



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION II
245 PEACHTREE CENTER AVENUE N.E., SUITE 1200
ATLANTA, GEORGIA 30303-1200

November 10, 2021

Mr. John A. Krakuszeski
Site Vice President
Duke Energy Progress, LLC
8470 River Road SE
M/C BNP04
Southport, NC 28461-0429

**SUBJECT: BRUNSWICK STEAM ELECTRIC PLANT – INTEGRATED INSPECTION
REPORT 05000324/2021003 AND 05000325/2021003**

Dear Mr. Krakuszeski:

On September 30, 2021, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Brunswick Steam Electric Plant. On October 28, 2021, the NRC inspectors discussed the results of this inspection with you and other members of your staff. The results of this inspection are documented in the enclosed report.

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

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

If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region II; and the NRC Resident Inspector at Brunswick Steam Electric Plant.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document Room in accordance with Title 10 of the *Code of Federal Regulations* 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Stewart N. Bailey, Chief
Reactor Projects Branch 4
Division of Reactor Projects

Docket Nos. 05000324 and 05000325
License Nos. DPR-62 and DPR-71

Enclosure:
As stated

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SUBJECT: BRUNSWICK STEAM ELECTRIC PLANT – INTEGRATED INSPECTION
 REPORT 05000324/2021003 AND 05000325/2021003 –
 DATED NOVEMBER 10, 2021

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**U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report**

Docket Numbers: 05000324 and 05000325

License Numbers: DPR-62 and DPR-71

Report Numbers: 05000324/2021003 and 05000325/2021003

Enterprise Identifier: I-2021-003-0018

Licensee: Duke Energy Progress, LLC

Facility: Brunswick Steam Electric Plant

Location: Southport, NC

Inspection Dates: July 01, 2021 to September 30, 2021

Inspectors: P. Cooper, Senior Reactor Inspector
G. Ottenberg, Senior Reactor Inspector
M. Schweg, Senior Reactor Inspector
G. Smith, Senior Resident Inspector

Approved By: Stewart N. Bailey, Chief
Reactor Projects Branch 4
Division of Reactor Projects

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting an integrated inspection at Brunswick Steam Electric Plant, in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC's program for overseeing the safe operation of commercial nuclear power reactors. Refer to <https://www.nrc.gov/reactors/operating/oversight.html> for more information.

List of Findings and Violations

Failure to Identify a Condition Adverse to Quality Associated With the Diesel Generator No. 4 Recirculation Damper			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000324/2021003-01 Open/Closed	[P.1] - Identification	71111.12
The inspectors identified a Green finding and associated non-cited violation (NCV) of Title 10 of the Code of Federal Regulations Part 50 (10 CFR 50), Appendix B, Criterion XVI, "Corrective Action," for the licensee's failure to correct a condition adverse to quality (CAQ) in the emergency diesel generator No. 4 (EDG-4) ventilation system. Specifically, from June 10, 2021 until July 12, 2021, the licensee did not identify and correct a damper position deviation.			

Inappropriate 10 CFR 50, Appendix J, Type C Test Exclusion			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Barrier Integrity	Green NCV 05000325,05000324/2021003-02 Open/Closed	[H.2] - Field Presence	71111.21N.02
The inspectors identified a Green finding and associated NCV of 10 CFR 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to correctly translate applicable regulatory requirements into procedures and instructions. Specifically, the licensee failed to translate applicable 10 CFR 50, Appendix J, Type C test requirements into test procedures and instructions for valves which were inappropriately excluded from the Appendix J test program.			

Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
URI	05000325,05000324/2021011-01	Potential Inappropriate 10 CFR 50, Appendix J, Type C Test Exclusion	71111.21N.02	Closed
LER	05000325/2020-002-01	LER 2020-002-01 for Brunswick Steam Electric Plant, Unit No. 1, Technical Specification Required Shutdown due to Unidentified Leakage	71153	Closed
LER	05000325/2020-004-00	LER 2020-004-00 for Brunswick Steam Electric	71153	Closed

		Plant (BSEP), Unit 1, Setpoint Drift in Main Steam Line Safety Relief Valves Results in Three Valves Inoperable		
LER	05000325/2020-003-00	LER 2020-003-00 for Brunswick Steam Electric Plant, Unit No. 1, Automatic Specified System Actuations due to Loss of Offsite Power	71153	Closed

PLANT STATUS

Unit 1 began the period at 100 percent (full) rated thermal power (RTP) and operated there until August 17, 2021, when power was reduced to 86 percent RTP due to lowering condenser vacuum following injection of sodium hypochlorite into the intake bays. Following clearing of the loosened debris from the intake wells as well as restoration of condenser vacuum, the unit was restored to 100 percent RTP where it continued to operate until August 27, when power was reduced to 60 percent RTP for a planned control rod sequence exchange and turbine valve testing. Following the testing and sequence exchange, as well as two follow on rod improvements, the unit was restored to full RTP on August 30, where the unit continued to operate for the remainder of the period with the exception of September 21 when the unit was briefly down-powered to 90 percent RTP for Switchyard line maintenance (Jacksonville line).

Unit 2 began the period at 100 percent RTP and operated there until September 10, 2021, when power was reduced to 60 percent RTP for a planned control rod sequence exchange and turbine valve testing. Following the testing and sequence exchange, as well as two follow on rod improvements, the unit was restored to full RTP on September 14, where the unit continued to operate for the remainder of the period.

INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at <http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html>. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards. Starting on March 20, 2020, in response to the National Emergency declared by the President of the United States on the public health risks of the coronavirus (COVID-19), resident and regional inspectors were directed to begin telework and to remotely access licensee information using available technology. During this time, the resident inspectors performed periodic site visits each week, increasing the amount of time on site as local COVID-19 conditions permitted. As part of their onsite activities, resident inspectors conducted plant status activities as described in IMC 2515, Appendix D; observed risk significant activities; and completed on site portions of IPs. In addition, resident and regional baseline inspections were evaluated to determine if all or a portion of the objectives and requirements stated in the IP could be performed remotely. If the inspections could be performed remotely, they were conducted per the applicable IP. In some cases, portions of an IP were completed remotely and on site. The inspections documented below met the objectives and requirements for completion of the IP.

REACTOR SAFETY

71111.01 - Adverse Weather Protection

External Flooding Sample (IP Section 03.03) (1 Sample)

- (1) On September 30, the inspectors completed an evaluation of the flood protection barriers, mitigation plans, procedures, and equipment to verify consistency with the

licensee's design requirements and risk analysis assumptions for coping with external flooding.

71111.04 - Equipment Alignment

Partial Walkdown Sample (IP Section 03.01) (4 Samples)

The inspectors evaluated system configurations during partial walkdowns of the following systems/trains:

- (1) Emergency Diesel Generator (EDG)-3 while EDG-4 was out-of-service (OOS) for a planned maintenance outage on July 16, 2021
- (2) Unit 1 Residual Heat Removal (RHR) train 'A' while the 'B' train RHR was OOS for a planned maintenance outage on July 29, 2021
- (3) Unit 2 high pressure coolant injection (HPCI) system while the reactor coolant isolation and cooling (RCIC) system was OOS for a maintenance outage on August 11, 2021
- (4) Unit 2 RCIC system following maintenance on September 17, 2021

71111.05 - Fire Protection

Fire Area Walkdown and Inspection Sample (IP Section 03.01) (5 Samples)

The inspectors evaluated the implementation of the fire protection program by conducting a walkdown and performing a review to verify program compliance, equipment functionality, material condition, and operational readiness of the following fire areas:

- (1) Unit 2 RCIC room -17' elevation (EL) on August 12, 2021
- (2) Unit 1 Reactor Building 20' EL on August 19, 2021
- (3) Unit 1 Reactor Building 50' EL on August 23, 2021
- (4) Unit 2 Reactor Building 20' EL on August 23, 2021
- (5) Unit 2 Reactor Building 50' EL on August 24, 2021

