DUKE ENERGY®

Ernest J. Kapopoulos, Jr.
Vice President
Harris Nuclear Plant
5413 Shearon Harris Road
New Hill NC 27562-9300

919.362.2000

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

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Shearon Harris Nuclear Power Plant, Unit 1
Docket No. 50-400

Subject: Response to *Request for Additional Information Regarding Response to Bulletin 2012-01, Design Vulnerability in Electric Power System*

Reference: NRC Letter dated December 20, 2013, *Request for Additional Information Regarding Response to Bulletin 2012-01, Design Vulnerability in Electric Power System*

Ladies and Gentlemen:

On July 27, 2012, the Nuclear Regulatory Commission issued Bulletin 2012-01, *Design Vulnerability in Electric Power System*. Carolina Power & Light Company (now Duke Energy Progress, Inc.) provided its response to Bulletin 2012-01 in a letter dated October 25, 2012. On December 20, 2013, the NRC issued the referenced request asking licensees to verify that they have completed interim corrective actions and compensatory measures and to determine the status of long-term corrective actions. The enclosure to this letter provides the response to the referenced request for the Harris Nuclear Plant.

This letter contains no new or revised Regulatory Commitments.

Please address any comments or questions regarding this matter to David Corlett, Regulatory Affairs Manager, at 919-362-3137.

I declare under penalty of perjury that the foregoing is true and correct. Executed on February 3, 2014.

Sincerely,

Ernest J. Kapopoulos, Jr

Enclosure

cc: Mr. J. D. Austin, NRC Sr. Resident Inspector, HNP
Mr. W. L. Cox, III, Section Chief, N.C. DHSR (email)
Mr. A. Hon, NRC Project Manager, HNP
Mr. V. M. McCree, NRC Regional Administrator, Region II

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NRC letter (ADAMS ML13351A314) dated December 20, 2013 stated:

In order for the NRC staff to complete its review of responses to the bulletin, the following additional information is requested:

1. Provide a summary of all interim corrective actions that have been taken since the January 30, 2012, event at Byron Station, Unit 2, to ensure that plant operators can promptly diagnose and respond to open phase conditions on the offsite power circuits for Class-1E vital buses until permanent corrective actions are completed.
2. Provide a status and schedule for completion of plant design changes and modifications to resolve issues with an open phase of electric power.

Response 1 - Summary of All Interim Corrective Actions

Lessons learned from the events at Byron station were reviewed and various interim corrective actions were implemented based on the Harris Nuclear Plant configuration and transformer design. Based on lessons learned, the following actions were taken to ensure plant operators can promptly diagnose and respond to an open phase condition:

- The bus transfer procedure was revised to ensure three phase voltages are checked prior to bus transfers and after bus transfers are complete.
- Quarterly infrared inspections of yard equipment were completed as part of routine inspections.
- The weekly offsite power verification procedure was revised to include visual verification of offsite power connection points to ensure no visible damage.
- Turbine building auxiliary operator rounds were performed weekly which included visual checks of offsite power connections to Start-Up Transformers (SUTs). Guidance was provided on actions required if degradation of offsite power is suspected.
- Outside auxiliary operator rounds were performed daily which included guidance to perform visual checks of connection points on lines feeding the SUTs. Guidance was provided on actions if degradation of offsite power is suspected.
- Operations training was provided to describe the purpose of the visual inspections and provide guidance on the expectations of the inspections.

Response 2 - Status and Schedule for Completion of Plant Design Changes

The Duke Energy fleet is investigating options being researched by several vendors (PSC2000, EPRI, Schweitzer, etc.) to detect open phase fault conditions. There is currently no industry technology that has been proven to detect all the required open phase fault conditions for all plant and transformer designs. With the goal of ensuring accurate detection without compromising nuclear safety or increasing plant risk, it is paramount that this new technology being evaluated be fully tested and analyzed before installation.

Design studies of the single open phase fault conditions have been started for the Duke Energy nuclear fleet. The Duke Energy nuclear fleet is fully engaged in the development of the NEI Open Phase Condition Industry Guidance Document, as well as development of enhancements to the ETAP software tool being used to analyze open phase fault conditions.

Harris Nuclear Plant intends to follow the schedule provided in the NEI industry initiative document. A provision in the schedule has already been identified for any deviations required for items such as the accommodation of outage schedules or technology availability and will be documented through the NEI exemption process.