



David S. Hoffman
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10 CFR 50.73

November 28, 2022
Serial: RA-22-0327

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Shearon Harris Nuclear Power Plant, Unit 1
Docket No. 50-400/Renewed License No. NPF-63

Subject: Licensee Event Report 2022-005-01

Ladies and Gentlemen:

Duke Energy Progress, LLC, submits the enclosed Licensee Event Report 2022-005-01 in accordance with 10 CFR 50.73 for Shearon Harris Nuclear Power Plant, Unit 1 (HNP). This report is a planned supplement to LER 2022-005-00 submitted on October 21, 2022. On August 28, 2022, with HNP in Mode 1, the reactor was manually tripped in response to an automatic trip of the "B" main feedwater pump caused by a trip of the "B" condensate pump (CP). The "B" CP tripped following an electrical failure of its motor caused by a lightning strike. This event had no significance with respect to the health and safety of the public.

There are no regulatory commitments contained within this report.

Please refer any questions regarding this submittal to Sarah McDaniel at (984) 229-2002.

Sincerely,

A handwritten signature in blue ink, appearing to read "D. Hoffman", written over a light blue circular stamp.

David S. Hoffman

Enclosure: Licensee Event Report 2022-005-01

cc: P. Boguszewski, NRC Senior Resident Inspector, HNP
M. Mahoney, NRC Project Manager, HNP
NRC Regional Administrator, Region II



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

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Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA, Library, and Information Collections Branch (T-6 A10M), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollections.Resource@nrc.gov, and the OMB reviewer at: OMB Office of Information and Regulatory Affairs, (3150-0104), Attn: Desk all: oir_submission@omb.eop.gov. The NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless the document requesting or requiring the collection displays a currently valid OMB control number.

1. Facility Name Shearon Harris Nuclear Power Plant, Unit 1	2. Docket Number 05000 400	3. Page 1 OF 3
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4. Title Manual Reactor Trip due to "B" Condensate Pump Motor Failure

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
08	28	2022	2022	- 005 -	01	11	28	2022	Facility Name	05000
									Facility Name	Docket Number 05000

9. Operating Mode 1	10. Power Level 100
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11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: (Check all that apply)

<input checked="" type="checkbox"/> 10 CFR Part 20	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.36(c)(2)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	10 CFR Part 73
<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.69(g)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(4)
<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> 73.71(a)(5)
<input type="checkbox"/> 20.2203(a)(2)(i)	10 CFR Part 21	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 73.77(a)(1)(i)
<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 21.2(c)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 73.77(a)(2)(i)
<input type="checkbox"/> 20.2203(a)(2)(iii)	10 CFR Part 50	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	<input type="checkbox"/> 73.77(a)(2)(ii)
<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	
<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)	
<input type="checkbox"/> OTHER (Specify here, in abstract, or NRC 366A).				

12. Licensee Contact for this LER

Licensee Contact Sarah McDaniel, Regulatory Affairs Engineer	Phone Number (Include area code) (984) 229-2002
-----------------------------------------------------------------	----------------------------------------------------

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
C	SD	MO	S188	Y					

14. Supplemental Report Expected

☒ No ☐ Yes (If yes, complete 15. Expected Submission Date)

15. Expected Submission Date

Month	Day	Year

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

On August 28, 2022, at 03:29 Eastern Daylight Time, with Shearon Harris Nuclear Power Plant, Unit 1 (HNP), in Mode 1 at 100 percent power, the reactor was manually tripped in response to an automatic trip of the "B" main feedwater pump (MFP) caused by a trip of the "B" condensate pump (CP). The "B" CP tripped following an electrical failure of its motor. The trip of the "B" CP resulted in subsequent trips of the "B" condensate booster pump and the "B" MFP as designed. In accordance with plant procedures, the operations crew manually tripped the reactor upon the trip of a MFP with initial reactor power greater than 90 percent. The "A" MFP tripped shortly after the manual reactor trip due to a low suction pressure condition created from the condensate and feedwater transient. The auxiliary feedwater pumps auto-started on low steam generator level as designed. Safety systems functioned as required. This event had no impact on the health and safety of the public.

