John A. Krakuszeski
Vice President
Brunswick Nuclear Plant
8470 River Rd SE
Southport, NC 28461
o: 910.832.3698

10 CFR 50.73

September 12, 2022
Serial: RA-22-0242

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Subject: Brunswick Steam Electric Plant, Unit No. 1
Renewed Facility Operating License No. DPR-71
Docket No. 50-325
Licensee Event Report 1-2022-001

In accordance with the Code of Federal Regulations, Title 10, Part 50.73, Duke Energy Progress, LLC, is submitting the enclosed Licensee Event Report (LER). This report fulfills the requirement for a written report within sixty (60) days of a reportable occurrence.

This document contains no regulatory commitments.

Please refer any questions regarding this submittal to Mr. Mark DeWire, Manager – Nuclear Support Services, at (910) 832-6641.

Sincerely,

John A. Krakuszeski

SBY/sby

Enclosure: Licensee Event Report

cc (with enclosure):

Ms. Laura Dudes, NRC Regional Administrator, Region II
Mr. Luke Haeg, NRC Project Manager
Mr. Gale Smith, NRC Senior Resident Inspector
Chair - North Carolina Utilities Commission

NRC FORM 366 (08-2020) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 08/31/2023

LICENSEE EVENT REPORT (LER)

(See Page 3 for required number of digits/characters for each block)
(See NUREG-1022, R.3 for instruction and guidance for completing this form
http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/)

1. Facility Name	2. Docket Number	3. Page
Brunswick Steam Electric Plant (BSEP), Unit 1	05000325	1 OF 3

4. Title
High Pressure Coolant Injection (HPCI) Inoperable

5. Event Date			6. LER Number			7. Report Date			8. Other Facilities Involved	
Month	Day	Year	Year	Sequential Number	Revision No.	Month	Day	Year	Facility Name	Docket Number
07	15	2022	2022	- 001 -	00	09	12	2022		05000
									Facility Name	Docket Number 05000

9. Operating Mode	10. Power Level
1	096

11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: *(Check all that apply)*

10 CFR Part 20	☐ 20.2203(a)(2)(vi)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(A)	**10 CFR Part 73**
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.69(g)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(4)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(i)	**10 CFR Part 21**	☐ 50.73(a)(2)(i)(B)	☒ 50.73(a)(2)(v)(D)	☐ 73.77(a)(1)(i)
☐ 20.2203(a)(2)(ii)	☐ 21.2(c)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)	☐ 73.77(a)(2)(i)
☐ 20.2203(a)(2)(iii)	**10 CFR Part 50**	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)	☐ 73.77(a)(2)(ii)
☐ 20.2203(a)(2)(iv)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)	
☐ 20.2203(a)(2)(v)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)	

☐ **OTHER** (Specify here, in abstract, or NRC 366A).

12. Licensee Contact for this LER

Licensee Contact	Phone Number (Include area code)
Mark DeWire, Manager – Nuclear Support Services	(910) 832-6641

13. Complete One Line for each Component Failure Described in this Report

Cause	System	Component	Manufacturer	Reportable to IRIS		Cause	System	Component	Manufacturer	Reportable to IRIS
D	BJ	FUB	J088	Yes						

14. Supplemental Report Expected		15. Expected Submission Date	Month	Day	Year
☒ No	☐ Yes (If yes, complete 15. Expected Submission Date)				

16. Abstract (Limit to 1560 spaces, i.e., approximately 15 single-spaced typewritten lines)

At 20:20 Eastern Daylight Time (EDT) on July 15, 2022, with Unit 1 in Mode 1 at approximately 96% power for planned maintenance on the '1A' Condensate Deep-bed Demineralizer (unrelated to this event), the High Pressure Coolant Injection (HPCI) system was declared inoperable upon discovering the HPCI flow controller without power.

The HPCI flow controller lost power as a result of an intermittent connection in the flow controller fuse holder. The fuse was secured in the fuse holder and HPCI was declared operable on July 16, 2022, at 12:10 EDT following associated post maintenance testing. The Reactor Core Isolation Cooling (RCIC) System and Automatic Depressurization System (ADS) remained operable during this event.

There was no impact on the health and safety of the public or plant personnel. The safety significance of this event is minimal.

This event is being reported in accordance with 10 CFR 50.73(a)(2)(v)(D).

LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

(See NUREG-1022, R.3 for instruction and guidance for completing this form http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/)

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Brunswick Steam Electric Plant (BSEP), Unit 1	05000- 325	2022	- 001	- 00

NARRATIVE

Energy Industry Identification System (EIIS) codes are identified in the text as [XX].

