



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

October 22, 2021

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

**SUBJECT: BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2 –TEMPORARY  
INSTRUCTION 2515/193 INSPECTION REPORT 05000324/2021010 AND  
05000325/2021010**

Dear Mr. Krakuszeski:

On September 24, 2021, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Brunswick Steam Electric Plant and 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.

One finding of very low safety significance (Green) is documented in this report. This finding did not involve a violation of NRC requirements.

If you disagree with a cross-cutting aspect assignment or a finding not associated with a regulatory requirement 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/**

Steven P. Smith, Chief  
Reactor Projects Branch 6  
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, UNITS 1 AND 2 –TEMPORARY  
INSTRUCTION 2515/193 INSPECTION REPORT 05000324/2021010 AND  
05000325/2021010 – DATED October 22, 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: 05000324/2021010 and 05000325/2021010

Enterprise Identifier: I-2021-010-0030

Licensee: Duke Energy Progress, LLC

Facility: Brunswick Steam Electric Plant

Location: Southport, North Carolina

Inspection Dates: September 20, 2021 to September 24, 2021

Inspectors: B. Bishop, Sr. Project Engineer  
D. Jackson, Sr. Project Engineer

Approved By: Steven P. Smith, Chief  
Reactor Projects Branch 6  
Division of Reactor Projects

Enclosure

## SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting a Reliable Hardened Containment Vent TI-193 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

Hardened Containment Vent System Preventative Maintenance not Performed Within Periodicity			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Barrier Integrity	Green FIN 05000325,05000324/2021010-01 Open/Closed	[H.5] - Work Management	2515/193
The inspectors identified a finding of very low safety significance (Green) for the failure to perform required surveillances within periodicity for the hardened containment vent system (HCVS).			

### 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. 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), inspectors were directed to begin telework. In addition, 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.

## OTHER ACTIVITIES – TEMPORARY INSTRUCTIONS, INFREQUENT AND ABNORMAL

2515/193 - Inspection of the Implementation of EA-13-109: Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation under Severe Accident Conditions

Inspection of the Implementation of EA-13-109: Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation under Severe Accident Conditions (1 Sample)

Based on samples selected for review, the inspectors verified that the licensee satisfactorily implemented appropriate elements of the reliable hardened containment wetwell vent as described in the plant specific submittals and the associated NRC safety evaluation (ADAMS Accession No. ML19284C833) and determined that the licensee was in compliance with NRC Order EA-13-109 Phase 1, "Reliable, Severe Accident Capable Wetwell Venting System" (ADAMS Accession No. ML13143A321).

The inspectors evaluated licensee implementation of the appropriate elements of the reliable hardened containment wetwell vent as described in the plant specific submittals and the associated NRC safety evaluation. Specifically, the inspectors evaluated licensee implementation of the hardened containment vent system (HCVS) functional requirements, design features, maintenance and testing, quality standards, and programmatic requirements as described in Appendix A of Temporary Instruction (TI) 2515/193 Revision 1.

The inspectors verified that the licensee satisfactorily:

- Installed the HCVS to meet the performance objectives outlined in Order EA-13-109;
- Installed the HCVS system with the design features specified in Order EA-13-109;
- Designed the HCVS to meet the quality standards described in Order EA-13-109;

- Developed and implemented adequate maintenance and testing of HCVS equipment to ensure their availability and capability;
- Developed and issued procedures to safely operate the HCVS using normal power supplies, during Extended Loss of All AC Power (ELAP), and a postulated severe accident scenario, and integrated the procedures into existing plant procedures; and
- Trained their staff to assure personnel can proficiently operate the HCVS.

Based on samples selected for review, the inspectors verified that the licensee satisfactorily implemented appropriate elements of the reliable wetwell venting strategy as described in the plant specific submittals and the associated safety evaluation and determined that the licensee was in compliance with NRC Order EA-13-109 Phase 2, "Reliable, Severe Accident Capable Drywell (or alternative strategy) Venting System" (ADAMS Accession No. ML13143A321).

The inspectors evaluated licensee implementation of the appropriate elements of the reliable wetwell venting strategy as described in the plant specific submittals and the associated NRC safety evaluation. Specifically, the inspectors evaluated licensee implementation of Severe Accident Water Addition / Severe Accident Water Management (SAWA/SAWM) functional requirements, installed instrumentation, maintenance and testing, and programmatic requirements as described in Appendix B of TI 2515/193, Revision 1.

The inspectors verified that the licensee satisfactorily developed a strategy making it unlikely that venting from the containment drywell would be necessary. As part of that strategy, the licensee:

- Implemented the SAWA/SAWM systems as defined and fulfilled functional requirements for installed and portable equipment.
- Installed and/or identified the previously installed instrumentation necessary to implement SAWM;
- Developed and implemented adequate maintenance and testing of SAWA/SAWM equipment to ensure availability and capability;
- Developed and issued procedures to safely operate the SAWA/SAWM during an ELAP and during postulated severe accident scenario, and integrated their procedures into their existing plant procedures such that entry into and exiting from the procedures are clear when using existing plant procedures; and
- Trained their staff to assure personnel can proficiently operate the HCVS during ELAP and accident scenarios.