71111.07T - Heat Sink Performance

Heat Exchanger (Service Water Cooled) (IP Section 03.02) (2 Samples)

The inspectors evaluated heat exchanger/sink performance on the following:

- (1) Residual Heat Removal Heat Exchanger: 1-E11-B001B
- (2) Diesel Generator Jacket Water Cooler: 2-MUD-JKT-WTR-CLR-3

71111.11Q - Licensed Operator Requalification Program and Licensed Operator Performance

Licensed Operator Performance in the Actual Plant/Main Control Room (IP Section 03.01) (1 Sample)

- (1) The inspectors observed and evaluated licensed operator performance in the Control Room during a brief Unit 1 down power to 95 percent RTP in order to place the 'A' heater drain pump discharge valve in service on August 3, 2021.

Licensed Operator Requalification Training/Examinations (IP Section 03.02) (1 Sample)

- (1) The inspectors observed and evaluated a simulator exam scenario of an operating crew on September 15. This simulator exam was part of the annual operator exam given during the month of September 2021. The scenario consisted of a recirculation flow transmitter failure, a reactor building closed cooling water (RBCCW) pipe break, a loss of off-site power (LOOP), and a small break loss of coolant accident (LOCA). Similarly, on September 22, the inspectors observed and evaluated a second simulator examination (part of the annual operator exam) of an operating crew. This scenario involved a reactor building ventilation radiation monitor failure, a loss of conventional service water, and anticipated transient without SCRAM in conjunction with a full main steam isolation valve closure.

71111.12 - Maintenance Effectiveness

Maintenance Effectiveness (IP Section 03.01) (3 Samples)

The inspectors evaluated the effectiveness of maintenance to ensure the following structures, systems, and components (SSCs) remain capable of performing their intended function:

- (1) EDG-4 six-year preventative maintenance outage conducted from July 12, 2021 to July 19, 2021
- (2) 2021 Maintenance Rule self-assessment performed in accordance with 10 CFR 50.65 a(3)
- (3) Diesel Generating Building Ventilation System following maintenance activities on July 12, 2021

Aging Management (IP Section 03.03) (1 Sample)

The inspectors evaluated the effectiveness of the aging management program for the following SSCs that did not meet their inspection or test acceptance criteria:

- (1) Diesel Fuel Oil Tanks

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management Sample (IP Section 03.01) (4 Samples)

The inspectors evaluated the accuracy and completeness of risk assessments for the following planned and emergent work activities to ensure configuration changes and appropriate work controls were addressed:

- (1) Elevated site risk due to EDG-4 outage on July 16, 2021
- (2) Elevated risk due to Unit 1 'B' train RHR outage on July 29, 2021
- (3) Elevated risk due to Unit 2 'A' train RHR outage on August 25, 2021
- (4) Emergent failure of first stage pressure transmitter on September 14, 2021

71111.15 - Operability Determinations and Functionality Assessments

Operability Determination or Functionality Assessment (IP Section 03.01) (6 Samples)

The inspectors evaluated the licensee's justifications and actions associated with the following operability determinations and functionality assessments:

- (1) Failed EDG-4 auxiliary relay associated with local EDG breaker operation (Nuclear condition report (NCR) 2391411) on August 5, 2021
- (2) Required leak check not performed on 2-C41-F029B (NCR 2382978) on July 5, 2021
- (3) Service water pump strainer stuffing boxes not PQL-2 as per design (NCR 2384462) on July 8, 2021
- (4) Stator cooling low flow indications during OPT-36.1 (NCR 2392850) on July 25, 2021
- (5) Corrosion on 1-VA-1D-SF-CB supply fan saddle supports (NCR 2384121) on August 31, 2021
- (6) RCIC drain pot outlet pipe flow orifice slow leak (NCR 2363459) on September 9, 2021

71111.19 - Post-Maintenance Testing

Post-Maintenance Test Sample (IP Section 03.01) (5 Samples)

