



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

April 6, 2020

Mr. John Krakuszeski
Site Vice President
Duke Energy
Brunswick Steam Electric Plant
8470 River Rd. SE (M/C BNP001)
Southport, NC 28461

SUBJECT: BRUNSWICK STEAM ELECTRIC PLANT – NRC FIRE PROTECTION TEAM
INSPECTION (FPTI) (NRC INSPECTION REPORT 05000324/2020010 and
05000325/2020010)

Dear Mr. Krakuszeski:

On February 27, 2020, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Brunswick Steam Electric Plant. The NRC inspectors discussed the results of this inspection with you and other members of your staff. The results of the inspection is documented in the enclosed report.

No findings or violations of more than minor significance were identified during this inspection.

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/

Scott M. Shaeffer, Chief
Engineering Branch 2
Division of Reactor Safety

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

Enclosure:
As stated

cc w/ encl: Distribution via LISTSERV®

SUBJECT: BRUNSWICK STEAM ELECTRIC PLANT – NRC FIRE PROTECTION TEAM INSPECTION (FPTI) (NRC INSPECTION REPORT 05000324/2020010 and 05000325/2020010) dated April 6, 2020

ADAMS ACCESSION NUMBER: ML20097E835

SUNSI Rev Compl.	<input type="checkbox"/> Yes <input type="checkbox"/> No	ADAMS	<input type="checkbox"/> Yes <input type="checkbox"/> No	Reviewer Initials	
Publicly Avail	<input type="checkbox"/> Yes <input type="checkbox"/> No	Sensitive	<input type="checkbox"/> Yes <input type="checkbox"/> No	Sens. Type Initials	
RII:DRS/EB2	RII:DRS/EB2	RII:DRS/EB2	RII:DRS/EB2	RII:DRS/EB2	
S.Shaeffer	R.Fanner	W. Monk	J. Dymek	D. Strickland	
4/ 6 /2020	3/ 31 /2020	3/31/2020	3/31/2020	3/31/2020	

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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: 05000324/2020010 and 05000325/2020010

Enterprise Identifier: I-2020-010-0028

Licensee: Duke Energy Progress, LLC

Facility: Brunswick Steam Electric Plant, Units 1 & 2

Location: Southport, NC

Inspection Dates: February 03, 2020 to February 27, 2020

Inspectors: R. Fanner, Senior Reactor Inspector
J. Dymek, Reactor Inspector
W. Monk, Senior Reactor Inspector
D. Strickland, Reactor Inspector

Approved By: Scott Shaeffer, Chief
Engineering Branch 2
Division of Reactor Safety

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring licensee's performance by conducting Inspection Procedure 711111 Attachment 21N.05, "Fire Protection Team Inspection (FPTI)," at the 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

No findings were identified.

ADDITIONAL TRACKING ITEMS

None.

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.

REACTOR SAFETY

71111.21N.05 - Fire Protection Team Inspection (FPTI)

SSC Credited for Fire Prevention, Detection, Suppression, or Post-Fire SSD Review (IP Section 03.01) (4 Samples)

The inspectors verified that components and/or systems will function as required to support the credited functions stated for each sample. Additional inspection considerations are located in the fire hazards analysis (FHA) or safe shutdown analysis (SSA). The inspectors performed the following:

- a. Review of deficiencies or open fire protection impairments for the selected system, including any temporary modifications, operator workarounds, or compensatory measures.
- b. Verify that operator actions can be accomplished as assumed in the licensee's FHA, or as assumed in the licensee's fire probabilistic risk assessment (FPRA) analysis and SSA.
- c. Review repetitive or similar maintenance work requests which could be an indicator of a design deficiency and could affect the ability of the components to perform their functions, when needed.
- d. Ensure that post maintenance and/or surveillance activities are performed as scheduled.
- e. Perform a walk-down inspection to identify equipment alignment discrepancies. Inspect for deficient conditions such as corrosion, missing fasteners, cracks, and degraded insulation.
- f. Ensure the selected SSCs that are subject to aging management review (AMR) pursuant to 10 CFR Part 54 are being managed for aging (e.g., loss of material, cracking, reduction of heat transfer) in accordance with appropriate aging management programs. Verify the licensee's aging management program activities (such as Fuel Oil Analysis or Selective Leaching Aging Management Program) associated with FP equipment are being implemented.
- g. If a review of operating experience issues will be completed for the selected inspection sample, verify that the licensee adequately reviewed and dis-positioned the operating experience in accordance with their processes.

