI) pump room as a HRA during a HPCI pump run in which maximum dose rates increased to 900 mrem per hour at 30 cm. As a result, an individual entered the area without knowledge of the changing radiological conditions and received a dose rate alarm. In response, the licensee immediately shut down the HPCI pump, performed a human performance review board, posted the area as a HRA, and surveyed the affected areas. The licensee entered this issue into the CAP as NCR 710281.

The failure to post a high radiation area with dose rates greater than 100 mrem per hour is a performance deficiency. The performance deficiency was more than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute of program and process (exposure control) and adversely affected the cornerstone objective to ensure the adequate protection of worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. Failure to inform workers of radiological conditions through the use of postings could lead to unintended exposures. The Occupational Radiation Safety Cornerstone was affected; therefore, the inspectors used Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," dated August 19, 2008, to determine the significance of the violation. The violation had very low safety significance (Green) because: (1) it was not an as low as is reasonably achievable finding, (2) there was no overexposure, (3) there was no substantial potential for an overexposure, and (4) the ability to assess dose was not compromised. The finding has a cross-cutting aspect in the area of human performance, associated with the teamwork attribute, because individuals and work groups failed to communicate and coordinate their activities within and across organizational boundaries to ensure nuclear safety is maintained and post the HPCI room as a high radiation area. [H.4] (Section 2RS1)

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

REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period at rated thermal power (RTP). On August 1, 2014, the unit was down powered to 72 percent as requested by Transmission due to a loss of the Delco East line. The unit was returned to RTP on August 1, 2014. On September 5, 2014, the unit was down powered to 70 percent for a control rod sequence exchange. The unit was returned to RTP on September 6, 2014, and remained at or near RTP for the remainder of the inspection period.

Unit 2 began the inspection period at RTP, 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 – 1 sample)

a. Inspection Scope

Impending Adverse Weather Conditions

The inspectors reviewed the licensee's preparations to protect risk-significant systems from Tropical Storm Arthur on July 3, 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 have resulted from winter storm Leon. 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. This constitutes one sample. Documents reviewed are listed in the Attachment.

b. Findings

No findings of were identified.

1R04 Equipment Alignment

Quarterly Partial System Walkdowns (71111.04Q – 3 samples)

a. Inspection Scope

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

- Emergency diesel generator (EDG) fuel oil fill on July 15, 2014
- Conventional service water pump 2A on July 27, 2014
- EDG No. 2 on September 5, 2014

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

b. Findings

No findings were identified.

1R05 Fire Protection

Quarterly Resident Inspector Tours (71111.05Q – 5 samples)

a. Inspection Scope

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

- 0PFP-SW-1a & 1b, Service Water Building, Elevations 20 foot and 4 foot
- 1PFP-RB1-1a & 1b, South and North Core Spray Rooms, Elevation -17 foot

- 1PFP-RB1-1c & 1d, North and South Residual Heat Removal Rooms, Elevation -17 foot
- 1PFP-RB1-2, High Pressure Coolant Injection Room, Elevation -17 foot
- 0PFP-DG-1, EDG Basement 2 foot Elevation

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

b. Findings

No findings were identified.

1R06 Flood Protection Measures

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

a. Inspection Scope

The inspectors reviewed selected risk-important plant design features and licensee procedures intended to protect the plant and its safety-related equipment from internal flooding events. The inspectors reviewed flood analyses and design documents, including the UFSAR, engineering calculations, and abnormal operating procedures (AOPs), for licensee commitments. In addition, the inspectors reviewed licensee drawings to identify areas and equipment that may be affected by internal flooding caused by the failure or misalignment of nearby sources of water, such as the fire suppression or the circulating water systems. The inspectors also reviewed the licensee's corrective action documents with respect to past flood-related items identified in the CAP to verify the adequacy of the corrective actions. The inspectors performed a

walkdown of the following plant areas to assess the adequacy of flood protection measures, and that the licensee complied with its commitments:

- Deluge valve pits

Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

2. Annual Review of Cables Located in Underground Bunkers/Manholes (71111.06 – 1 sample)

a. Inspection Scope

The inspectors conducted an inspection of underground bunkers/manholes subject to flooding that contain cables whose failure could disable risk-significant equipment. The inspectors performed walkdowns of risk-significant areas, including deluge valve pits which drain to safety related buildings, to verify that the cables were not submerged in water, that cables and/or splices appear intact and to observe the condition of cable support structures. When applicable, the inspectors verified proper dewatering device (sump pump) operation and verified level alarm circuits were set appropriately to ensure that the cables would not be submerged. Where dewatering devices were not installed; the inspectors ensured that drainage was provided and was functioning properly. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R08 Inservice Inspection (ISI) Activities (IP 71111.08G, Unit 1 – 1 sample)

a. Inspection Scope

Non-Destructive Examination Activities and Welding Activities:

From March 10, 2014, through March 14, 2014, the inspectors conducted an on-site review of the implementation of the licensee's ISI Program for monitoring degradation of the reactor coolant system, emergency feedwater systems, risk-significant piping and components, and containment systems in Unit 1. The inspectors' activities included a review of non-destructive examinations (NDEs) to evaluate compliance with the applicable edition of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (BPVC), Section XI (Code of record: 2001 Edition with 2003 Addenda), and to verify that indications and defects (if present) were appropriately evaluated and dispositioned in accordance with the requirements of the ASME Code, Section XI, acceptance standards.

The inspectors directly observed the following NDE mandated by the ASME Code to evaluate compliance with the ASME Code Section XI and Section V requirements and, if any indications and defects were detected, to evaluate if they were dispositioned in accordance with the ASME Code or an NRC-approved alternative requirement.

- Magnetic Particle Testing (MT):
 - 24" Primary Steam Pipe to Snubber Weld Attachment, Weld No. 1-PSN-B3SS48-ATT
- In-Vessel Visual Inspection (IVVI):
 - Core Spray A Loop, Weld No.: P4A-010
 - Reactor Vessel Feedwater Sparger A at 45°, No. FW-045-FH16
 - Reactor Vessel Jet Pump Riser K at 330°, No. JPKRS-1
- Ultrasonic Testing (UT):
 - Reactor Water Clean Up Return to Reactor Line between Valves F0425 and F039, Weld No.: 1B32RECIR-22-BM-1

The inspectors reviewed records of the following NDEs mandated by the ASME Code Section XI to evaluate compliance with the ASME Code Section XI and Section V requirements and, if any indications and defects were detected, to evaluate if they were dispositioned in accordance with the ASME Code or an NRC-approved alternative requirement.

- UT:
 - Service Water Pipe Upstream the Conventional Header Drain Valve No. 1-SW-V93

The inspectors observed the welding activities referenced below and reviewed associated documents in order to evaluate compliance with procedures and the ASME Code. The inspectors reviewed the work order, repair and replacement plan, weld data sheets, welding procedures, procedure qualification records, welder performance qualification records, and NDE reports.

- Class 1 to Class 2 Reactor Core Isolation Cooling Steam Supply, Valve Nos.: 1-E51-405 to 1-E51-406
- Class 2 Reactor Heat Removal Valve Replacements, Nos.: 1-E11-234 and 1-E11-235

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 attribute.

Identification and Resolution of Problems: The inspectors reviewed a sample of ISI-related problems which were identified by the licensee and entered into the CAP as NCRs. The inspectors reviewed the NCRs to confirm 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 10CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requirements. The corrective action documents reviewed by the inspectors are listed in the Attachment.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program

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

a. Inspection Scope

On July 22, 2014, the inspectors observed a crew of licensed operators in the plant's simulator during a hostile based emergency action drill to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and to ensure that training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

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

No licensed operator requalification training involving declarations and notifications occurred during this quarter. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

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

a. Inspection Scope

Inspectors observed and assessed licensed operator performance in the plant and main control room, particularly during periods of heightened activity or risk and where the activities could affect plant safety. Specifically, on August 8, 2014, the inspectors observed the control room response during a notification of unusual event caused by a Halon gas release near the technical support center (TSC) and emergency operations facility (EOF). 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

b. Findings

No findings were identified.