The inspectors evaluated the following post-maintenance test activities to verify system operability and functionality:

- (1) OPT-08.2.2C, "LPCI/RHR System Operability Test- Loop A" following rebuilding of valve actuator (1-E11-F047A) in accordance with WO 20414895 on July 13, 2021
- (2) 0LP-A0010, "Calibration and functional testing of Johnson Controls Model D-9502 Positioner" after actuator 1609D replacement on July 13, 2021
- (3) OPT-10.14.L, "RCIC Turbine Exhaust Vacuum Breaker Valves Operability test" after relay replacement on August 11
- (4) OPT-08.2.2C, "LPCI/RHR System Operability Test - Loop A" following valve maintenance on August 25, 2021
- (5) OPT-07.2.4.A, "Core Spray System Operability Test – Loop A" following switchgear maintenance on September 8, 2021

71111.21N.02 - Design-Basis Capability of Power-Operated Valves Under 10 CFR 50.55a Requirements

POV Review (IP Section 03)

The inspectors reviewed the licensee's follow-up to the inspectors' questions regarding unresolved item (URI) 05000325,05000324/2021011-01, Potential Inappropriate 10 CFR 50, Appendix J, Type C Test Exclusion, and the licensee's extent-of-condition review of the valves removed from the Appendix J test program. The URI was related to the licensee's exclusion of the high pressure coolant injection (HPCI) injection valves, 1(2)-E41-F006, from local leak rate testing via Engineering Change (EC) 417109, "Evaluation of Penetrations and Valves Eligible for Appendix J Local Leak Rate Testing Exclusion," dated March 2, 2020, which evaluated Brunswick's Appendix J program to determine if the exclusion criteria contained in NEI 94-01, "Industry Guideline for Implementing Performance-Based Option of 10 CFR 50, Appendix J," revision 3A, could be applied. As a result of the inspector's review, a non-cited violation was identified and documented in this report. This URI is closed.

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

RCS Leakage Detection Testing (IP Section 03.01) (1 Sample)

- (1) Unit 2 RCS leak rate surveillance on September 9, 2021

Containment Isolation Valve Testing (IP Section 03.01) (1 Sample)

- (1) OPT-20.3 Local Leak rate testing for G31-F004, RWCU Outboard Isolation Valve on August 5, 2021

71114.06 - Drill Evaluation

Select Emergency Preparedness Drills and/or Training for Observation (IP Section 03.01) (1 Sample)

- (1) Emergency preparedness drill on July 21, 2021

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

BI01: Reactor Coolant System (RCS) Specific Activity Sample (IP Section 02.10) (2 Samples)

- (1) Unit 1 (July 1, 2020 through June 30, 2021)
- (2) Unit 2 (July 1, 2020 through June 30, 2021)

BI02: RCS Leak Rate Sample (IP Section 02.11) (2 Samples)

- (1) Unit 1 (July 1, 2020 through June 30, 2021)
- (2) Unit 2 (July 1, 2020 through June 30, 2021)

71153 - Follow Up of Events and Notices of Enforcement Discretion

Event Report (IP Section 03.02) (3 Samples)

The inspectors evaluated the following licensee event reports (LERs):

- (1) LER 05000325/2020-002-01, Technical Specification Required Shutdown due to Unidentified Leakage (ADAMS Accession No. ML20322A021) This event was reported pursuant to 10 CFR 50.73(a)(2)(i)(A) because a Unit 1 Technical Specification (TS) required shutdown was completed on March 24, 2020. The shutdown was required due to TS Action 3.4.4.A, as unidentified reactor coolant system (RCS) leakage increase was not within limits and could not have been reduced within the required 8 hours. The RCS leak was ultimately determined to be a leaking safety relief valve (SRV) in conjunction with back leakage past the SRV vacuum breaker resulting in the increased drywell leakage, The inspectors

determined that it was not reasonable to foresee or correct the cause of the SRV failure discussed in the LER therefore no performance deficiency was identified. The inspectors did not identify a violation of NRC requirements. The inspectors reviewed the updated LER submittal which addressed the root cause of the SRV failure. The previous LER submittal was reviewed in Inspection Report 05000324,05000325/2021002 under Inspection Results Section 71153.

