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10 CFR 50.54(q)(5)

Serial: HNP-17-015

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: Summary of 10 CFR 50.54(q) Evaluation

Ladies and Gentlemen:

As required by 10 CFR 50.54(q)(5), Duke Energy Progress, LLC, is providing a summary of a 10 CFR 50.54(q) evaluation. Enclosure 1 provides the summary of the associated 10 CFR 50.54(q) evaluation.

This submittal contains no regulatory commitments. Please refer any questions regarding this submittal to Jeffrey Robertson, Manager - Regulatory Affairs, at (919) 362-3137.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Bentley K. Jones', with a stylized flourish at the end.

Bentley K. Jones

Enclosure: 1 - Summary of 10 CFR 50.54(q) Evaluation

cc: R. Patterson, NRC Senior Resident Inspector, HNP  
M. Barillas, NRC Project Manager, HNP  
C. Haney, NRC Regional Administrator, Region II

Harris Nuclear Plant  
Summary of 10 CFR 50.54(q) Evaluation

Duke Energy has completed various equipment design improvements to the Technical Support Center's (TSC) Heating, Ventilation, and Air Conditioning (HVAC) system to increase reliability, provide redundancy, and to facilitate planned maintenance. The engineering design modification was completed under a "master" engineering change (EC) package 297736, TSC HVAC System Upgrade Project.

The master EC implemented the improvements to the facility with three "child" EC packages 401286, 401284, and 401283.

During the course of the EC development and field work, the EC documentation was revised to incorporate necessary changes. A few of the EC revisions required 50.54(q) evaluations, as determined necessary by Engineering. Specifically, Revision 0, Revision 2, Revision 3, and Revision 8 of the master EC 297736 required 50.54(q) evaluations. The 50.54(q) evaluation associated with master EC 297736, Revision 8, considers the final EC description and best presents the modification and respective 50.54(q) evaluation. Therefore, a summary of each child EC associated with the master EC 297736, Revision 8, is provided below.

Child EC 401286:

- A second outside air (OA) intake fan (OA-3) was installed in parallel with the existing fan (OA-2) to provide redundancy. Each fan, by itself, is able to provide the required amount of outside air. The existing outside air fan was replaced. Additionally, backdraft dampers were installed downstream of each fan to prevent recirculation through the idle fan.

Child EC 401284:

- Heat Pumps (HP) HP-10, HP-11, and HP-17 that are located on the roof were changed to Direct Expansion (DX) air conditioning units with electric heaters. The corresponding air handling (AH) units, AH-10, AH-11, AH-17, and associated humidifiers were replaced as well. The replacement air handling systems provide the cooling, heating, and humidity required to maintain TSC habitability. Circuit breaker ratings for air handlers AH-10, AH-11, and AH-17 were increased from 20, 20, and 30 amps to 60, 45, and 45 amps, respectively, per breaker sizing calculations.
- Minor ductwork changes were made within the facility to allow AH-10, AH-11, and AH-17 to achieve their originally intended design flows to the various TSC areas.
- Existing climate controllers for AH-10, AH-11, and AH-17 were replaced.
- Two new penetrations into the TSC were created in the existing penetration bunkers located on the roof of the K-Building. The new penetrations facilitate routing of refrigerant lines and conduits for the new DX air conditioning units located on the roof. The new penetrations are sealed with Type MR-1 radiation seals and the new conduit seals are Type EC-2. This is the same seal type installed in the existing penetrations from the K-Building roof into the TSC. EC 297736 has evaluated the MR-1 seal and determined that it provides adequate wind (capable of withstanding winds over 1000 mph) and radiation resistance (provides an air seal to prevent inleakage of contaminated air and gamma shielding equivalent to that of concrete) for the TSC.

Child EC 401283:

- A new variable refrigerant flow (VRF) system and mini-split system were installed with outdoor units mounted on the roof and ductless fan coil units installed inside the TSC. The VRF system serves as a redundant means of heating and cooling to maintain TSC habitability. The mini-split system provides redundant and additional cooling and heating to the TSC mechanical ventilation room. The VRF combined with the mini-split system are designed to accommodate loss of any two of the air handling units (AH-10, AH-11, and AH-17) with respect to maintaining design space temperatures. The remaining air handler(s) is adequate to provide humidification for the entire TSC (only one of three humidifiers is required). New circuit breakers were installed to accommodate the new HVAC equipment.
- Condensate drainage associated with the new TSC HVAC indoor units were routed to the existing drainage point. One exception to this is the HVAC indoor unit for the TSC mechanical ventilation room was routed to the floor drain.
- The new outdoor heat pumps and indoor units have digital controllers. The wall-mounted climate controllers are also digital components.
- Two new penetrations into the TSC were created in the existing penetration bunkers located on the roof of the K-Building. The new penetrations facilitated routing of new refrigerant lines and conduits to the new VRF and mini-split cooling units located on the roof. The new penetration seals are Type MR-1 radiation seals and the new conduit seals are Type EC-2. These are the same type seals as the existing seals. EC 297736 has evaluated the MR-1 seal and determined that it provides adequate wind (capable of withstanding winds over 1000 mph) and radiation resistance (provides an air seal to prevent inleakage of contaminated air and gamma shielding equivalent to that of concrete) for the TSC.

**Description of Licensing Basis affected by the changes:**

- NUREG-1038, Safety Evaluation Report Related to the Operation of Shearon Harris Nuclear Power Plant, Units 1 and 2; Section 13.3.2.8, Emergency Facility and Equipment (applicable sections)
- PLP-201, Emergency Plan, Revision 3, Section 3.3, Technical Support Center (TSC), Subsection 3.3.1 Characteristics
- PLP-201, Emergency Plan, Revision 65, Section 3.3, Technical Support Center (TSC), Subsection 3.3.1 Characteristics
- NUREG-0696, Functional Criteria for Emergency Response Facilities, Section 2.5, Structure
- NUREG-0737, Supplement No. 1, Clarification of TMI Action Plan Requirements, Section 8.2.1.d

**Description of how the change to the Emergency Plan still complies with regulation:**

The function of the TSC does not change with the implementation of this EC to upgrade equipment. The change will improve the TSC HVAC system by providing equipment redundancy, which will reduce non-functional time and add components that will better maintain the habitability parameters in the facility. Therefore, this change will continue to comply with the regulations described by 10 CFR 50.47(b)(8) and 10 CFR 50, Appendix E, Section IV. E, Emergency Facilities and Equipment.

**Description of why the proposed change was not a reduction in the effectiveness of the Emergency Plan:**

The TSC HVAC system was modified to improve equipment reliability of the facility to perform its function. The TSC continues to meet NRC requirements, as described in 10 CFR 50.47(b) and 10 CFR 50, Appendix E, and does not reduce the effectiveness of the HNP Emergency Plan.