.3 Licensed Operator Requalification (71111.11B – 1 sample)

a. Inspection Scope

The inspectors reviewed the facility operating history and associated documents in preparation for this inspection. During the week of August 11 - 15, 2014, the inspectors reviewed documentation, interviewed licensee personnel, and observed the administration of operating tests associated with the licensee's operator requalification program. Each of the activities performed by the inspectors was done to assess the effectiveness of the facility licensee in implementing requalification requirements identified in 10 CFR Part 55, "Operators' Licenses." The evaluations were also performed to determine if the licensee effectively implemented operator requalification guidelines established in NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," and Inspection Procedure 71111.11, "Licensed Operator Requalification Program." The inspectors also evaluated the licensee's simulation facility for adequacy of its use in operator licensing examinations using ANSI/ANS-3.5-2009, "American National Standard for Nuclear Power Plant Simulators for use in Operator Training and Examination." The inspectors observed two full crews during the performance of the operating tests. Documentation reviewed included written examinations, Job Performance Measures (JPMs), simulator scenarios, licensee

procedures, on-shift records, simulator modification request records, simulator performance test records, operator feedback records, licensed operator qualification records, remediation plans, watchstanding records, and medical records. The records were inspected using the criteria listed in Inspection Procedure 71111.11. Documents reviewed during the inspection are documented in the List of Documents Reviewed.

b. Findings

The enforcement associated with this inspection was documented in Section 40A7 of this report.

1R12 Maintenance Effectiveness (71111.12Q – 3 samples)

a. Inspection Scope

The inspectors evaluated degraded performance issues involving the following risk-significant SSCs:

- Common Bus C transformer failure and keepfill inoperability
- Tornado protection of the EDG fuel oil tank vents
- Unit 2 residual heat removal torus suction valve F020A tripped on thermal overloads

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

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

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

b. Findings

.1 Inadequate Procedure to Perform Preventative Maintenance on the Common Bus C Transformer

Introduction. A self-revealing Green finding of licensee Procedure OPM-XMR001, ITE Substation Transformers, was identified for the failure to have an adequate procedure to perform preventative maintenance on the Common Bus C 4160/480V Transformer. Specifically, between May 6, 2009 and March 23, 2012, the licensee failed to incorporate Procedure Revision Request (PRRs) 312951 and 334482 to add core ground testing of the Common Bus C transformer, resulting in the transformer failing and a Unit 1 manual reactor shutdown. The licensee replaced the transformer for the Common Bus C.

Description. On February 22, 2012, the Common Bus C 4160/480V transformer failed with a core to ground and a phase to phase short resulting in arcing and smoke. This resulted in a loss of power to the circulating water intake pump (CWIP) traveling screen motors, which lead to high delta-pressure across the traveling screens. The CWIP 1B tripped due to high delta-pressure across its associated traveling screen. In anticipation of a loss of condenser vacuum, the licensee inserted a manual reactor SCRAM of Unit 1. As a result of the SCRAM, reactor water level reached the Reactor Water Level - Low Level 1 actuation set point and the Primary Containment Isolation System (PCIS) Groups 2 and 6 isolations occurred. Additionally, the Main Steam Isolation Valves (MSIVs) (PCIS Group 1) were manually closed prior to reaching the Condenser Vacuum - Low actuation set point.

Also, a loss of the Common Bus C Transformer resulted in the loss of the demineralized water transfer pumps, which is the source of keepfill for the emergency core cooling system (ECCS) piping. With the loss of keepfill, ECCS systems started to depressurize, with Unit 1 ECCS depressurizing in 17 minutes and Unit 2 ECCS depressurizing in 2 hours and 29 minutes. With depressurized ECCS, both Units declared ECCS inoperable and entered TS 3.0.3. The licensee provided temporary power to a single demineralized water pump and successfully filled and vented the ECCS within 4 hours and 16 minutes of the event. The inspectors reviewed the licensee's evaluation of the depressurization of ECCS and determined that in this case, ECCS was able to perform its function.

The licensee determined the root causes to be Procedure OPM-XMR001, ITE Substation Transformers, did not include a core ground check or monitor for signs of overheating on the core clamping structure, and 480V transformer performance monitoring did not include a comparison to initial design data. The licensee's corrective actions to preclude repetition were: 1) Perform core ground testing by meggering the transformer core to earth ground, and core to secondary winding; 2) check for discoloration and signs of overheating on core clamping structures; and 3) establish and implement ITE Substation Transformer monitoring which includes, in part: thresholds for temperature monitoring, and required actions once thresholds are reached or exceeded.

The inspectors reviewed procedure revision request (PRR) 312951 and 334482 that state, in part, that electrical testing is comprised of the following: Core ground testing to ensure core is grounded and to eliminate ground currents caused by multiple grounds. The inspectors determined that the licensee did not include this core ground testing in Procedure OPM-XMR001. The licensee wrote NCR 519193 to address this issue.

Analysis. The inspectors determined that the failure of the licensee to have an adequate procedure to perform preventative maintenance on the Common Bus C transformer was a performance deficiency. The finding was more than minor because it was associated with the equipment performance attribute of the Initiating Events Cornerstone and affects the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the failure to perform preventative maintenance on the Common Bus C transformer resulted in the transformer failing and a Unit 1 manual reactor SCRAM. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not cause a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. The finding does not have a cross-cutting aspect since the performance deficiency is not indicative of current plant performance. The PRR was initiated on May 6, 2009.

Enforcement. This finding does not involve enforcement action because no violation of a regulatory requirement was identified since the Common Bus C Transformer is not safety-related. The licensee entered this issue into the CAP as NCR 519193. Because this finding does not involve a violation and is of very low safety or security significance, it is identified as FIN 05000325/2014004-01, Inadequate Procedure to Perform Core Ground Checks on the Common Bus C Transformer.

.2 (Opened) Unresolved Item (URI) 05000325/2014004-02 and 05000324/2014004-02, Tornado Protection of the Emergency Diesel Fuel Oil Tank Vent Lines

Introduction. The inspectors are opening an URI to review the licensee's evaluation of the potential for adverse impact to the safety-related EDG fuel oil tank vent lines due to a design basis tornado event and determine if there is a performance deficiency.

Description. On May 8, 2014, during a walk-down, the inspectors noted that the EDG fuel oil tank vent lines were not protected from tornado-borne missiles. The inspectors questioned the licensee on the whether these vents needed to be tornado protected, and if so, could they withstand the design basis tornado event. The licensee took immediate corrective actions to place concrete blocks around the vent lines. The inspectors are opening an URI to review the licensee's evaluation in engineering change (EC) document 96860 of the potential for adverse impact to the safety-related EDG fuel oil tank vent lines due to a design basis tornado event and determine if there is a performance deficiency. The licensee entered this issue in the CAP as NCR 686589. This issue is being tracked as a URI: URI 05000325/2014004-02 and 05000324/2014004-02, Tornado Protection of the Emergency Diesel Fuel Oil Tank Vent Lines.

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

a. Inspection Scope

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

- Unit 2 elevated risk due core spray channel calibration on July 8, 2014
- Unit 2 elevated risk due to 2B conventional service water pump fire on August 1, 2014
- Unit 1 elevated risk due to loss of the Delco East line and reactor downpower to 72 percent on August 1, 2014
- Unit 1 elevated risk due to 1B residual heat removal outage on August 6, 2014
- Unit 2 elevated risk due to 2B residual heat removal outage on September 10, 2014

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

b. Findings

No findings were identified.

1R15 Operability Evaluations (71111.15 – 5 samples)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- EDG starting air capacity for required number of starts on July 17, 2014
- High stator temperatures on the 2A conventional service water pump on July 28, 2014

- EDG 2 starting air receiver A air leak on August 19, 2014
- EDG 3 starting air receiver A tank defect on August 19, 2014
- Aggregate effect of flood in leakage to the EDG building including deluge valve pit 6 drains on September 15, 2014

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

b. Findings

No findings were identified.