- (2) LER 05000325/2020-003-00, Automatic Specified System Actuations due to Loss of Offsite Power, (ADAMS Accession No. ML20265A162). On August 3, 2020, Unit 1 experienced a LOOP that resulted in several automatic safety system actuations including a reactor trip, EDG start signals, and several group isolation signals including group 1 (main steam isolation valve closure). All safety systems functioned as expected. The cause of the LOOP was a lockout on the station auxiliary transformer because of flying debris during Hurricane Isaias. The inspectors determined that it was not reasonable to foresee or correct the cause discussed in the LER therefore no performance deficiency was identified. The inspectors did not identify a violation of NRC requirements.
- (3) LER 05000325/2020-004-00, Setpoint Drift in Main Steam Line Safety Relief Valves Results in Three Valves Inoperable, (ADAMS Accession No. ML 20274A324). This LER involved the failure of three of the eleven Unit 1 safety relief valves (SRVs) to lift within three percent of their setpoint as discovered on August 12, 2020. This event was similar to a previous LER 05000325/2018-003-00. In this previous LER, the licensee noted that the root cause of the failure was a misapplication of the platinum coating on the pilot valve seat due to an inadequate procedure. This causal factor was noted back in 2018 but was after the installation of these particular SRVs in March 2018. During the March 2020 Unit 1 refueling outage, the licensee used the knowledge of the previous LER and replaced all the existing SRV pilot valves with valves maintained to the new coating procedure. The inspection conclusions associated with this current LER were documented in Inspection Report 05000324,05000325/2019002-03 under Inspection Results Section 71153.

INSPECTION RESULTS

Failure to Identify a Condition Adverse to Quality Associated With the Diesel Generator No. 4 Recirculation Damper			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000324/2021003-01 Open/Closed	[P.1] - Identification	71111.12
The inspectors identified a Green finding and associated non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the licensee's failure to correct a condition adverse to quality (CAQ) in the emergency diesel generator No. 4 (EDG-4) ventilation system. Specifically, from June 10, 2021 until July 12, 2021, the licensee did not identify and correct a damper position deviation.			
<u>Description:</u> On June 10, 2021, an inspector conducted a walkdown of the 50' EL Diesel Generation Building. The inspector noted the EDG-4 exhaust fan recirculation damper was fully open and the exhaust damper was closed during a high ambient temperature day. The other three (3) diesel generator cell recirculation dampers were fully closed as expected. These dampers were required to maintain diesel cell room temperature and ensure diesel operability. The condition was reported to the licensee, but no work request or			

condition report was issued as required by site procedures. On July 12, 2021, during the performance of an 8-year positioner calibration check, it was found the EDG-4 exhaust damper positioner (2-VA-FA-1606D) was not responding to applied inputs. The positioner was replaced per work order (20213273). The new positioner was calibrated and satisfactorily returned to service.

Each diesel cell has an exhaust fan with a dual damper arrangement with pneumatic automatic controls. When the diesel cell temperature reaches 85 degree Fahrenheit (F), the damper positioner operates to fully close the recirculation damper and to fully open the exhaust damper which allows hot air to directly exit the building. Likewise, when the cell temperature is below 80 degree F, the damper positioner operates to fully open the recirculation damper and fully close the exhaust damper which allows warm air to recirculate back to the inlet of the supply fans. If the cell temperature is between 80 degree F and 85 degree F, both dampers will be partially open.

The inspectors were concerned that the recirculation damper would remain open given the positioner failure. If the diesel was operated, the diesel cell temperature would rapidly increase due to the hot engine air being recirculated back into the cell. These higher cell temperatures could impact temperature sensitive components (i.e., EDG pedestal bearing) in the diesel cell.

