DUKE ENERGY.

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SEP 01 2016

10 CFR 50.73

Serial: HNP-16-065

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 2016-001-00

Ladies and Gentlemen:

Duke Energy Progress, Inc., submits the enclosed Licensee Event Report 2016-001-00 in accordance with 10 CFR 50.73 for Shearon Harris Nuclear Power Plant, Unit 1. This report details nonconformances associated with protection against potential tornado missile impact.

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

Sincerely,

Benjamin C. Waldrep

Enclosure: Licensee Event Report 2016-001-00

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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NRC FORM 366 (06-2016) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 10/31/2018

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.

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/)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Shearon Harris Nuclear Power Plant - Unit 1	05000 400	1 OF 4

4. TITLE

Inadequate Protection from Tornado Missiles Identified Due to Nonconforming Design Conditions

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
									No Other Facilities Involved.	05000 N/A
07	07	2016	2016	- 001	- 00	09	01	2016	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	☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
	☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
	☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
	☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
10. POWER LEVEL	☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
	☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
	☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(C)	☐ 73.77(a)(1)
100	☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☑ 50.73(a)(2)(v)(D)	☐ 73.77(a)(2)(i)
	☐ 20.2203(a)(2)(vi)	☑ 50.73(a)(2)(i)(B)	☑ 50.73(a)(2)(vii)	☐ 73.77(a)(2)(ii)
		☐ 50.73(a)(2)(i)(C)	☐ OTHER Specify in Abstract below or in NRC Form 366A	

12. LICENSEE CONTACT FOR THIS LER

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

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☑ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR
-	-	-

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

On July 7, 2016, during evaluation of protection for Technical Specification (TS) equipment from the damaging effects of tornados, Shearon Harris Nuclear Power Plant identified nonconforming conditions in the plant design such that specific TS equipment did not meet current design basis for protection against potential tornado missile impact. Identified systems were declared inoperable and Enforcement Guidance Memorandum (EGM) 15-002, "Enforcement Discretion for Tornado-Generated Missile Protection Noncompliance," was implemented. Compensatory measures were implemented within the time allowed by the applicable Limiting Condition(s) for Operation and the associated systems were then declared operable but nonconforming.

The two systems identified with credible impacts were the 'A' train Emergency Diesel Generator and the Main Steam Safety Relief Valves. Actions will be taken to establish compliance, either by plant modification or by employing a methodology for addressing tornado missile noncompliances.

Due to the historical nature of the issue, a specific cause for the identified vulnerabilities was not determined.

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.
Shearon Harris Nuclear Power Plant - Unit 1	05000- 400	2016	- 001	- 00

NARRATIVE

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

A. Plant Operating Conditions Before the Event:
Event Date: July 7, 2016 Mode: 1 Reactor Power: 100 percent

No plant transients are associated with this event. Thus, no Structures, Systems or Components (SSCs) were inoperable at the start of this event that contributed to the event.

Background NRC Documents:

Enforcement Guidance Memorandum (EGM) 15-002, "Enforcement Discretion for Tornado-Generated Missile Protection Noncompliance," provides guidance to exercise enforcement discretion when an operating power reactor licensee does not comply with a plant's current site-specific licensing basis for tornado-generated missile protection. Specifically, discretion would apply to the applicable Technical Specification (TS) Limiting Condition(s) for Operation (LCO) that would require a reactor shutdown or mode change in the event a licensee could not meet TS LCO required action(s) within the TS completion time.

Interim Staff Guidance DSS-ISG-2016-01, "Clarification of Licensee Actions in Receipt of Enforcement Discretion Per Enforcement Guidance Memorandum EGM 15-002," provides interim staff guidance to facilitate staff understanding of expectations for consistent oversight associated with implementing enforcement discretion for tornado missile protection noncompliance(s) per EGM 15-002.

Appendix A to DSS-ISG-2016-01 provides guidance for acceptable initial and comprehensive compensatory measures for licensee use in implementing the enforcement discretion outlined in EGM 15-002. The licensee should declare (log) the utilization of EGM 15-002, inform the resident inspector, and enter the issue into the corrective action program. For initial compensatory measures, it is expected that the measures listed are already in place at sites that may be affected by severe weather, such as tornados and/or hurricane force winds. The measures should be verified as current and readily deployable within a very short timeframe.