1R19 Post Maintenance Testing (71111.19 – 5 samples)

a. Inspection Scope

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

- 1OP-50, Plant Electric System Operating Procedure after replacement of the 1A NSW pump breaker on May 1, 2014
- 2PT-24.1-2, Service Water Pump and Discharge Valve Operability Test after 2B CSWP motor fire and motor replacement on July 31, 2014
- 0PT-12.2C, No. 3 Diesel Generator Monthly Load Test after failure of local frequency meter on August 11, 2014
- 0PT-09.2, HPCI System Operability Test after EGR actuator and servo inspection on August 16, 2014
- 0PT-08.1.4A, RHR Service Water System Operability Test - Loop A after failure of the 2A RHRSW Discharge Check valve on September 11, 2014

These activities were selected based upon the structure, system, or component's ability to impact risk. The inspectors evaluated these activities for the following: the effect of testing on the plant had been adequately addressed; testing was adequate for the

maintenance performed; acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate; tests were performed as written in accordance with properly reviewed and approved procedures; equipment was returned to its operational status following testing; and test documentation was properly evaluated. The inspectors evaluated the activities against TS and the UFSAR to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with post-maintenance tests to determine whether the licensee was identifying problems and entering them in the CAP and that the problems were corrected commensurate with their importance to safety. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R22 Surveillance Testing

.1 Routine Surveillance Testing (71111.22 – 3 ST samples)

a. Inspection Scope

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

- OPT-12.2B, No. 2 Diesel Generator Monthly Load Test on June 11, 2014
- OPT-08.1.6, Suppression Pool Level Indicator Operability on July 9, 2014
- OPT-15.4, Unit 1 Secondary Containment Integrity Test on August 18, 2014

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors reviewed the performance of the following test:

- OPT-19.5 Nuclear Steam System Safety/Relief Valve Test on July 17, 2014

Inspectors evaluated the effectiveness of the licensee's ASME Section XI testing program for determining equipment availability and reliability. The inspectors evaluated

selected portions of the following areas: 1) testing procedures; 2) acceptance criteria; 3) testing methods; 4) compliance with the licensee's IST program, TSs, selected licensee commitments, and code requirements; 5) range and accuracy of test instruments; and 6) required corrective actions. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors observed and reviewed the test results for a Unit 2 RCS leak detection surveillance, 0OI-03.1, Reactor Operator Daily Surveillance Report, on August 18, 2014. The inspectors observed in-plant activities and reviewed procedures and associated records to determine whether: effects of the testing were adequately addressed by control room personnel or engineers prior to the commencement of the testing; acceptance criteria were clearly stated, demonstrated operational readiness, and were consistent with the system design basis; plant equipment calibration was correct, accurate, and properly documented; and the calibration frequency were in accordance with TSs, the UFSAR, procedures, and applicable commitments; applicable prerequisites described in the test procedures were satisfied; test frequencies met TS requirements to demonstrate operability and reliability; tests were performed in accordance with the test procedures and other applicable procedures; and test data and results were accurate, complete, within limits, and valid. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1EP6 Emergency Planning (EP) Drill Evaluation (71114.06 – 2 samples)

a. Inspection Scope

The inspectors observed a site EP training drill in the simulator conducted on July 22, 2014 and September 9, 2014. The inspectors reviewed the drill scenario narrative to identify the timing and location of classifications, notifications, and protective action recommendations development activities. During the drill, the inspectors assessed the adequacy of event classification and notification activities. The inspectors observed portions of the licensee's post-drill critique. The inspectors verified that the licensee properly evaluated the drill performance with respect to performance indicators and assessed drill performance with respect to drill objectives. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

2. RADIATION SAFETY

2RS1 Radiological Hazard Assessment and Exposure Controls

a. Inspection Scope

The inspectors reviewed the events of September 25, 2014, involving elevated radiological conditions in the HPCI pump room. The inspectors reviewed survey results, condition reports, human performance review board results, and discussed the event with licensee staff. This does not constitute a sample.

b. Findings

Introduction. A Green self-revealing NCV of TS 5.7.1 was identified for the failure to post a HRA. Specifically, on September 25, 2014, the licensee failed to post the Unit 2 HPCI pump room as HRA during a HPCI pump run.

Description. On September 25, 2014, the Unit 2 HPCI turbine was being tested for control system tuning following repair of the governor and maintenance on the steam supply valve. Since dose rates increase when reactor steam is admitted into the HPCI turbine, a pre-job meeting was held between Operations, Maintenance, and Health Physics (HP) personnel to coordinate the evolution. The plan was to have an auxiliary operator and a HP technician perform simultaneous walkdowns of the area in order to ensure it was clear of personnel and that the proper radiological postings were in place. Contrary to the plan, the auxiliary operator cleared the area without informing HP and therefore without HP accompaniment. The operator then communicated to the control room that the area was clear of all personnel and the pump was started. This caused dose rates in the pump room to increase substantially.

An individual was touring the residual heat removal and HPCI areas after receiving a brief from the HP desk. The person was not informed that the HPCI pump was going to be started or that the area might be a HRA. Since the HPCI pump room was still only posted as a Radiation Area, the individual entered the area without being aware of the changing radiological conditions and received a dose rate alarm of 134 mrem per hour (versus an alarm set point of 50 mrem per hour). The individual immediately left the area as required by licensee procedures.

In response, the licensee posted the area as a HRA, shut down the HPCI pump, and initiated a human performance review board. The licensee entered this issue into the CAP as NCR 710281. Subsequent to the event, the licensee performed surveys while the HPCI pump was running and determined the highest dose rate in the room was 900 mrem per hour at 30 centimeters from the source.

Analysis. The failure to post HRA dose rates greater than 100 mrem per hour was a performance deficiency. The performance deficiency was more than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute of program and process (exposure control) and adversely affected the cornerstone objective to ensure the adequate protection of worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. Failure to inform workers of radiological conditions through the use of postings could lead to unintended exposures. The Occupational Radiation Safety Cornerstone was affected; therefore, the inspectors used Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," dated August 19, 2008, to determine the significance of the violation. The violation had very low safety significance (Green) because: 1) it was not an as low as is reasonably achievable finding, 2) there was no overexposure, 3) there was no substantial potential for an overexposure, and 4) the ability to assess dose was not compromised. The finding has a cross-cutting aspect in the area of human performance associated with the teamwork attribute because individuals and work groups failed to communicate and coordinate their activities within and across organizational boundaries to ensure nuclear safety is maintained and post the HPCI room as a high radiation area. [H.4]

Enforcement. TS 5.7.1 requires, in part, that each HRA in which the intensity is 1000 mrem per hour or less be barricaded and conspicuously posted as a HRA. Contrary to the above, on September 25, 2014, the licensee failed to post the Unit 2 HPCI pump room as a HRA during a pump run in which dose rates increased to 900 mrem per hour at 30 cm. In response, the licensee immediately shut down the HPCI pump, performed a human performance review board, posted the area as a HRA, and surveyed the affected areas. Because this finding is of very low safety significance and was entered into the licensee's CAP as NCR 710281, consistent with Section 2.3.2.a of the NRC's Enforcement Policy, this violation is being treated as a NCV: NCV 05000324/2014004-03, Failure to Post a High Radiation Area.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

Initiating Event Cornerstone (71151 – 6 samples)

a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index (MSPI) performance indicators listed below for the period from July 1, 2013, through June 30, 2014. The inspectors reviewed the licensee's operator narrative logs, issue reports, MSPI derivation reports, event reports and NRC Integrated Inspection Reports for the period to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator. Documents reviewed are listed in the Attachment.

- MSPI RHR
- Reactor Coolant System (RCS) activity
- RCS leakage

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems

.1 Routine Review of Items Entered Into the Corrective Action Program

a. Inspection Scope

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

b. Findings

No findings were identified.