The samples for this section included:

- (1) 2-CAC-LR-2602, Suppression Pool Level
- (2) 2-E11-PDV-F068A, RHR HX 2A SW Discharge Valve
- (3) Suppression SSCs
- (4) Detection SSCs

Fire Protection Program Administrative Controls (IP Section 03.02) (2 Samples)

The inspectors verified that the selected control or process was implemented in accordance with the licensee's current licensing basis. Ensured that the licensee's FPP contains adequate procedures to implement the selected administrative control. Verified that the selected administrative control meets the requirements of all committed industry standards.

The samples for this section included:

- (1) NPFA 805 Monitoring Program
- (2) Fire System Impairments Program

Fire Protection Program Changes/Modifications (IP Section 03.03) (2 Samples)

The inspectors verified the following:

- a. Changes to the approved FPP do not constitute an adverse effect on the ability to safely shutdown.
- b. The adequacy of the design modification, if applicable.
- c. Assumptions and performance capability stated in the SSA have not been degraded through changes or modifications.
- d. The FPP documents, such as the Updated Final Safety Analysis Report, fire protection report, FHA, and SSA were updated consistent with the FPP or design change.
- e. Post-fire SSD operating procedures, such as abnormal operating procedures, affected by the modification were updated.

The samples for this section included:

- (1) EC 407358, Diesel Fire Pump Charger
- (2) EC 407614, E11-F020, Suppression Pool Suction Valve

INSPECTION RESULTS

No findings were identified.

EXIT MEETINGS AND DEBRIEFS

On February 27, 2020, the inspectors presented the NRC inspection results to Mr. Krakuszeski and other members of the licensee staff. The inspectors verified no proprietary information was retained or documented in this report.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.21N.05	Calculations	2-FP-0049	Qualification of Selected Door Transoms in the Diesel Generator Building	Rev. 0
71111.21N.05	Calculations	2-FP-0076	Hydraulic Calculation Unit 2, Reactor Building-SE RHR and Water Curtain	Rev. 1
71111.21N.05	Calculations	BNP-E-9.007	ASSD Recovery Action Feasibility	Rev. 1
71111.21N.05	Calculations	BNP-E-9.010	Safe Shutdown Equipment List	Rev. 3
71111.21N.05	Calculations	BNP-E-9.011	NFPA 805 Transition - Non Power Operational Modes Review	Rev. 2
71111.21N.05	Calculations	BNP-E-9.011	NFPA 805 Transition - Non-Power Operational Modes Review	12/04/2018
71111.21N.05	Calculations	BNP-PSA-080	BNP FPRA Quantification Calculation	Rev. 6
71111.21N.05	Corrective Action Documents	AR 02258766	U2 N Core Spray Pmp FLR Drn not fixed in 30 days	02/20/2019
71111.21N.05	Corrective Action Documents	AR-02135608-02	Prompt Functionality Assessment Electric Fire Pump 2-FP-P2	7/17/2017
71111.21N.05	Corrective Action Documents	CR2045218	Trend in Improper Storage of Transient Combustible Materials	
71111.21N.05	Corrective Action Documents	CR2139276	Fire Protection Health Report status change green to red	
71111.21N.05	Corrective Action Documents Resulting from Inspection	NCR 02304493	FSA Updates due to BNP-E-9.010 Update	2/25/2020
71111.21N.05	Corrective Action Documents Resulting from Inspection	NCR 02314376	QFPI- Housekeeping Inside AFFF Enclosure	02/04/2020

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.21N.05	Corrective Action Documents Resulting from Inspection	NCR 02314509	QFPI-Sprinkler Head Potential Corrosion	02/05/2020
71111.21N.05	Corrective Action Documents Resulting from Inspection	NCR 02314918	QFPI - Potential Transient Combustible Violation	2/6/2020
71111.21N.05	Corrective Action Documents Resulting from Inspection	NCR 02315670	QFPI 2020- Calculation Verbiage Clarification	02/12/2020
71111.21N.05	Corrective Action Documents Resulting from Inspection	NCR 02317935	2020 NRC QFPI - Missing Reference in 0FP-1213, NFPA 805 Code	2/26/2020
71111.21N.05	Corrective Action Documents Resulting from Inspection	NCR 02318054	2020 NRC QFPI - Steps missing in 2ASSD-06	02/26/2020
71111.21N.05	Corrective Action Documents Resulting from Inspection	NCR 02318122	2020 NRC Fire Protection Inspection QFPI 2-VA-DG-FDMP-101	02/26/2020
71111.21N.05	Corrective Action Documents Resulting from Inspection	NCR 02318123	2020 NRC QFPI - Electric Heat Blower in Aux Boiler House	2/26/2020
71111.21N.05	Corrective Action Documents Resulting from Inspection	NCR 02318276	2020 NRC QFPI – Pre-Fire Plan FP Features	2/27/2020
71111.21N.05	Corrective Action Documents	WR 20167491	2020 NRC QFPI - INSTALL LADDER RACKS IN U2 RB - 17'	2/27/2020