Background

Initial Conditions

At the time of the event, Unit 1 was in Mode 1 (i.e., Power Operation), at approximately 96 percent rated thermal power for planned maintenance on the '1A' Condensate Deep-bed Demineralizer (unrelated to this event). There was no inoperable equipment that contributed to the event.

Reportability Criteria

The High Pressure Coolant Injection (HPCI) [BJ] inoperability is being reported in accordance with 10 CFR 50.73(a)(2)(v)(D) as a condition that could have prevented fulfillment of the safety function needed to mitigate the consequences of an accident.

The NRC was notified of this event per 10 CFR 50.72(b)(3)(v)(D) via Event Notification 55997 at 23:41 Eastern Daylight Time (EDT) on July 15, 2022.

Event Description

At 20:20 EDT on July 15, 2022, with Unit 1 in Mode 1 at approximately 96% power for planned maintenance on the '1A' Condensate Deep-bed Demineralizer (unrelated to this event), the HPCI system was declared inoperable upon discovering the HPCI flow controller without power during Reactor Operator control board walkdowns.

Event Cause

Upon initial investigation into the issue, a loose lead to the HPCI flow controller was discovered. Upon tightening the loose lead power returned to the HPCI flow controller, and availability of the HPCI system was restored at 20:23 EDT on July 15, 2022. However, the HPCI system remained inoperable at this time while additional troubleshooting and testing were performed.

Additional troubleshooting determined that the identified loose lead could not have caused loss of power to the device and some other intermittent connection was present. While performing a calibration check on the device, a loose fuse holder connection was identified on the backside of the flow controller. The fuse was secured in the fuse holder and HPCI was declared operable on July 16, 2022, at 12:10 EDT following associated post maintenance testing.

The HPCI flow controllers are refurbished and replaced on a 10-year frequency. This flow controller had been replaced in the May 2022 timeframe. However, fuse replacement is not part of the refurbishment instructions, and checking fuse holder tightness is not included in the installation instructions. This allowed the fuse holder to work its way loose over time due to normal handling/inspection/maintenance. Therefore, the cause of this event was determined to be inadequate procedural guidance associated with ensuring tightness of the fuse holder.

Safety Assessment

There was no impact on the health and safety of the public or plant personnel as a result of this event.

HPCI system availability was restored at 20:23 EDT on July 15, 2022, following power restoration to the HPCI flow controller. Therefore, the system was available to perform its safety function of injecting the required flow rate into the Reactor Pressure Vessel at this time. In addition, the Reactor Core Isolation Cooling (RCIC) [BN] System and Automatic Depressurization System (ADS) remained operable during this event.

LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

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Brunswick Steam Electric Plant (BSEP), Unit 1	05000- 325	2022	- 001	- 00

NARRATIVE

The safety significance of this event is minimal.

Corrective Actions

The fuse was secured in the fuse holder and the Unit 1 HPCI system was declared operable on July 16, 2022, at 12:10 EDT following associated post maintenance testing. Also, as part of an extent of condition review, the Unit 2 HPCI flow controller fuse holder was ensured to be secured and, since RCIC uses the same made/model controller, the Unit 1 and Unit 2 RCIC flow controller fuse holders will be checked to ensure tightness.

In addition, instructions will be added to the associated maintenance procedure to check the fuse holder tightness prior to returning the HPCI and RCIC flow controllers to service following replacement and calibration. This action is planned to be completed by November 14, 2022.

Any revisions to corrective actions will be made in accordance with the site's corrective action program.

Previous Similar Events

A review of events for the past three years identified the following previous similar events related to HPCI inoperability.

- Event Notification 54116, completed on June 13, 2019, reported HPCI System inoperability due to the required response time not being met during routine testing. This event was the result of the HPCI turbine experiencing an overspeed trip during the initial ramp up to achieve rated conditions. In this event, the overspeed trip was caused by a momentary failure of the Electric Governor – Remote (EG-R) as a result of internally generated debris causing binding within the EG-R and preventing proper speed control.
- Event Notification 55780, completed on March 9, 2022, reported Unit 2 HPCI System inoperability following evaluation of routine HPCI surveillance testing data indicating that the required response time for reaching rated conditions was not met. It was determined that this was caused by sluggish operation (i.e., "sticking") of the remote servo associated with the HPCI turbine speed control system. Event Notification 55780 was retracted on May 4, 2022, after it was determined that the required response time was overly conservative for assuring the safety function of the system could be fulfilled and there was not a condition that could have prevented the system from fulfilling the safety function.

The corrective actions associated with these previous similar events could not have reasonably been expected to prevent the condition reported herein.

Commitments

No regulatory commitments are contained in this report.