.2 Assessments and Observations

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

a. Inspection Scope

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

b. Findings

Introduction. An NRC-identified Green finding of Licensee Procedure AD-PI-ALL-0100, Corrective Action Program, was identified for the failure of the licensee to identify and correct a condition adverse to quality with the SLC control room level indicators.

Description. On August 17, 2014, the Unit 2 operators received an alarm for a high SLC tank level. The licensee determined the bubbler tube had become clogged and performed an emergent cleanout of the tube on August 20, 2014.

Since there is only one indication in the control room for SLC tank level, the inspectors questioned the licensee on how they would determine SLC tank level during an event. The licensee had implemented a routine supplemental check to determine SLC tank level by sending an operator out, opening the tank lid, and determining volume once per shift. The inspectors questioned the licensee on whether this should be classified as an operator workaround in accordance with Licensee Procedure AD-OP-ALL-0202, Aggregate Operator Impact Assessment, Section 3.7.a(3), which defines operator workaround, in part, as equipment deficiencies that may require operators to take some form of compensatory action during plant transients. Any equipment deficiency that affects, or could affect, emergency operating procedures would be included.

The SLC tank level indicator is used in licensee Emergency Operating Procedure 1(2)EOP-01-LPC, Level and Power Control. Specifically, during an anticipated transient without SCRAM (ATWS), reactor vessel level is lowered to reduce power in the core. Operations personnel need the SLC tank level indicator to allow restoration of reactor vessel level to the normal shutdown band after lowering level to less than 90 inches and possibly as low as low level 4. Restoration of the reactor vessel level could be delayed while waiting for indications the tank has been pumped empty by the SLC pumps showing indications of cavitation. The licensee determined this should have been classified as an operator workaround.

The inspectors reviewed the failure history of the SLC tank level indicators due to the bubbler clogging. Between 2000 and the present, the Unit 1 and Unit 2 SLC tank level bubblers had been clogged five times including Unit 1 December 10, 2000, Unit 2 August 10, 2001, Unit 2 February 25, 2012, Unit 1 February 20, 2013, and Unit 2 August 17, 2014. The licensee changed the preventative maintenance (PM) to quarterly in 2005, but that did not eliminate the clogging issue.

The inspectors determined that if the failure of the SLC tank level indicator had been classified as an operator workaround, Procedure AD-OP-ALL-0202, Section 5.9, would have required effective corrective actions, and the closure of the operator workaround would have required approval from the Operations Manager, Plant Manager, and the Engineering Manager. The licensee wrote NCR 704327 to address the SLC tank level repetitive failures, and NCR 704593 to address the failure to declare this issue as an operator workaround.

The inspectors also determined the licensee failed to follow Licensee Procedure AD-PI-ALL-0100, CAP, to correct this undesired condition.

Analysis. The inspectors determined that the failure of the licensee to identify and correct the clogged SLC tank level indicators before the indicators failed was a performance deficiency. The finding was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, this resulted in the instrument reading a higher tank level than actual due to the flow restriction in the bubbler tube, and the inoperability of the instrument. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating structure, SSC, the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the TS allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, and did not screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event. The finding has a cross-cutting aspect in the area of human performance associated with the work management attribute because the licensee failed to implement a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. The licensee failed to have the work process include the identification and management of risk commensurate to the work and the need for coordination with different groups. Specifically, the licensee failed to identify and manage the risk of the SLC tank level indicator bubbler clogging issue. [H.5]

Enforcement. This finding does not involve enforcement action because no regulatory requirement violation was identified since the SLC tank level indicator is not safety-related. The licensee entered this issue into the CAP as NCRs 704327 and 704593. Because this finding does not involve a violation and is of very low safety or security significance, it is identified as FIN 05000324; 05000325/2014004-04, Failure to Correct SLC Tank Level Indication Degradation.

.3 Annual Follow-up of Selected Issues (71152 - 1 sample)

a. Inspection Scope

On February 22, 2012, the Common C 4160/480V transformer failed. This resulted in a loss of power to the circulating water intake pump (CWIP) traveling screen motors, which lead to high delta-pressure across the traveling screens. The CWIP 1B tripped due to high delta-pressure across its associated traveling screen. In anticipation of a loss of condenser vacuum, the licensee inserted a manual reactor SCRAM on Unit 1. As a result of the SCRAM, reactor water level reached the Reactor Water Level - Low Level 1 actuation set point and the Primary Containment Isolation System (PCIS) Groups 2 and 6 isolations occurred. Additionally, the Main Steam Isolation Valves (MSIVs) (PCIS Group 1) were manually closed prior to reaching the Condenser Vacuum – Low

actuation set point. Also, a loss of the Common C Transformer resulted in the loss of the demineralized water transfer pumps, which is the source of keepfill for the emergency core cooling system (ECCS) piping. With the loss of keepfill, ECCS systems started to depressurize, with Unit 1 ECCS depressurizing in 17 minutes and Unit 2 ECCS depressurizing in 2 hours and 29 minutes. With depressurized ECCS, both units declared ECCS inoperable and entered TS 3.0.3. The licensee provided temporary power to a single demineralized water pump and successfully filled and vented the ECCS within 4 hours and 16 minutes of the event. The licensee performed an evaluation to determine if ECCS would have been able to perform its safety-related function in NCR 519193. The inspectors reviewed the evaluation and interviewed engineering personnel. Documents reviewed are listed in the Attachment.

b. Findings

The enforcement related to the failure of the Common C transformer is documented in section 1R12.1 of this report.

4OA3 Follow-up of Events (71153 – 2 samples)

.1 (Closed) Licensee Event Report (LER) 05000325/2014-005-00, Setpoint Drift in Main Steam Line Safety/Relief Valves Results in Two Valves Inoperable

a. Inspection Scope

On May 20, 2014, licensee received the results of as-found testing on 11 safety/relief valves (SRVs) which had been removed from Unit 1 during the Spring 2014 refueling outage. The testing indicated that one of the 11 valves was found to lift above the TS required tolerance band of +/- 3 percent. The valve was determined to be inoperable while the unit was in operation. Setpoint drift in the increasing direction occurred in one valve because of an inadequate surface finish on the pilot disc which caused a loss of platinum coating followed by corrosion bonding of the disc and seat. The licensee entered this issue into the CAP as NCRs 688621. The corrective actions included replacing the all of the SRV pilot valves in Unit 1 and completing a procedure revision for ensuring proper surface preparation.

b. Findings

The enforcement actions associated with this LER are documented in Sections 4OA7. No additional findings were identified during the review of this LER. This LER is closed.

.2 (Closed) Event Notification (EN) 50355 Unusual Event for a Halon Release Near the Emergency Operating Facility and Technical Support Center

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 August 12, 2014, operations personnel declared a notice of unusual event for Units 1 and 2 in accordance with EAL HU 3.1, toxic, corrosive, asphyxiate, flammable gas release that could affect normal operations, due to a halon discharge in the simulator area of the Emergency Operations Facility / Technical Support Center Building. The halon discharge occurred when an electrical card failed resulting in smoke. The fire brigade responded to the event; however, no fire was observed. Units 1 and 2 were not affected. The licensee wrote NCR 702634 to address this event.

b. Findings

No findings were identified.

4OA5 Other Activities

.1 Operation of an Independent Spent Fuel Storage Installation (ISFSI) (60855.1 – 2 samples)

a. Inspection Scope

During the inspection period the inspectors conducted two observations of ISFSI cask loadings to ensure fuel was loading in accordance with procedures. Inspectors walked down the ISFSI pad to ensure that the licensee has maintained fuel stored in the ISFSI in a safe manner and in compliance with approved procedures. Inspectors also reviewed selected records to ensure that the licensee has identified each fuel assembly placed in the ISFSI, has recorded the parameters and characteristics of each fuel assembly, and has maintained a record of each fuel assembly as a controlled document.

b. Findings

Introduction. An NRC-identified Severity Level IV NCV of very low safety significance of 10 CFR 72.150, Instructions, Procedures, and Drawings, was identified for the failure of the licensee to have adequate procedures to ensure the design basis peak fuel cladding limit would not be exceeded during outer transfer cask draining operations.