The design calculation 7453-101-6-VAD-54F, DGB Ventilation, determined the diesel can operate at design peak ambient conditions (93 degrees) without exceeding any temperature limits. However, the calculation assumed that the individual EDG Cell exhaust fan damper sets are aligned with the recirculation damper closed and the exhaust damper full-open. If the recirculation damper was open under peak ambient, the diesel cell temperature would most likely exceed the maximum design limit for the EDG pedestal bearing,

The inspectors reviewed the EDG-4 run history and ambient temperature conditions over the time period between June 10, 2021 and July 12, 2021. The EDG-4 monthly runs occurred on the morning of June 13, 2021, and in the afternoon on July 11, 2021. During these monthly runs, the ambient temperature was well below the peak design temperature (93 degrees). Therefore, the inspector concluded the EDG-4 run did not exceed any temperature design limits.

During subsequent walkdowns following the positioner repair, the EDG-4 cell dampers were noted to be in the correct position for the given cell temperature. The inspectors were unable to determine if the July 12 exhaust positioner failure was ultimately related to the recirculation damper position deviation noted on June 10.

Corrective Actions: The damper positioner was replaced and calibrated.

Corrective Action References: NCR 2389216

Performance Assessment:

Performance Deficiency: The failure to identify and correct a condition adverse to quality associated with diesel ventilation damper position deviation was a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Protection Against External Factors attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure

the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, for EDG-4 an exhaust damper positioner failure would increase the cell temperature during diesel operation and adversely affect the availability, reliability, and capability of the emergency diesel generator.

Significance: The inspectors assessed the significance of the finding using Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." Using the Mitigating System screening questions, it was determined to be of low safety significance (green) because EDG-4 maintained its operability.

During a loss of offsite power (LOOP), the instrument air would be lost, which is used to control the exhaust fan dampers. Without instrument air, the damper positioner would align the dampers to the exhaust mode configuration (recirculation damper would close and the exhaust damper would open). Therefore, there would be no additional increase in the diesel cell temperature or impact on diesel operation.

Cross-Cutting Aspect: P.1 - Identification: The organization implements a corrective action program with a low threshold for identifying issues. Individuals identify issues completely, accurately, and in a timely manner in accordance with the program.

Enforcement:

Violation: Title 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," states that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances are promptly identified and corrected. Contrary to the above, from June 10, 2021, until July 12, 2021, the licensee did not identify and correct the EDG-4 damper deviation, which was a condition adverse to quality.

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

Inappropriate 10 CFR 50, Appendix J, Type C Test Exclusion			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Barrier Integrity	Green NCV 05000325,05000324/2021003-02 Open/Closed	[H.2] - Field Presence	71111.21N.02
The inspectors identified a Green finding and associated non-cited violation (NCV) of Title 10 of the Code of Federal Regulations Part 50 (10 CFR 50), Appendix B, Criterion III, "Design Control," for the licensee's failure to correctly translate applicable regulatory requirements into procedures and instructions. Specifically, the licensee failed to translate applicable 10 CFR 50, Appendix J, Type C test requirements into test procedures and instructions for valves which were inappropriately excluded from the Appendix J test program.			
<u>Description:</u> An unresolved item (URI) was previously identified in the Brunswick Steam Electric Plant, Units 1 & 2, Design Bases Assurance Inspection (Programs) Inspection Report 05000324/2021011 and 05000325/2021011 [ADAMS ML21154A045] related to the licensee's exclusion of the high pressure coolant injection (HPCI) injection valves, 1(2)-E41-F006, from local leak rate testing (LLRT). The inspectors were concerned that the licensee's conclusion that "1(2)-E41-F006 are primary containment boundaries that DO NOT constitute primary			

containment atmospheric pathways during and following a DBA” was not technically supported by a vendor analysis which provided the basis for their exclusion from 10 CFR 50, Appendix J, Type C, LLRT program. Therefore, the inspectors asked the licensee several follow-up questions to determine if the removal of the HPCI valves from the test program was supported.