The "B" CP motor electrical failure was caused by a lightning strike. The design of CP motors and associated surge protection did not prevent motor damage and failure from a lightning strike. The "B" CP motor was replaced. The "A" CP and "B" CP motor surge protectors were inspected and tested, with no deficiencies identified. A study will be completed to determine changes needed to prevent future lightning induced failures of the CP motors.

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

(See NUREG-1022, R.3 for instruction and guidance for completing this form
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1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Shearon Harris Nuclear Power Plant, Unit 1	05000-400	2022	005	01

NARRATIVE

Note: Energy Industry Identification System (EIIIS) codes are identified in the text within brackets [].

A. Background

Prior to the event, Shearon Harris Nuclear Power Plant, Unit 1 (HNP), was operating in Mode 1 at approximately 100 percent power. There were no structures, systems, or components that were inoperable at the time of this event that contributed to the event. This event is reportable per 10 CFR 50.73(a)(2)(iv)(A) as "Any event or condition that resulted in manual actuation or automatic actuation of any of the systems listed in paragraph (a)(2)(iv)(B) of [10 CFR 50.73]..." due to actuation of the Reactor Protection System (RPS) [JC] and Auxiliary Feedwater System (AFWS) [BA]. All actuated safety systems functioned as designed.

The HNP condensate system [SD] and feedwater system [SJ] design includes two redundant trains each with a condensate pump (CP) [SD P], a condensate booster pump (CBP), and a main feedwater pump (MFP) [SJ P]. The CPs take suction from the main condenser [COND] hotwell. The discharge from both CPs combine and flow to the suction of both CBPs. The discharge of the CBPs flow through a series of feedwater heaters [SJ HX] and combines with the discharge of the heater drain pumps [SN P] to provide suction to the two MFPs. The MFPs discharge flow through two additional feedwater heaters, and then the flow is separated into three lines to provide inventory to the three steam generators [SGs]. The HNP condensate system and feedwater system design results in a trip of the associated CBP and MFP following a CP trip when both MFPs are in service.

B. Event Description

On August 28, 2022, at 03:29 Eastern Daylight Time, the reactor was manually tripped in response to an automatic trip of the "B" MFP caused by a trip of the "B" CP. The "B" CP tripped following an electrical failure of its motor. The "B" CP motor is a 6.6 kilovolt motor manufactured by Siemens-Allis, serial number 1-5017-10368-1-1. The trip of the "B" CP resulted in subsequent trips of the "B" CBP and the "B" MFP as designed. In accordance with plant procedures, the operations crew manually tripped the reactor upon the trip of a MFP with initial reactor power greater than 90 percent. The "A" MFP tripped shortly after the manual reactor trip due to a low suction pressure condition created from the condensate and feedwater transient. The AFWS pumps auto-started on low steam generator level as designed. Safety systems functioned as required.

C. Causal Factors

The "B" CP motor electrical failure was caused by a lightning strike. The design of CP motors and associated surge protection did not prevent motor damage and failure from a lightning strike.

D. Corrective Actions

The "B" CP motor was replaced. The "A" CP and "B" CP motor surge protectors were inspected and tested, with no deficiencies identified. A study will be completed to determine changes needed to prevent future lightning induced failures of the CP motors. Necessary changes identified by this study will be implemented.

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

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Shearon Harris Nuclear Power Plant, Unit 1	05000-400	2022	- 005	- 01

NARRATIVE**E. Safety Analysis**

The manual reactor trip had no impact on public health and safety. The reactor was manually tripped by control room operators as directed by plant procedures. The plant is designed for a loss of main feedwater and plant systems responded as expected for this condition. The condition did not result in a safety system functional failure and had no adverse impact on the health and safety of the public.

F. Additional Information

There have been no events at HNP similar to the event documented in this LER in the past three years.