Description. On August, 19, 2014, the licensee was performing a dry fuel loading campaign. The dry shielded canister (DSC) had been loaded with spent fuel, the inner cover had been welded on the DSC, and the DSC had been drained and filled with helium. A human performance error occurred allowing the water in the annulus region between the DSC and the outer transfer cask to be contaminated with spent fuel pool water, instead of the normal demineralized water. The licensee documented this issue in NCR 703802.

On August 23, 2014, Revision 13 to Procedure IFS-NGGC-0016, ISFSI DSC Sealing Operations, was issued which contained an attachment to allow draining and refilling of the transfer cask annulus to support decontamination efforts. The water annulus in the transfer cask provides the interim cooling for the DSC prior to installation into the storage facility. The vendor, Transnuclear Engineering, provided technical guidance that supported the draining and refilling evolution and included guidance to refill the annulus and allow the fuel to cool down for 24-hours to ensure the fuel reaches equilibrium temperatures before the final drain of the cask was performed and the cask was moved to the storage facility.

On August 25, 2014, at 0941, the licensee began the flushing evolution, and concluded the evolution at 1727. On August 25, 2014, the inspectors reviewed Procedure IFS-NGGC-0016 and determined that the 24-hour wait period had not been included in the procedure. The inspectors determined the 24-hour wait time between flushing the annulus and performing the final drain down was imperative to ensure the fuel did not exceed the fuel cladding temperature limits in UFSAR Appendix T.4, Section T.4.5.4 and

TS 1.2.18a. The inspectors questioned the shift manager on this issue. The licensee called the fuel vendor and determined that a 24-hour wait period was needed between flushing and draining the annulus before the move to the storage facility.

The inspectors determined the licensee performed the flushing evolution of the DSC on August 25, 2014, with no procedural requirements to wait 24-hours between flushing and draining the annulus region of the DSC/transfer cask before draining the annulus to move the cask to the storage facility. The inspectors also determined that the Shift Manager, the senior license holder onsite, was not aware that a 24-hour wait period was needed between flushing and draining operations. The Shift Manager took immediate actions to ensure a 24-hour wait period was instituted before the cask was moved to the storage facility. The licensee wrote NCR 705130 and changed Procedure IFS-NGGC-0016 to incorporate the 24-hour wait period.

Analysis. The inspectors determined the failure to have an adequate procedure to ensure the design basis peak fuel cladding limit would not be exceeded during draining operations was a performance deficiency. Consistent with guidance in Section 2.2 of the NRC Enforcement Policy, ISFSIs are not subject to the SDP and, thus, traditional enforcement will be used for these facilities. The inspectors determined the violation was more than minor because, if left uncorrected, the failure to allow a proper cooldown of the fuel after flushing, prior to draining to move the cask, could lead to a more significant safety concern in that fuel damage could occur. Consistent with the guidance

in Section 2.6.D of the NRC Enforcement Manual, if a violation does not fit an example in the Enforcement Policy Violation Examples, it should be assigned a severity level: (1) Commensurate with its safety significance; and (2) informed by similar violations addressed in the Violation Examples. The inspectors found no similar violations in the Violations Examples. Since the licensee waited 24 hours prior to the final drain down, the violation was determined to be of very low safety significance (Severity Level IV). Cross-cutting aspects are not assigned to traditional enforcement violations. The licensee documented this issue in the CAP as NCR 705130.

Enforcement. Title 10 CFR 72.150, Instructions, Procedures, and Drawings, states, in part, that the licensee shall prescribe activities affecting quality by documenting instructions, procedures, or drawings of a type appropriate to the circumstance and shall require that these instructions, procedures, and drawings, be followed.

Contrary to the above, on August 25, 2014, Licensee Procedure IFS-NGGC-0016, ISFSI DSC Sealing Operations, failed to include documented instructions appropriate to the circumstance for flushing and draining the DSC. Specifically, Procedure IFS-NGGC-0016 did not include a 24-hour waiting period between flushing and draining the annulus region of the cask before moving the cask to the storage facility, to ensure that the fuel cladding temperature limits are not exceeded. There were no actual safety consequences since the licensee ensured the 24-hour wait time occurred before draining the annulus region. Because this finding is of very low safety significance and was entered into the licensee's CAP as NCR 705130, consistent with Section 2.3.2.a of the NRC's Enforcement Policy, this violation is being treated as a NCV: NCV 05000324/2014004-05, Inadequate Procedure for Implementation of Dry Cask Annulus Cooling to Remain in an Analyzed Thermal Condition.

.2 (Closed) URI 05000325/2013005-01, Failure of Transformer Common C and Loss of Emergency Core Cooling System Keepfill

a. Inspection Scope

The inspectors completed an evaluation of URI 05000325/2013005-01, Failure of Transformer Common C and Loss of Emergency Core Cooling System Keepfill. On February 22, 2012, the Common C 4160/480V transformer failed. This resulted in a loss of power to the circulating water intake pump (CWIP) traveling screen motors, which lead to high delta-pressure across the traveling screens. The CWIP 1B tripped due to high delta-pressure across its associated traveling screen. In anticipation of a loss of condenser vacuum, the licensee inserted a manual reactor SCRAM on Unit 1. As a result of the SCRAM, reactor water level reached the Reactor Water Level - Low Level 1 actuation set point and the Primary Containment Isolation System (PCIS) Groups 2 and 6 isolations occurred. Additionally, the Main Steam Isolation Valves (MSIVs) (PCIS Group 1) were manually closed prior to reaching the Condenser Vacuum – Low actuation set point. Also, a loss of the Common C Transformer resulted in the loss of the demineralized water transfer pumps, which is the source of keepfill for the emergency core cooling system (ECCS) piping. With the loss of keepfill, ECCS systems started to depressurize, with Unit 1 ECCS depressurizing in 17 minutes and Unit 2

ECCS depressurizing in 2 hours and 29 minutes. With depressurized ECCS, both units declared ECCS inoperable and entered TS 3.0.3. The licensee provided temporary power to a single demineralized water pump and successfully filled and vented the ECCS within 4 hours and 16 minutes of the event. The licensee determined the root causes to be Procedure OPM-XMR001, ITE Substation Transformers, did not include a core ground check or monitor for signs of overheating on the core clamping structure, and 480V transformer performance monitoring did not include a comparison to initial design data. The licensee's corrective actions to preclude repetition were: 1. Perform core ground testing by meggering the transformer core to earth ground, and core to secondary winding; 2. Check for discoloration and signs of overheating on core clamping structures; and 3. Establish and implement ITE Substation Transformer monitoring which includes, in part: thresholds for temperature monitoring, and required actions once thresholds are reached or exceeded. The inspectors reviewed the cause determination and interviewed engineering personnel to understand the cause and the impact of the failure.

b. Findings

The enforcement related to the failure of the Common C transformer is documented in Section 1R12.1 of this report. This URI is closed.

4OA6 Management Meetings

Exit Meeting Summary

On October 14, 2014, the inspector presented the inspection results to Mr. William R. Gideon, and other members of the licensee staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

On September 8, 2014, the inspectors held a teleconference with licensee staff to discuss the status of the groundwater monitoring program. The licensee provided an update on tritium concentrations in water collected from onsite and offsite groundwater and surface water sampling locations and discussed ongoing remediation efforts associated with the Storm Drain Stabilization Pond and areas near a U1 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>.

On August 15, 2014, the licensed operator requalification exit meeting was conducted with Mr. George 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.

On March 14, 2014, an exit meeting was conducted by ISI inspectors with licensee management. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

4OA7 Licensee-Identified Violations

The following violations of very low significance (Green) were identified by the licensee and are violations of NRC requirements which meet the criteria of the NRC Enforcement Policy, for being dispositioned as non-cited violations.