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Resulting from Inspection			
71111.21N.05	Drawings	2FP-20589	Fire Protection Piping Isometric, Reactor Building Unit 2 SE RHR	Rev. E
71111.21N.05	Drawings	D-02299	Reactor Building Fire Protection Piping	Rev. 12
71111.21N.05	Drawings	F-01926	Diesel Generator Building-Building Plans	Rev.21
71111.21N.05	Drawings	F-01926	Diesel Generator Building-Building Plans	Rev.21
71111.21N.05	Drawings	F-01928	Diesel Generator Building-Door and Hardware Schedule and Details	Rev.22
71111.21N.05	Drawings	F-03049	480 Volt System MCC 2XA, 2XC, 2XE, 2XG, 2XJ, 2XL Auxiliary One Line Diagram	Rev. 85
71111.21N.05	Drawings	F-04093	Diesel Generator Building Ventilation System-Plans at Elevation 23'-0" and 50'-0"	Rev.21
71111.21N.05	Drawings	LL-09046 - SHT: I100	CAC System 2-CAC Level Transmitter and Recorder 2-CAC-LT-2602 and 2-CAC-LR-2602 Control Wiring Diagram	Rev. 5
71111.21N.05	Drawings	LL-09046 - SHT: I101	CAC System 2-CAC Level Transmitter and Recorder 2-CAC-LT-2602 and 2-CAC-LR-2602 Cable Diagram	Rev. 4
71111.21N.05	Drawings	LL-09236 - SH: 82	RHR HX 2A Service Water Discharge Valve 2-E11-PDV-F068A Cable Wiring Diagram	Rev. 9
71111.21N.05	Drawings	LL-09236 - SH: 83	RHR HX 2A Service Water Discharge Valve 2-E11-PDV-F068A Cable Diagram	Rev. 8
71111.21N.05	Drawings	O-FP-15062	Sonicbar Door Division, Ryson Products Company, Schedule Sheet	Rev.7
71111.21N.05	Drawings	O-FP-15063	1 & 3/4 Door, Sections and Elevations	Rev. 5
71111.21N.05	Engineering Changes	EC 0407614	Permanent Resolution of Temporary Change Ecs on E11-F020 Valves	Rev. 0
71111.21N.05	Engineering Changes	EC 407358	Diesel Fire Pump Charger Modification Package	Rev. 0
71111.21N.05	Engineering Changes	EC 416723	Abandon 2-FO-12-1-1/2-U-6 Diesel Fire Pump Fuel Oil Supply Line	Rev. 0
71111.21N.05	Engineering Evaluations	BNP 98-032	Response to Water Hammer Event WNP-2	Rev. 0
71111.21N.05	Engineering	EC-413079	Equivalency Evaluation of Diesel Driven Centrifugal Split	Rev. 3