## INSPECTION RESULTS

Hardened Containment Vent System Preventative Maintenance not Performed Within Periodicity			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Barrier Integrity	Green FIN 05000325,05000324/2021010-01 Open/Closed	[H.5] - Work Management	2515/193
<p>The inspectors identified a finding of very low safety significance (Green) for the failure to perform required surveillances within periodicity for the hardened containment vent system (HCVS).</p> <p><u>Description:</u> Order EA-13-109, Attachment 2, Section 1.2.13, requires that the HCVS include features and provisions for the operation, testing, inspection, and maintenance adequate to ensure that reliable function and capability are maintained. Relevant guidance is found in NEI 13-02 Sections 5.4 and 6.2; and HCVS-FAQs-05 and -06.</p> <p>Brunswick's HCVS Final Integrated Plan, RA-19-0176, Table 3-3, includes testing and inspection requirements. Contrary to the self-imposed surveillance requirements, some of Brunswick's HCVS preventative maintenance (PM) work orders were not scheduled, and one had not been completed within periodicity. Among the activities that had not been completed since the initial HCVS modification were valve strokes of the HCVS valves, CAC-V7 and CAC-V216, from the remote operating station, stroke test of the HCVS check valve, CAC-V5002, and visual inspection of the HCVS rooftop weather caps, CAC-75-12-154A. The visual inspection of the weather caps had exceeded its periodicity requirement. The aforementioned valve strokes from the remote operating station were past the recommended periodicity of Table 3-3 but within the 25 percent surveillance grace period. All of these are new PMs and were not captured in a PM change request (PMCR) or PM requirement (PMRQ), therefore, it is possible that several of them would not have been performed within periodicity prior to the licensee becoming aware of it.</p> <p>Corrective Action References: AR 02397922, 02397152</p> <p><u>Performance Assessment:</u></p> <p>Performance Deficiency: The inspectors determined the licensee's failure to implement testing and inspection requirements for the HCVS in accordance with the Brunswick Final Integrated Plan, Table 3-3, was a performance deficiency.</p> <p>Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the SSC and Barrier Performance attribute of the Barrier Integrity cornerstone and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, failure to inspect the weather cap could have allowed undetected degradation and entry of debris/precipitation.</p> <p>Significance: The inspectors assessed the significance of the finding using Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." Using Exhibit 3, Barrier Integrity Screening Questions, the inspectors determined the finding was of very low safety significance (Green) because it did not represent an actual open pathway in the physical</p>			



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 failure of the plant's severe accident mitigation features (AP1000); nor did it involve an actual reduction in function of hydrogen igniters in the reactor containment.

Cross-Cutting Aspect: H.5 - Work Management: The organization implements a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. The work process includes the identification and management of risk commensurate to the work and the need for coordination with different groups or job activities. Specifically, the licensee failed to ensure that testing and inspection requirements identified in the HCVS engineering change were translated and implemented into preventive maintenance routes (PMCRs nor PMRQs) within the work management system to ensure completion.

Enforcement: Inspectors did not identify a violation of regulatory requirements associated with this finding.

## **EXIT MEETINGS AND DEBRIEFS**

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

- On September 24, 2021, the inspectors presented the Reliable Hardened Containment Vent TI-193 Inspection results to John A. Krakuszeski and other members of the licensee staff.

**DOCUMENTS REVIEWED**

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
2515/193	Corrective Action Documents	02095769		
		02367844		
		02356120		
		02337405		
		02328070		
		02226385		
		02397152		
	Miscellaneous	CSD-EG-BNP-8888	Mitigating Beyond Design Basis Events (MBDBE) Program Document	4
		NTM 736273-02	Validation Plan No AI 736273	
		RA-19-0176 ML 18149A523	Brunswick Steam Electric Plant (BSEP), Unit Nos. 1 and 2 Renewed Facility Operating License Nos. DPR-71 and DPR-62 NRC Docket No. 50-325 and 50-324 Completion of Required Action for NRC Order EA-13-109, Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions	05/22/2019
	Procedures	0AP-064	Time Critical Actions/Time Sensitive Actions Supplement	7
		0PLP-01.4	Fukushima Flex System Availability, Action, and Surveillance Requirements	7
		0PT-04.2.4	Hardened Wetwell Vent Radiation Monitor Channel Functional Test	13
0PT-20.3-68C/D		Local Leak Rate Testing (Attachments 1, 7, 8)	91	
Work Orders	20077091			
	20086672-01			
	20086673-01			
	20107654			
	20255485-01			
	20255486-01			
	20264373 20271494-01			

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		20340187-01 20340194-01 20411221 20411222		