In addressing the inspectors’ follow-up questions, the licensee acknowledged that the vendor’s evaluation failed to consider conditions that could result in the penetrations becoming atmospheric pathways and determined that additional evaluation would be needed to justify excluding several valves from testing, including the HPCI injection valves. As a result, the licensee generated nuclear condition report (NCR) 2390723 and updated NCR 2384029, evaluated the impact of the valves’ removal from the test program, and determined that each of the inappropriately excluded valves had a valid basis with which to extend the test interval using Option B of Appendix J such that, to date, no required local leak rate test has been missed. However, the licensee identified during their review that one of the twelve valves determined to be inappropriately removed from the program, namely the 1-E11-F009, Shutdown Cooling Inboard Suction Throttle Valve, could not have its test interval extended until the next opportunity to test the valve during the next scheduled Unit 1 refueling outage. The licensee documented this discovery in NCR 2398526. The valve has had good leakage test performance since being reworked following testing in 2012. It’s performance simply did not meet the licensee’s procedural requirements in 0ENP-16.8, Containment Leakage Tracking, revision 31, for such an extended test interval. Based on review of leakage tests on 1-E11-F009 since its rework, the inspectors determined the operability and expected successful leakage performance of the valve is not in question. Until additional evaluation can be completed, the licensee planned to return the valves that were inappropriately excluded to the LLRT program. The inspectors reviewed the licensee’s evaluation of the impact and the licensee’s planned actions and believe them to be appropriate.

Corrective Actions: The licensee generated NCR 2390723, 2398526, and updated NCR 2384029 to address the identified performance deficiency. The licensee evaluated operability and determined that the applicable valves would be expected to successfully perform their containment boundary functions.

Corrective Action References: NCR 2390723, NCR 2398526, and updated NCR 2384029

Performance Assessment:

Performance Deficiency: The licensee’s removal of several valves from the 10 CFR 50, Appendix J test program without adequate technical basis was a performance deficiency. Specifically, the licensee’s vendor report failed to evaluate several conditions that could cause the containment penetrations to become atmospheric pathways and would be therefore ineligible for exclusion.

Screening: The inspectors determined the performance deficiency was more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, the licensee's exclusion of valves from the Appendix J test program could lead to future undetected unacceptable degradation of their leakage rates.

Significance: The inspectors assessed the significance of the finding using Appendix A, “The Significance Determination Process (SDP) for Findings At-Power.” Using the “Exhibit 3-Barrier Integrity Screening Questions,” the finding was determined to be very low safety

significance (Green) because the finding did not represent an actual open pathway in the physical integrity of reactor containment (valves, airlocks, etc.), failure of containment isolation system (logic and instrumentation), failure of containment pressure control equipment (including SSCs credited for compliance with Order EA-13-109), failure of containment heat removal components, or involve an actual reduction in function of hydrogen igniters in the reactor containment.

Cross-Cutting Aspect: H.2 - Field Presence: Leaders are commonly seen in the work areas of the plant observing, coaching, and reinforcing standards and expectations. Deviations from standards and expectations are corrected promptly. Senior managers ensure supervisory and management oversight of work activities, including contractors and supplemental personnel. The inspectors considered that the performance deficiency could be attributed to a lack of technical consideration in a vendor analysis which was not recognized by the licensee.

Enforcement:

Violation: 10 CFR 50, Appendix B, Criterion III, Design Control, required in part that, “measures shall be established to assure that applicable regulatory requirements and the design basis, as defined in in § 50.2 and as specified in the license application, for those structures, systems, and components to which this appendix applies are correctly translated into specifications, drawings, procedures, and instructions.” Contrary to the above, the licensee failed to correctly translate applicable regulatory requirements into procedures and instructions. Specifically, since the LLRT procedures were updated in early 2021 to reflect the conclusions of EC 417109, the licensee failed to correctly translate the Type C testing regulatory requirements of 10 CFR 50, Appendix J into instructions or procedures for the valves removed from the Appendix J program.

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

The disposition of this finding and associated violation closes URI: 05000325,05000324/2021011-01.