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Evaluations		Case Horizontal 2000 GPM Fire Pump	
71111.21N.05	Engineering Evaluations	EGR-NGGC-0005	Random Sample Program of FB Penetration Seals	Rev. 12
71111.21N.05	Engineering Evaluations	ESR-9700571	Fire Door Problem Resolution	Rev. 0
71111.21N.05	Engineering Evaluations	ESR-9900328	Fire Barrier Penetration Seal Statistical Sample	Rev. 0
71111.21N.05	Engineering Evaluations	OFP-0086	Code Compliance Evaluation NFPA 20, Flammable and Combustible Liquids Code	Rev. 4
71111.21N.05	Engineering Evaluations	OFP-0089	Code Compliance Evaluation NFPA 22, Water Tanks for Private Fire Protection	Rev. 1
71111.21N.05	Engineering Evaluations	OFP-1017	Code Compliance Evaluation NFPA 24, Standard for Outside Protection	Rev. 4
71111.21N.05	Engineering Evaluations	OFP-1020	Code Compliance Evaluation NFPA 11B, Synthetic Foam and Combined Agent Systems	Rev. 3
71111.21N.05	Engineering Evaluations	OFP-1020,	Code Compliance Evaluation NFPA 16, Foam Water Spray and Sprinkler Systems	Rev. 3
71111.21N.05	Engineering Evaluations	OFP-1024	Code Compliance Evaluation NFPA 15, Standard on Fixed Water Spray Systems Unit 1 and 2 Reactor Building	Rev. 4
71111.21N.05	Engineering Evaluations	OFP-1027	Code Compliance Evaluation NFPA 14, Standard on the Installation of Standpipes and Hose Systems, Reactor Building	Rev. 4
71111.21N.05	Engineering Evaluations	OFP-1028	Code Compliance Evaluation NFPA 14, Standard on the Installation of Standpipes and Hose Systems, Radwaste Building	Rev. 4
71111.21N.05	Engineering Evaluations	OFP-1213	Code Compliance Evaluation NFPA 805, Performance-Based Standard for Fire Protection for Light Water REactor Electric Generating Plants-2001 Edition	Rev. 3
71111.21N.05	Miscellaneous		Specification 024-001 for Special Doors for BNP Units 1 & 2	Rev. 9
71111.21N.05	Miscellaneous		NFPA 90A-1985, Standard for the Installation of Air conditioning and Ventilation Systems	
71111.21N.05	Miscellaneous		NUREG 1856-Safety Evaluation Report Related to License Renewal of Brunswick Steam Electric Plant Unit 1	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			and 2	
71111.21N.05	Miscellaneous	01028015	Brunswick Steam Electric Plant unit 1 and 2, Issuance of Amendment regarding Transition to a Risk Informed-Performance Based Fire Protection program in Accordance with 10CFR50.48	1/28/2015
71111.21N.05	Miscellaneous	02282014	Brunswick Steam Electric Plant Unit 1 and 2 Renewed Facility Operating License Amendment DPR-71 and DPR-62, Docket No. 50-325 and 50-324, Response to Second Request for Additional Information Voluntary Risk Initiative-National Fire Protection Association Standard 805	12/28/2014
71111.21N.05	Miscellaneous	DBD-38	Fuel Oil System Design Basis	Rev. 8
71111.21N.05	Miscellaneous	LAR	BNP LAR Attachments compiled through Nov 20 2014 submittal	
71111.21N.05	Miscellaneous	Operating License and Technical Specifications	Operating License and Technical Specifications- Brunswick Steam electric Plant Unit 1	Updated through Amendment 292
71111.21N.05	Miscellaneous	SD-17	Residual Heat Removal System (RHR)	Rev. 19
71111.21N.05	Procedures	0AP-33	Fire Protection Program Manual	Rev. 23
71111.21N.05	Procedures	0ASSD-01	Alternative Safe Shutdown Procedure Index	Rev. 41
71111.21N.05	Procedures	0FP-1222	BNP NFPA 805 Monitoring	Rev. 2
71111.21N.05	Procedures	0MMM-055	Cleanliness and Flushing Requirements	Rev. 28
71111.21N.05	Procedures	0MST-BATT10R	Diesel Fire Pump Starting Batteries 18 Month Operability Test	Rev. 10
71111.21N.05	Procedures	0MST-BATT12Q	Diesel Fire Pump Starting Batteries Quarterly Operability Test	Rev. 10
71111.21N.05	Procedures	0MST-BATT12W	Diesel Fire Pump Starting Batteries Weekly Operability Test	Rev. 11
71111.21N.05	Procedures	0OP-41	Fire Pump Manual Start and Stop Completed Procedure	Rev. 142