B. Description of Event:
On July 7, 2016, during evaluation of protection for TS equipment from the damaging effects of tornados, Shearon Harris Nuclear Power Plant (Harris) identified nonconforming conditions in the plant design such that specific TS equipment did not meet current design basis for protection against potential tornado missile impact. Two systems contained equipment affected to the extent that an impact on operability was credible. The 'A' Emergency Diesel Generator (EDG) [EK-ED] could be rendered inoperable due to potential effects on control conduit [CND] or to the fuel oil supply pipe [PSX]. In addition, the Main Steam Safety Relief Valves (MSSVs) [SB-RVs] could be rendered inoperable due to potential crimping of the associated exhaust pipe [PSX]. Both systems were declared inoperable, and EGM 15-002 was implemented. Compensatory measures were implemented within the time allowed by the applicable LCOs and the associated systems were then declared operable but nonconforming.

LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

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NARRATIVE

This condition is being reported per the following criteria:

• 10 CFR 50.73(a)(2)(v)(D) for any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident,
• 10 CFR 50.73(a)(2)(i)(B) for any condition that is prohibited by TS,
• 10 CFR 50.73(a)(2)(vii) for any event where a single cause or condition caused at least one independent train to become inoperable in multiple systems.

These reporting criteria were selected based on the historical nature of the issue. The conditions existed for longer than permitted by TS. In addition, there were instances of 'B' EDG unavailability in the past three years and multiple MSSVs were impacted, resulting in losses of safety functions for both systems. The inoperabilities were a result of a single cause impacting independent trains in multiple systems.

C. Cause of Event:
Due to the historical nature of the issue, a specific cause for the identified vulnerabilities was not determined.

D. Safety Consequence:
As documented per EGM 15-002, tornado missile scenarios that may lead to core damage are very low probability events because safety-related SSCs are typically designed to withstand the effects of tornados. For a tornado missile-induced scenario to occur, a tornado would have to hit the site and result in the generation of missiles that would hit and fail vulnerable, unprotected safety-related equipment and/or unprotected safety-related subcomponents in a manner that is non-repairable and non-recoverable. In addition, because plants are designed with redundancy and diversity, the tornado missiles would have to affect multiple trains of safety systems and/or means of achieving safe shutdown.

The NRC has completed a generic risk analysis of potential tornado missile protection noncompliances to examine the risk significance of these scenarios. This assessment documents a conservative, bounding-type analysis of the risk significance for plant facilities. The generic analysis assumed that core damage would occur if a tornado hit a plant located in the most active tornado region in the country and that it caused a tornado-generated missile to fail all emergency core cooling equipment at the plant with no ability to recover. Given this conservative assumption, the staff's study established that the core damage frequency (CDF) associated with tornado missile-related noncompliances are well below CDFs requiring immediate regulatory action. In summary, the generic bounding risk analysis performed by the NRC concluded that this issue is of low risk significance.

During a postulated design basis tornado, the conditions documented could have resulted in a loss of the safety function for the EDGs, assuming the 'B' EDG was already inoperable for a reason unrelated to tornado missile. Loss of safety function for the MSSVs could also result from multiple tornado missile strikes. Both systems are used to mitigate the effects of a loss of offsite power by providing an emergency AC power source and an alternate path for core heat removal, respectively. No actual safety consequence occurred, as Harris did not experience an actual tornado missile event. Therefore, enforcement discretion until June 10, 2018, will not impose significant additional risk to public health and safety.

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Shearon Harris Nuclear Power Plant - Unit 1	05000- 400	2016	- 001	- 00

NARRATIVE

E. Corrective Actions

Corrective Actions Completed:
• Implemented initial compensatory measures per DSS-ISG-2016-01.
o Verified that procedures are in place and training is current for actions to be taken if a tornado watch or warning is issued for the area, and for performing actions in response to a tornado.
o Established a heightened level of station awareness and preparedness relative to identified tornado missile vulnerabilities.
• Implemented comprehensive compensatory measures that demonstrated a discernable change from pre-discovery conditions as described in EGM 15-002.
• Revised the plant Severe Weather Response procedure to include actions specific to the identified tornado missile vulnerabilities that include pre-tornado walkdowns to reduce the possibility of a tornado-generated missile and post-tornado walkdowns to expedite the identification and restoration of the vulnerable equipment if affected by a tornado-generated missile. Suggested actions to restore functionality of the affected equipment have been included in the procedure.

Corrective Actions Planned:
• Establish compliance by either engineering and installing a plant modification or by employing a methodology for addressing tornado missile noncompliances acceptable to the NRC.

F. Previous Occurrences:
There have been no previous Licensee Event Reports at Harris on this issue.

G. Component Failure: None.