EXIT MEETINGS AND DEBRIEFS

The inspectors verified no proprietary information was retained or documented in this report.

- On October 28, 2021, the inspectors presented the integrated inspection results to John A. Krakuszeski and other members of the licensee staff.
- On August 18, 2021, the inspectors presented the Triennial Heat Sink inspection results to John A. Krakuszeski, Site Vice President and other members of the licensee staff.
- On October 5, 2021, the inspectors presented the URI 202101011-01 closure inspection results to John A. Krakuszeski and other members of the licensee staff.

THIRD PARTY REVIEWS

During the period, the inspectors reviewed a World Association of Nuclear Operators (WANO) report dated July 2021.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.01	Procedures	0AI-68	Brunswick Nuclear Plant Response to Severe Weather Warnings	62
		0AOP-13.0	Operation During Hurricanes, Flood Conditions, Tornado, or Earthquake	71
		DBD-144	External and Internal Flooding Topical Design Basis Document	1
71111.04	Procedures	1OP-17	Residual Heat Removal Operating Procedure	139
		SD-17	Residual Heat Removal System	19
		SD-19	High Pressure Coolant Injection System	25
		SD-39	Emergency Diesel Generators	22
71111.05	Fire Plans	0PFP-013	General Fire Plan	54
		CSD-BNP-PFP-1RB	Reactor Building Prefire Plans	2
		CSD-BNP-PFP-2RB	Reactor Building Prefire Plans	0
71111.11Q	Miscellaneous	LORX-004	Simulator Evaluation Guide - Reactor Building Ventilation Radiation Monitor Failure, Loss of Conventional Service Water, Anticipated Transient Without SCRAM, and Main Steam Isolation Valve Closure	22
		LORX-202	Simulator Evaluation Guide - Recirculation Loop A Flow Transmitter Failure, Reactor Building Closed Cooling Water High Radiation, Loss of Off-Site Power, Small Break Loss of Coolant Accident	10
71111.12	Calculations	7453-101-6-VAD-54F	DGB VENTILATION DETERMINE TEMPERATURE IN 480V SWITCHGEAR ROOMS IF EXHAUST FAN FAILS	4
	Procedures	0LP-AO010	CALIBRATION AND FUNCTIONAL TESTING OF JOHNSON CONTROLS MODEL D-9502 POSITIONER CONNECTED TO MODEL D-251 AND D-265 ACTUATORS	6
		0OP-37.4	DIESEL GENERATOR BUILDING HEATING AND VENTILATION SYSTEM OPERATING PROCEDURE	42
		AD-EG-ALL-1210	Maintenance Rule Program	3
		SD-39	Emergency Diesel Generators	22

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Work Orders	20342255		01/29/2021
71111.13	Procedures	0AP-025	BNP Integrated Scheduling	60
		AD-OP-ALL-0201	Protected Equipment	9
		AD-WC-ALL-0200	On-Line Work Management	20
		AD-WC-ALL-0250	Work Implementation and Completion	14
		AD-WC-ALL-0410	Work Activity Integrated Risk Management	12
71111.15	Corrective Action Documents	02391411		07/27/2021
	Procedures	AD-OP-ALL-0105	Operability Determinations	6
71111.19	Corrective Action Documents	02389216		07/12/2021
	Procedures	0LP-AO010	CALIBRATION AND FUNCTIONAL TESTING OF JOHNSON CONTROLS MODEL D-9502 POSITIONER CONNECTED TO MODEL D-251 AND D-265 ACTUATORS	6
		0PLP-20	Post-Maintenance Testing Program	53
		0PT-07.2.4.A	Core Spray System Operability Test – Loop A	
		0PT-08.2.2C	LPCI/RHR System Operability Test - Loop A	97
		0PT-10.14.L	RCIC Turbine Exhaust Vacuum Breaker Operability Test	8
		Work Orders	20213273	
	20412530			
	2042527801			
	20470832			08/26/2021
71111.22	Procedures	00I-02.3	Drywell Leakage Control	9