

David B. Hamilton
Vice President

440-280-5382

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L-16-142

10 CFR 50.4

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852**SUBJECT:**Perry Nuclear Power Plant
Docket No. 50-440, License No. NPF-58
Commitment to Modify Undervoltage/Degraded Voltage Protection Design

As a result of an event at the Perry Nuclear Power Plant (PNPP) that involved loss of power to Division one shutdown cooling during shutdown, a vulnerability was identified in the original design of the undervoltage/degraded voltage (UV/DV) protection circuitry. Specifically, the issue was revealed on February 11, 2016, when a single fuse on one phase of the division one 4.16 kV safety bus failed, causing the UV/DV protection circuitry to satisfy the coincidence logic and separate that bus from the offsite power source. This event was documented in PNPP Licensee Event Report 2016-003 (ADAMS Accession No. ML16104A024). This event was characterized as an unresolved item (URI) during the Special Inspection conducted at PNPP starting February 29, 2016, and documented in Reactive Inspection Report 05000440/2016008 (ADAMS Accession No. ML16057A039), dated May 25, 2016.

This issue involves the original UV/DV design, as documented in PNPP's original licensing safety evaluation report (NUREG-0887). FirstEnergy Nuclear Operating Company (FENOC) has determined that the design of the UV/DV circuits requires modification to address the issue. Therefore, FENOC commits to installing a modification to the UV/DV protection scheme for the division one, two and three 4.16kV safety buses that will prevent a failed fuse from satisfying the coincident logic and causing a separation of the offsite power source from the safety bus when no UV/DV condition exists.

FENOC has initiated the design modification process and preliminarily identified a solution that is consistent with other industry UV/DV protection designs. As part of the design modification development, FENOC will determine if a license amendment is required to address UV/DV Technical Specification setpoints or other changes to the current PNPP licensing basis. The new design will be finalized and any required license amendment requests will be submitted to the NRC by November 1, 2016.

To preclude the risks associated with an inadvertent separation of the offsite power source from the safety buses during installation, the modification will require installation during a refueling outage. However, even during a refueling outage, the new design must be installed and tested on a divisional basis to manage shutdown risk. As such, FENOC commits to have the new design installed and tested by the second refueling outage after NRC approval of any required

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license amendment request, but no later than startup from refuel outage 1R18 scheduled to begin in March 2021.

Based on a review of the applicable design basis documents and recent surveillance history, the current configuration of the UV/DV protection circuitry remains capable of performing its intended safety function, which is to detect a sustained degraded voltage condition or loss of power to its associated 4.16kV safety bus, then separate the offsite source and start the associated emergency diesel generator (EDG). Therefore, FENOC has determined that the UV/DV protection circuitry and the associated 4.16kV safety buses remain operable in accordance with the plant's Technical Specifications. The condition that occurred on February 11, 2016, is bounded by the worst case single failure, which is the loss of an EDG.

It is unlikely that a similar fuse failure would occur based on the evaluation by FENOC and the vendor, which found this issue to be an isolated event. No previous instances of this type of failure have been observed at PNPP, and examination of additional fuses of the same part number from the same manufacturing lot revealed no evidence that the isolated manufacturing error is a recurring event.

Until final installation of the modification, the following compensatory actions will remain in place:

- An operations standing order was issued to address operator response in the event a similar fuse malfunction was to occur.
- Operators have received informational training on the expected response to a fuse malfunction in the UV/DV voltage circuitry.
- Operators will be periodically retrained on the fuse malfunction through licensed operator continuing training.
- A work order package with spare fuses is staged to replace a failed fuse in the event a similar malfunction was to occur.

Attachment 1 identifies the regulatory commitments contained in this letter. If there are any questions or if additional information is required, please contact Mr. Nicola F. Conicella, Manager – Regulatory Compliance, at 440-280-5415.

Sincerely,



David B. Hamilton

Attachments:

1. Regulatory Commitment List

cc: Director, Office of Nuclear Reactor Regulation (NRR)
NRC Region III Administrator
NRC Resident Inspector
NRR Project Manager

Attachment 1
Perry Nuclear power Plant
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Regulatory Commitment List
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The following list identifies those actions committed to by FirstEnergy Nuclear Operating Company (FENOC) for the Perry Nuclear Power Plant (PNPP), in this document. Any other actions discussed in the submittal represent intended or planned actions by FENOC. They are described only as information and are not Regulatory Commitments. Please notify Mr. Nicola F. Conicella, Manager – Regulatory Compliance, at 440-280-5415, of any questions regarding this document or associated Regulatory Commitments.

Regulatory Commitment

Due Date

1. FENOC will implement a design modification of the Undervoltage/Degraded Voltage (UV/DV) protection scheme for the Division one, two and three 4.16kV safety buses that will prevent a failed fuse from improperly satisfying the coincident logic and causing a separation of the offsite power source from the safety bus when no UV/DV condition exists.

The second refueling outage after NRC approval of any required license amendment request but no later than startup from refuel outage 1R18 scheduled to begin in March 2021.

2. Until final installation of the modification compensatory actions will remain in place.

The second refueling outage after NRC approval of any required license amendment request but no later than startup from refuel outage 1R18 scheduled to begin in March 2021.