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.21N.05	Procedures	0PLP-01.2	Fire Protection System Functionality, Action, and Surveillance Requirements	Rev. 52
71111.21N.05	Procedures	0PLP-01.5	ALTERNATIVE SHUTDOWN CAPABILITY CONTROLS	Rev. 15
71111.21N.05	Procedures	0PT-08.1.4A	RHR SERVICE WATER SYSTEM OPERABILITY TEST - LOOP A	Rev. 88
71111.21N.05	Procedures	0PT-08.1.6	SUPPRESSION POOL LEVEL INDICATOR OPERABILITY	Rev. 38
71111.21N.05	Procedures	0PT-08.2.4	RHR SERVICE WATER SYSTEM COMPONENT TEST	Rev. 32
71111.21N.05	Procedures	0PT-48.1	Public Address System Speaker Test	Rev. 58
71111.21N.05	Procedures	2ASSD-06	REACTOR BUILDING SOUTH	Rev. 31
71111.21N.05	Procedures	2FP-1183	NFPA 805 TRANSITION - FIRE AREA RB2-1 FIRE SAFETY ANALYSIS FOR UNIT 2	Rev. 2
71111.21N.05	Procedures	2OP-17	RESIDUAL HEAT REMOVAL SYSTEM OPERATING PROCEDURE	Rev. 181
71111.21N.05	Procedures	2OP-43	SERVICE WATER SYSTEM OPERATING PROCEDURE	Rev. 168
71111.21N.05	Procedures	AD-EG-ALL-1132	Preparation and Control of Design Change Engineering Changes	Rev. 15
71111.21N.05	Procedures	AD-EG-ALL-1501	Fire Protection Change Process	Rev. 2
71111.21N.05	Procedures	AD-EG-ALL-1503	NFPA Monitoring	Rev. 2
71111.21N.05	Procedures	AD-EG-ALL-1520	TRANSIENT COMBUSTIBLE CONTROL	Rev. 12
71111.21N.05	Procedures	AD-EG-ALL-1522	Duties of A Compensatory Fire Watch	Rev. 9
71111.21N.05	Procedures	AD-EG-ALL-1532	NFPA 805 PRE-FIRE PLANS	Rev. 1
71111.21N.05	Procedures	AD-LS-ALL-0005	UFSAR Updates	Rev. 7
71111.21N.05	Procedures	BN-MECH-MEQ0031B	Fire Periodic Test Qualification	Rev. 0
71111.21N.05	Procedures	BNP-E-9.007	ASSD RECOVERY ACTION FEASIBILITY	Rev. 1
71111.21N.05	Procedures	OFPP-020	Impairment Notification	Rev. 25
71111.21N.05	Procedures	OPLP-01.2	Fire Protection System Functionality, Action and Surveillance Requirements	Rev. 4
71111.21N.05	Procedures	OPT-34.1.1.0	Fire Pump Test (Electric and Diesel)	Rev. 28
71111.21N.05	Procedures	OPT-34.5.5.0	Diesel and Electric Fire Pump Functional Test	Rev. 35

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.21N.05	Procedures	OPT-34.5.5.0	Diesel and Electric Fire Protection Functional Test	Rev. 39
71111.21N.05	Procedures	OPT-34.6.7.10	Fire Barrier Penetration Seals Diesel Generator Building	Rev. 20
71111.21N.05	Procedures	PD-EG-ALL-1500	Fleet Fire Protection Program Manual	Rev. 2
71111.21N.05	Work Orders	MWO 12246953	Preventative Maintenance Task Instructions 2VA-DGB-FDMP-101	Rev. 0
71111.21N.05	Work Orders	MWO 13356194	Work Order Task Instructions, Diesel Generator Building Fire Dampers	Rev. 0
71111.21N.05	Work Orders	OPT-34.5.5.0	Diesel and Electric Fire Pump Functional Test (Motor Driven)	7/18/2017
71111.21N.05	Work Orders	OPT-34.5.5.0	Diesel and Electric Fire Pump Functional Test (Diesel Driven)	10/18/2018
71111.21N.05	Work Orders	OPT-34.5.5.0	Diesel and Electric Fire Pump Functional Test (Diesel Driven)	10/09/2019
71111.21N.05	Work Orders	OPT34.5.5.0	Diesel and Electric Fire Pump Functional Test (Motor Driven)	12/22/2018
71111.21N.05	Work Orders	WO 12104983-01	2FP-V-122 Material Condition Issues	3/30/2017
71111.21N.05	Work Orders	WO 12247251	Inspection and Cleaning Fire Damper 2VA-DG-FDMP-101	7/30/2014
71111.21N.05	Work Orders	WO 20161112-02	Fire Barrier Penetration Seals, Diesel Generator Building	5/29/2019
71111.21N.05	Work Orders	WO 20345205	LPCI/RHR SYSTEM OPERABILITY TEST - LOOP B	11/14/2019
71111.21N.05	Work Orders	WO 20346874-01	November 2019 PA System Speaker Test	11/12/2019
71111.21N.05	Work Orders	WO 20363358-01	February 2020 PA System Speaker Test	02/14/2020
71111.21N.05	Work Orders	WO 20380541	SUPPRESSION POOL LEVEL INDICATOR OPERABILITY	1/27/2020
71111.21N.05	Work Orders	WO- 12104983-03	2FP-V-122 Material Condition Issues	2/21/2018