1. 10 CFR Part 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, states in part that activities affecting quality shall be prescribed by documented procedures and shall be accomplished in accordance with these procedures. Contrary to the above, from May 2012 until May 2014, safety relief valve (SRV) pilot valve conical seating surface finish requirements were not incorporated into Licensee Procedure OCM-VSR509, Main Steam Relief Valves Target Rock Model 7567 Air Operators and Pilot Assembly, Disassembly, Inspection, and Reassembly. This resulted in one of the eleven SRVs being out of tolerance. The licensee took corrective action to replace all of the pilot valves with valves that had the correct surface finish. This violation was more than minor because the performance deficiency was associated with Mitigating System cornerstone and adversely affected the associated cornerstone objective. This violation was determined to be of very low safety significance (Green) because the finding was a deficiency affecting the design or qualification of a mitigating structure, system, or component that maintained operability. This finding is associated with the Mitigating Systems Cornerstone. The licensee entered this issue into their CAP as NCR 688621. The licensee revised Procedure OCM-VSR509 to include polishing seat surface requirements.
2. 10 CFR 55.49, Integrity of examinations and tests, states in part that applicants, licensees, and facility licensees shall not engage in any activity that compromises the integrity of any application, test, or examination required by this part. The integrity of a test or examination is considered compromised if any activity, regardless of intent, affected, or, but for detection, would have affected the equitable and consistent administration of the test or examination. This includes all activities related to the preparation, administration, and grading of the tests and examinations required by this part. Paragraph 5.1.8 of Brunswick Training Administration Procedure-411, Continuing Training Annual/Biennial Exam Development, Administration and Security, states that duplication of test exam items (written, JPMs and scenarios) between and among crews in the same training program cannot exceed 50 percent for any examination. Contrary to the above, during the 2013 Biennial Requalification Examination, Shift "B" licensed operators were administered an exam having 60

percent overlap for Job Performance Measures, 100 percent overlap for scenario events and 91 percent overlap for written exam questions. This violation is of very low safety significance (Green) because there is no evidence of any actual compromise of the examination material. This issue was entered into the licensee's CAP as NCR 702220 and was addressed by the corrective actions associated with NCR 698700.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

W. Gideon, Site Vice President
K. Allen, Manager – Design Engineering
Y. Anagostopoulos, Manager – Major Projects
A. Brittain, Manager – Security
K. Crocker, Supervisor – Emergency Preparedness
P. Dubrouillet, Manager – Nuclear Systems Engineering
S. Gordy, Manager – Maintenance
L. Grzeck, Supervisor – Licensing
K. Hamm, Superintendent – Mechanical Maintenance
B. Houston, Manager – Environmental and Radiological Controls
J. Kalamaja, Manager – Operations
J. Hicks, Manager – Training
J. Krakuszeski, Plant General Manager
M. McGowan, Supervisor – Environmental
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, Project Manager – Major Projects
M. Similey, Superintendent of Operations Training
E. Wills, Director of Site Operations
O. Wisbon, Superintendent – Electrical, Instrumentation and Controls Maintenance

NRC Personnel

G. Hopper, Chief, Reactor Projects Branch 4
J. Dodson, Senior Project Engineer
T. Nicholson, Sr. Technical Advisor for Radionuclide Transport - Office of Nuclear Regulatory Research
R. Cady, Hydrogeologist – Office of Nuclear Material Safety and Safeguards

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000325/2014004-01	FIN	Inadequate Procedure to Perform Core Ground Checks on the Common Bus C Transformer (Section 1R12.1)
05000324/2014004-03	NCV	Failure to Post a High Radiation Area (Section 2RS1)
05000324;325/2014004-04	FIN	Failure to Correct SLC Tank Level Indication Degradation (Section 4OA2.2)
05000324/2014004-05	NCV	Implementation of Dry Cask Annulus Cooling to Remain in an Analyzed Thermal Condition (Section 4OA5.1)

Opened

05000325;324/2014004-02	URI	Tornado Protection of the Emergency Diesel Fuel Oil Tank Vent Lines (Section 1R12.2)
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Closed

05000325/2014-005-00	LER	Setpoint Drift in Main Steam Line Safety/Relief Valves Results in Two Valves Inoperable (Section 4OA3.1)
Event Notification 50355	EN	Unusual Event for a Halon Release Near the Emergency Operating Facility and Technical Support Center (Section 4OA3.2)
05000325/2013005-01	URI	Failure of Transformer Common C and Loss of Emergency Core Cooling System Keepfill (Section 4OA5.2)

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

0AOP-13.0, Operation during Hurricane, Flood Conditions, Tornado, or Earthquake, Rev. 56
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. 52
0PEP-02.6, Severe Weather, Rev. 17
0AOP-22.0, Grid Stability Rev. 24

Section 1R04: Equipment Alignment

Procedures

0SP-12-006, Supplying Fuel Oil to Diesel Generator 4-Day Tanks During Replacement of
Underground Piping, Rev. 2
2OP-43, Service Water System Operating Procedure, Rev. 152
0OP-39, Diesel Generator Operating Procedure, Rev. 157

Work Orders

2079414 11641562 11641563

Drawings

D-02041, Piping Diagram, Service Water System Piping Diagram Sheet 1, Rev. 64
D-02265, Units 1 Starting Air for EDGs Sheet 1B, Rev. 25
D-02268, Units 1 EDG Fuel Oil Piping Diagram Sheet 1B, Rev. 20
D-02272, Units 1 EDG Jacket Water Piping Diagram Sheet 1B, Rev. 16

Section 1R05: Fire Protection

Procedures

1PFP-RB, Reactor Building Prefire Plans, Rev. 16
0PT-34.11.2.0, Portable Fire Extinguisher Inspection, Rev. 50
0PLP-01.1, Fire Protection Program Document, Rev. 39
0PLP-01.2, Fire Protection System Operability, Action, and Surveillance Requirements, Rev. 44
0PFP-PBAA, Power Block Auxiliary Areas Prefire Plan, Rev. 22
0PFP-DG, Diesel Generator Building Prefire Plan, Rev. 17

Condition Reports

667122 702053

Section 1R06: Flood ProtectionProcedures

SAF-NGGC-2174, Confined Space Entry Procedure, Rev. 11
 EGR-NGGC-0351, Condition Monitoring of Structures, Rev. 20
 0AOP-05, Radioactive Spills, High Radiation, and Airborne Activity, Rev. 30

Condition Reports

690026 688429

Work Orders

13375301 13375299 13375298 13375296 13375295 13375294

Drawings

D-02043, Plant Fire Protection System Piping Diagram, Rev. 12
 F-04208, Fire Protection Deluge Valve Pit Piping & Section, Rev. 4
 F-04022, Diesel Generator Building, Units 1 & 2 Fire Protection & Drainage Piping Plans & Details, Rev. 16
 F-02296, Service Water Building Sprinkler & Standpipe System Fire Protection Piping, Rev. 6
 F-02277, Diesel Generator Building Floor & Wall Sleeves, Rev. 26
 D-29099, Reactor Building Piping Diagram Fire Protection Piping Sprinkler, Rev. 6
 F-02213, Diesel Generator Building Fuel Oil Tank Chamber Composite Piping Units 1 & 2, Rev. 20

Miscellaneous

NRC Information Notice 2005-11: Internal Flooding / Spray-Down of Safety-Related Equipment Due to Unsealed Equipment Hatch Floor Plugs And / Or Blocked Floor Drains Sump Pump Cover Plate Modifications, June 12, 2014
 DBD-144, External and Internal Flooding Topical Design Basis Document, Rev. 0
 Engineering Change 97060

