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SEP 19 2016

10 CFR 50.73

Serial: HNP-16-071

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 2016-002-00

Ladies and Gentlemen:

Duke Energy Progress, Inc., submits the enclosed Licensee Event Report 2016-002-00 in accordance with 10 CFR 50.73 for Shearon Harris Nuclear Power Plant, Unit 1. This report details a trip of 'A' train Essential Service Chilled Water chiller due to low oil pressure that occurred on July 22, 2016. The direct cause was oil leakage through a tube fitting. Corrective actions were implemented and further evaluation is underway.

This document contains no regulatory commitments. Please refer any questions regarding this submittal to John Caves at (919) 362-2406.

Sincerely,

A handwritten signature in black ink, appearing to read 'B. Waldrep', written over the printed name.

Benjamin C. Waldrep

Enclosure: Licensee Event Report 2016-002-00

cc: Mr. M. J. Riches, NRC Sr. Resident Inspector, HNP
Ms. M. Barillas, NRC Project Manager, HNP
Regional Administrator, Region II



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LICENSEE EVENT REPORT (LER)

(See Page 2 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/>)

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, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

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
'A' Essential Services Chilled Water Chiller Trip due to Oil Leak from Failed Tube Fitting

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
07	22	2016	2016	002	00	09	20	2016	None	05000 N/A
									N/A	05000 N/A

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)			
1	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
100	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> 73.77(a)(1)
	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 73.77(a)(2)(i)
	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 73.77(a)(2)(ii)
	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> OTHER Specify in Abstract below or in NRC Form 366A		

12. LICENSEE CONTACT FOR THIS LER	
LICENSEE CONTACT John Caves - Manager, Regulatory Affairs.	TELEPHONE NUMBER (Include Area Code) (919) 362-2406

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT									
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
B	KM	PSF	Swagelok	Y	N/A	N/A	N/A	N/A	N/A

14. SUPPLEMENTAL REPORT EXPECTED <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO	15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
		-	-	-

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On July 22, 2016, the 'A' Essential Services Chilled Water (ESCW) chiller tripped due to low oil pressure and was declared inoperable. The cause was oil leakage from a recently replaced brass tube fitting connecting the high-pressure side of an oil pressure differential sensing line to the lubrication system. An equivalent stainless steel fitting was installed in place of the brass, and the 'A' ESCW chiller was then declared operable.

This failed brass fitting was a recently installed like-for-like replacement component following a similar 'A' ESCW chiller trip on July 15, 2016, caused by low oil pressure as a result of leakage through the original brass tube fitting.

The cause of the failed tube fitting was fatigue crack growth resulting from vibration, with stress corrosion cracking having a secondary role. The material was replaced with stainless steel, and further analysis to address the vibration is ongoing.



**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 Shearon Harris Nuclear Power Plant - Unit 1	2. DOCKET NUMBER 05000- 400	3. LER NUMBER		
		YEAR 2016	SEQUENTIAL NUMBER 002	REV NO. 00

NARRATIVE

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

A. Background

Event Date: July 22, 2016 Mode: 1 Reactor Power: 100 percent

No Structures, Systems or Components (SSCs) were inoperable at the start of this event that contributed to the event. No change in plant mode or in reactor power occurred as a result of this event.

On July 15, 2016, the 'A' train Essential Services Chilled Water (ESCW) [KM] chiller [CHU] tripped due to low oil pressure. An oil leak was identified at a brass tube fitting [PSF] connecting the high-pressure side of an oil pressure differential sensing line to the lubrication system, and the chiller was declared inoperable. The leaking fitting had been in service for over 10 years, and was replaced with a like-for-like component. The chiller was declared operable on July 16, 2016.

The failed component was the 'A' train Essential Services Chilled Water chiller, oil pressure differential sensing line tube fitting, high pressure side, manufactured by Swagelok, Part Number B-600-1-4.

B. Event Description

On July 22, 2016, the 'A' ESCW chiller tripped a second time due to low oil pressure, with the cause being additional oil leakage from the replaced tube fitting. The 'A' ESCW chiller was again declared inoperable. Vibrations were identified on the oil pressure differential sensing line. An equivalent stainless steel fitting was installed in place of the brass. The 'A' ESCW chiller was then declared operable.

Metallurgical analysis of both failed fittings was conducted. Stress corrosion cracking was identified in the first fitting, which contributed significantly to the overall failure and was the initiation site of the fatigue failure. However, the failure of the second fitting was dominated by fatigue, with possible signs of stress corrosion cracking in some locations. Thus, cyclic stress-driven fatigue is considered the primary cause of failure, with stress corrosion cracking having a secondary role. After the second failure, a notable vibration was discovered in the oil pressure differential sensing line, likely driving the fatigue.

This condition is reportable as a condition prohibited by Technical Specification (TS) per 10 CFR 50.73(a)(2)(i)(B). The second fitting failed short of the 30-day mission time of the ESCW system and after the 72 hour action statement time for the applicable ESCW TS Limiting Condition for Operability. The vibrations in the sensing line were likely present when the second fitting was installed after the July 15 failure, as demonstrated by the failure of the first fitting. Thus, the ESCW system was inoperable for longer than permitted by TS, making the July 22, 2016, event reportable.

C. Causal Factor

The cause of the failed tube fitting was fatigue crack growth resulting from vibration, with stress corrosion cracking having a secondary role.



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CONTINUATION SHEET**

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NARRATIVE

D. Safety Analysis

No loss of safety function occurred during the event. The 'B' ESCW chiller was available throughout the specified period to perform the credited safety function. Thus, the failure of the 'A' ESCW chiller has very low safety significance. At no point during the impacted period was the ESCW system required to mitigate the effects of a Design Basis Accident. Thus, there is no consequence to the health and safety of site personnel or to the public.

E. Corrective Actions

Corrective Actions Completed:

The failed tube fitting was replaced with an equivalent stainless steel fitting. This stainless steel fitting is not as susceptible to stress corrosion cracking in this environment and has higher endurance limits/fatigue strength.

Corrective Actions Planned:

Additional analysis is underway to address the vibrations present on the oil pressure differential sensing line of the 'A' ESCW Chiller.

F. Additional Information:

There have been no previous Licensee Event Reports at Harris due to a tripped ESCW Chiller from oil leakage through a tube fitting due to fatigue failure.