Section 1R08: Inservice Inspection ActivitiesProcedures

54-ISI-363-007, Remote Underwater In-vessel Visual Inspection of Reactor Pressure Vessel Internal Components and Associated Repairs of Boiling Water Reactors, Rev 7
 54-ISI-882-001, Procedure for Single Line Encoded Phased Array Ultrasonic Examination of BWR Shroud Support Welds from Reactor Vessel OD, Rev 1
 54-ISI-30-018, Written Practice for the Qualification and Certification of NDE Personnel, Rev 18
 9.2. System One Qualification and Certification of Visual Examination Personnel for ASME Section XI Applications, Rev 11
 NDEP-0301, Dry Powder Magnetic Particle Examination, Rev 20
 NGGM-PM-0011, NDE Appendix B NDE Surface Examination Criteria, Rev 10
 WDI-STD-119A, Generic Procedure for Ultrasonic Examination of Dissimilar Metal Nozzle to Safe-End and Dissimilar Metal Piping Welds Using the IntraSpect Automated Imaging System, Rev 3

Corrective Action

530581	546816	578246	592998	592998	597673
652700					

Drawings:

205-H1332, Shroud Support, Rev 9

Other Documents

ASME Section XI Code Case N-513-3, Evaluation Criteria for Temporary Acceptance of Flaws in Moderate Energy Class 2 or 3 Piping, Section XI, Division I

NDE Equipment Certifications: Simco Electronic Foot Candle Meter, Serial No. L873238, Western Instrument Inc. 10 lb Pull Test Bar, Serial No. A289, Excelon Power Labs Thermometer, Serial No. 0010796668, Parker Research Corporation Dry Magnetic Inspection Powder, Lot No. 17595

NDE Personnel Certifications: A. Bingel, A. Zulauf, C. Olson, D. Kulkoski, G. Britt, G. Myer, J. Trumble, R. Caulder, W. Milner, B. Bennett, G. Myers, C. Olson, C. Shaw, K. Smith

OPS-NGGC-1305, Operability Determinations, Rev 11

B-ISI-11-01, Assessment of the In-Service Inspection/In-Service Testing/10CFR50 Appendix J Programs, March 13, 2011

80133, Welding Program Self-Assessment at BNP and CR3, November 10-13, 2003

Section 1R11: Licensed Operator RequalificationProcedures

OPEP-02.1, Initial Emergency Actions, Rev. 52

OPEP-02.6.21, Emergency Communicator, Rev. 71

OPEP-02.2.1, Emergency Action Level Technical Bases, Rev. 0

AOP-40.0, Security Events, Rev. 30

OPEP-02.6.26, Activation and Operation of the TSC, Rev. 34

Brunswick Simulator Instruction (SI) SI-216.1, Regulatory Testing, Rev. 21

AD-TQ-ALL-0425, Simulator Scenario Based Testing, Rev. 1

TAP-412, Simulator Operation and Maintenance, Rev. 7

OTPP-206, Simulator Program, Rev. 6

TAP-411, Continuing Training Annual/Biennial Exam Development, Administration and Security, Rev. 15

Miscellaneous

Scenario BNP-EP-EX-14-01

Exercise Scenario September 9, 2014

Simulator Steady State Tests

Simulator Test Procedure (STP) STP-SS-002 (50 percent Power Steady State Comparison), Rev. 11 (2012 and 2013 tests reviewed)

Simulator Test Procedure (STP) STP-SS-003 (75 percent Power Steady State Comparison), Rev. 11 (2012 and 2013 tests reviewed)

Simulator Test Procedure (STP) STP-SS-004 (100 percent Power Steady State Comparison), Rev. 12 (2012 and 2013 tests reviewed)

Simulator Normal Evolution Tests

Simulator Test Procedure (STP) STP-OL-001(Operating Limits Test), Rev. 8 (2012 and 2013 tests reviewed)

Simulator Transient Tests

Simulator Test Procedure (STP) STP-TN-004 (Simultaneous Trip of Both Recirculation Pumps), Rev. 3 (2012 and 2013 tests reviewed)

Simulator Test Procedure (STP) STP-TN-011 (Inadvertent HPCI Initiation), Rev. 4 (Unsatisfactory and Satisfactory tests reviewed from 2013)

Simulator Scenario Based Tests

Scenario Based Testing (SBT) for Simulator Scenario LORX-141

Scenario Based Testing (SBT) for Simulator Scenario LORX-143

Simulator Service Requests (SSR)

SSR 12-0046, Condenser Vacuum Not Lowering With Loss Of CW Intake Pumps, June 19, 2012

SSR 12-0051, AOG Refrigeration Compressor Yellow Cycle Timer Lamp Not Modeled Correctly, July 9, 2012

SSR 12-0056, Turbine Building Ventilation Not Lined Up In Accordance With Operating Procedure, August 10, 2012

Simulator Modification Requests (SMR)

SMR 14-0020, Modify Unit 1 Condensate Model to Incorporate Condensate Pump Parallel Suction Piping & New RFP Impellers, June 5, 2014

SMR 10-0008, Software Upgrade for Thermo-Westronics Recorders, January 21, 2010

Scenario Packages

LORX-141, LOP Instrumentation, Condenser Tube Leak, EHC Failure, ATWS, Rev. 2

LORX-142, 2C32-LT-N004A Failure, HD Controller Failure, CRD Pump Trip, LOOP, Small Break LOCA with Loss of Pressure Suppression Function, Rev. 0

LORX-143, 2B SLC Breaker, Isolable CSW Leak in Turbine Building, Loss of 4KV Buses 2C and E4, Small Break LOCA, Emergency Depressurization, Rev. 1

LORX-144, ECCS Cabinet Trouble Alarm, Loss of 2XDB, Steam Leak in SRHR, Rev. 0

LORX-145, SRV "J" Loss of Control Power, 2B RFP DFCS signal will fail, 4160 VAC 2B Trip, Electrical ATWS, Scram Discharge Volume Rupture, Rev. 0

LORX-147, NSW Pump Trip with Failure of Standby Pump to Auto Start, Flooding in the Turbine Building, Moderate sized LOCA, Rev. 0

JPM Packages

LOT-SIM-JP-016-A02, RCIC Start Using the Hard Card – Flow Controller Failure (Alternate Path), Rev. 4

AOT-OJT-JP-300-J11, LEP-01; Alternate Coolant Injection - SLC Pumps Using Fire Water, Rev. 11

AOT-OJT-JP-052-01, Stack Radiation Monitor Power Supply Transfer, Rev. 4

LOT-SIM-JP-037.1-01, Placing RHR Room Cooler in Service on NSW Header (Alternate Path), Rev. 1

LOT-OJT-JP-307-A03, Determine SRM/IRM Overlap per GP-02, Rev. 4
 LOT-SIM-JP-050-01, Emergency Isolation of the 230 KV Bus, Rev. 1

Records

License Reactivation Packages (13)
 LORP Training Attendance records (68)
 Medical Files (10)
 Remedial Training Records (all records for previous two years)
 Remedial Training Examinations (all records for previous two years)
 Watchstanding Records (68)

Written Examinations:

LOCT 2013 Biennial Exam RO Version 1, November 1, 2013
 LOCT 2013 Biennial Exam SRO Version 1, November 1, 2013

Section 1R12: Maintenance Effectiveness

Procedures

0BNP-TR-019, External Event Protection Features, Rev. 0
 0ENP-66, External Events Protection Program, Rev. 0

Condition Reports

692976	691200	686589	655827	651862	624417
490292	341002	347133	520578	431511	685352
520580	520576	520575	520574		

Work Orders

11606672	2154149	2154147
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Drawings

F-01926, Diesel Generator Building Plans, Rev. 19

Miscellaneous

Brunswick Operating Experience, 1984-04-20, Failure of Residual Heat Removal / Low Pressure Safety Injection Suppression Pool Suction Isolation Valve 2-E11-F020B
 Engineering Change 968220, Rev. 0
 Engineering Change 96861, Rev. 0
 Engineering Change 96862, Rev. 0
 Applicability of ANSI Standard 59.51 to the Diesel Generator 4-Day Tank Vent Line, April 3, 1991
 UFSAR Section 3.1.2.1.2, Criterion 2 – Design Bases for Protection Against Natural Phenomena
 Maintenance Rule Scoping Document, Control Building, EDG Building and Tank Vault
 DBD-106, Hazards Analysis, Rev. 1
 Calculation OVA-0033, Tornado Analysis of Diesel Generator Building, Rev. 2

Section 1R13: Maintenance Risk Assessment and Emergent Work Control Procedures

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

Miscellaneous

EOOS Risk Assessment July 8, 2014
 EOOS Risk Assessment July 28, 2014
 EOOS Risk Assessment August 1, 2014
 EOOS Risk Assessment August 6, 2014
 EOOS Risk Assessment September 10, 2014

Section 1R15: Operability Evaluations

Procedures

EGR-NGGC-0005, Engineering Change, Rev. 35
 OPS-NGGC-1305, Operability Determinations, Rev. 11
 0PIC-TAC001, Emergency Diesel Generator Switching Tachometers Dynalco Model SST-2400, Rev. 8

Condition Reports

700030	7000249	698658	627547	704029	651696
690026					

Work Orders

2070020	2035507	2070021	2008449	13331136	13331141
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Drawings

D-02265, Starting Air for Diesel Generators Piping Diagram, Sheet 1B, Rev. 25

Miscellaneous

Plant Modification 85-123, Starting Air Timing Relay
 DBD-39, Emergency Diesel Generator System, Rev. 15
 Emergency Diesel Generators 1-4 Compressor Run Time, December 2013-May 2014

Section 1R19: Post Maintenance Testing

Procedures

0PLP-20, Post-Maintenance Testing Program, Rev. 42
 2PT-24.1-2, Service Water Pump and Discharge Valve Operability Test, Rev. 68
 0PT-08.1.4A, RHR Service Water System Operability Test - Loop A, Rev. 81
 1OP-50, Plant Electric System Operating Procedure, Rev. 114
 NGG-PMB-SWG-01, NGG Reliability Template Medium Voltage Switchgear, Rev. 0
 0PT-09.2, HPCI System Operability Test, Rev. 141
 0PT-12.2C, No. 3 Diesel Generator Monthly Load Test, Rev. 103

Condition Reports

700024	685019	706435	702365	702366
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Work Orders

13417540	13384177	13389339	22349244
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Miscellaneous

Operator logs

FP-30118, ITE Type Electrical Equipment

Section 1R22: Surveillance TestingProcedures

OPT-19.5, Nuclear Steam System Safety/Relief Valve Test, Rev. 10

OPT-15.4, Unit 1 Secondary Containment Integrity Test, Rev. 30

OPS-NGGC-1308, Plant Status Control, Rev. 6

OPT-12.2B, No. 2 Diesel Generator Monthly Load Test, Rev. 105

OPT-08.1.6, Suppression Pool Level Indicator Operability, Rev 34

2OI-03.2, Reactor Operator Daily Surveillance Report, Rev. 133

Condition Reports

688621	692378	555657	555654	698401	692378
696832					

Work Orders

2234849	555657	555654	1973815	13307266	13307268
11634376					

Section 1EP6: Emergency Planning Drill EvaluationProcedures

OPEP-02.1.1, Emergency Control – Notification of Unusual Event, Alert, Site Area Emergency, or General Emergency, Rev. 24

OPEP-02.1, Initial Emergency Actions, Rev. 52

OPEP-02.6.21, Emergency Communicator, Rev. 72

OPEP-02.6.26, Activation and Operation of the TSC, Rev. 34

OPEP-02.2.1, Emergency Action Level Technical Bases, Rev. 0

Miscellaneous

Exercise Scenario July 22, 2014

Exercise Scenario September 9, 2014

Section 2RS1: Radiological Hazard Assessment and Exposure ControlsProcedures

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

HPS-NGGC-0003, Radiological Posting, Labeling and Surveys, Rev. 16

HPS-NGGC-0019, Conduct of Radiological Protection Briefings, Rev. 7

HPS-NGGC-1000, Radiation Protection – Conduct of Operations, Rev. 5

TE-RP-ALL-2000, Preparation of Radiation Work Permit, Rev. 0

Condition Reports

710281

Miscellaneous

Radiation Work Permit 2-1, Routine Surveillance (Planning & Tours)
 Survey BNP-M-20140927-A, September 27, 2014
 Survey BNP-M-20140926-A, September 26, 2014
 Survey BNP-M-20140927-1, September 27, 2014

Section 40A1: Performance Indicator (PI) VerificationProcedures

REG-NGGC-0009, NRC Performance Indicators and Monthly Operating Report Data, Rev. 11

MiscellaneousOperator Logs

NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Rev. 7
 Brunswick Unit 1 PI Summary, July 2013 – June 2014
 Brunswick Unit 2 PI Summary, July 2013 – June 2014
 Monthly PI Reports, July 2013 – June 2014
 System Health Reports, July 2013 – June 2014
 Licensee Event Reports, July 2013 – June 2014
 Maintenance Rule Event List, System 2045
 MSPI Unavailability, Residual Heat Removal, July 2013 - June 2014
 Reactor Coolant System Leakage, July 2013 – June 2014
 Reactor Coolant System Specific Activity, July 2013 – June 2014

Section 40A2: Identification and Resolution of ProblemsProcedures

AD-PI-ALL-0100, Corrective Action Program, Rev. 0
 AD-PI-ALL-0400, Operating Experience Program, Rev. 0
 CAP-NGGC-0205, Condition Evaluation and Corrective Action Process, Rev. 18
 CAP-NGGC-0206, Performance Assessment and Trending, Rev. 7
 OPS-NGGC-1305, Operability Determinations, Rev. 11
 OPS-NGGC-1307, Operational Decision Making, Rev. 6
 AD-OP-ALL-0202, Aggregate Operator Impact Assessment, Rev. 0

Condition Reports

601286	704593	692504	692502	602392
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Work Orders

2231401	13425244	2047930	571952	168555	81210
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Miscellaneous

Chart of Operator Workarounds, August 2013 - July 2014
 Chart of Operator Burdens, August 2013 - July 2014
 Chart of Control Room Deficiencies, August 2013 - July 2014
 Chart of Control Room Lit / Out of Service Annunciators, August 2013 - July 2014

Active Operational Decision Making Statements, August 18, 2014
 List of Operator Challenge/Degraded Equipment Aggregate Assessment, August 18, 2014
 Operations Turnover List, August 18, 2014
 Engineering Change 91507
 Engineering Change 76247
 Supplemental Check – Unit 2 Standby Liquid Control Tank Volume

Section 40A3: Follow-up of Events

Procedures

OPEP-02.1, Initial Emergency Actions, Rev. 52
 OPEP-02.1.1, Emergency Control – Notification of Unusual Event, Alert, Site Area Emergency, and General Emergency, Rev. 24
 OPEP-02.2.1, Emergency Action Level Bases, Rev. 5

Condition Reports

702634 703993 706690 703387

Miscellaneous

Event Notification 50355 Unusual Event for a Halon Release Near the Emergency Operating Facility and Technical Support Center

Section 40A5: Other Activities

Procedures

IFS-NGGC-0015, Transfer Cask and Dry Shielded Canister Preparation for Loading, [Rev. 10](#)
 IFS-NGGC-0016, ISFSI Dry Shielded Canister Sealing Operations, [Rev. 12](#)
 IFS-NGGC-0017, Transfer Cask and Dry Shielded Canister to the Horizontal Storage Module, Rev. 11
 NFP-NGGC-0023, Selection of Fuel for Storage in Independent Spent Fuel Storage Installations, Rev. 4
 OISFS-002, Transfer Cask Handling Operations for Fuel Loading, Rev. 8
 OISFS-003, Dry Shielded Canister Fuel Loading, Rev. 4
 OSMP-FH506, Fuel Preparation, Rev. 6

Condition Reports

701684 700735 705130

Miscellaneous

Integrated Risk Assessment, Dry Fuel Movement

Section 40A6: Meetings, including Exit

Condition Reports

402755

Section 40A7: Licensee-Identified Violation

Condition Reports

688621 607846 698700 702220