Kim Maza
Vice President
Harris Nuclear Plant
5413 Shearon Harris Rd
New Hill, NC 27562-9300

984-229-2512

10 CFR 50.90

October 2, 2020
Serial: RA-20-0287

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: Response to Request for Additional Information Regarding License Amendment Request to Revise Technical Specifications Related to Accident Monitoring Instrumentation, Refueling Operations Instrumentation, and Electrical Equipment Protective Devices

Ladies and Gentlemen:

By application dated March 12, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20072M618), as supplemented by letter dated June 22, 2020 (ADAMS Accession No. ML20174A639), Duke Energy Progress, LLC (Duke Energy), submitted a license amendment request (LAR) for Shearon Harris Nuclear Power Plant, Unit 1 (HNP). The proposed license amendment would revise HNP Technical Specification (TS) 3.3.3.6, “Accident Monitoring Instrumentation,” to change the allowed outage times for inoperable post-accident monitoring (PAM) instrumentation, eliminate the shutdown requirement for inoperable PAM instruments when the minimum required channels are operable, and add a provision that allows a separate action entry for each instrument function. Duke Energy also proposed a revision to TS 3.9.2, “Instrumentation,” to reflect the removal of the audible indication requirement in Mode 6, as well as relocate the requirements in TS 3.8.4.1, “Containment Penetration Conductor Overcurrent Protective Devices,” and TS 3.8.4.2, “Motor-Operated Valves Thermal Overload Protection,” from TS to a licensee-controlled document. Additionally, Duke Energy proposed a revision to the Note in TS 3.9.2 to allow for the substitution of Wide Range Neutron Flux Monitors (WRNFMs) for both of the Source Range Neutron Flux Monitors (SRNFMs) required to be operable while in Mode 6.

The U.S. Nuclear Regulatory Commission (NRC) staff reviewed the LAR and determined that additional information is needed to complete their review. Duke Energy received the request for additional information (RAI) from the NRC through electronic mail on September 3, 2020 (ADAMS Accession No. ML20247J382). The attachment to this letter provides Duke Energy’s response to the RAI.

This additional information does not change the No Significant Hazards Determination provided in the original submittal. No regulatory commitments are contained within this letter.

Please refer any questions regarding this submittal to Art Zaremba, Manager – Nuclear Fleet Licensing, at (980) 373-2062.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on October 2, 2020.

Sincerely,

Kim E. Maza
Site Vice President
Harris Nuclear Plant

Attachment: Response to Request for Additional Information

cc: J. Zeiler, NRC Sr. Resident Inspector, HNP
W. L. Cox, III, Section Chief, N.C. DHSR
M. Mahoney, NRC Project Manager, HNP
L. Dudes, NRC Regional Administrator, Region II

ATTACHMENT

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1

DOCKET NO. 50-400

RENEWED LICENSE NUMBER NPF-63

Response to Request for Additional Information

By application dated March 12, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20072M618), as supplemented by letter dated June 22, 2020 (ADAMS Accession No. ML20174A639), Duke Energy Progress, LLC (Duke Energy), submitted a license amendment request (LAR) for Shearon Harris Nuclear Power Plant, Unit 1 (HNP). The proposed license amendment would revise HNP Technical Specification (TS) 3.3.3.6, "Accident Monitoring Instrumentation," to change the allowed outage times for inoperable post-accident monitoring (PAM) instrumentation, eliminate the shutdown requirement for inoperable PAM instruments when the minimum required channels are operable, and add a provision that allows a separate action entry for each instrument function. Duke Energy also proposed a revision to TS 3.9.2, "Instrumentation," to reflect the removal of the audible indication requirement in Mode 6, as well as relocate the requirements in TS 3.8.4.1, "Containment Penetration Conductor Overcurrent Protective Devices," and TS 3.8.4.2, "Motor-Operated Valves Thermal Overload Protection," from TS to a licensee-controlled document. Additionally, Duke Energy proposed a revision to the Note in TS 3.9.2 to allow for the substitution of Wide Range Neutron Flux Monitors (WRNFMs) for both of the Source Range Neutron Flux Monitors (SRNFMs) required to be operable while in Mode 6.

The U.S. Nuclear Regulatory Commission (NRC) staff reviewed the LAR and determined that additional information is needed to complete their review. Duke Energy received the request for additional information (RAI) from the NRC through electronic mail dated September 3, 2020 (ADAMS Accession No. ML20247J382).

RAI – 1

Discussion

In Section 2.3, "Reasons for the Proposed Change" of letter dated March 12, 2020, the licensee discusses its proposed change to modify the TS 3.9.2 Note to permit both SRNFMs to be substituted with WRNFMs, provided that the Neutron Flux Monitors are located on opposite sides of the core. This proposed change would be applicable during Mode 6 (Refueling). In Section 3.0, "Technical Evaluation" of letter dated March 12, 2020, the licensee states that "the WRNFM provides the same level of quality assurance, redundancy, and necessary display range as the SRNFM". The licensee specifies the neutron sensitivity of both the SRNFMs and WRNFMs but does not provide any further discussion on the performance of the WRNFMs in comparison to the SRNFMs.

Request

a. Please describe the equivalence of performance of WRNFM and SRNFM channels in Mode 6.

b. Clarify if the WRNFM channels are as capable as the SRNFM channels in their ability to detect the onset of neutron activity. For example, clarify if the minimum detectable neutron activity for the WRNFM channels is the same as for the SRNFM channels. If not, provide justification as to why the WRNFM channels may be considered acceptable substitutes for the SRNFM channels in Mode 6.

Duke Energy Response

a. Both the SRNFMs and WRNFMs provide indication on the Main Control Board in the Main Control Room. The indicator range for the SRNFMs is from 10^0 to 10^6 counts per second (cps), whereas the indicator range for the WRNFMs is from 10^{-1} to 10^6 cps. As such, the WRNFMs encompass the necessary display range of the SRNFMs.

b. As indicated above, the indicator range for the WRNFMs starts at 10^{-1} cps and overlaps the indicator range of the SRNFMs, which starts at 10^0 cps. In reviewing data from a previous refueling outage, both source range and wide range monitors indicated changes in neutron activity that corresponded with the reloading of the fuel assemblies back into the core. During refueling, source range counts are expected to increase and reach a new plateau between fuel assembly insertions, with counts reaching a stable level and each successive reading being within 250 counts of the previous reading and not continuously increasing. After a 3 x 3 box is loaded in front of each source range nuclear instrumentation, a doubling in source range counts should not occur. In the event an unexpected increase in counts is observed, refueling boron concentration and monitor operability is confirmed to be met prior to continuing core reload. Based on the ability of the WRNFMs to detect changes in neutron activity that coincide with those detected by the SRNFMs during core reload, the WRNFMs have demonstrated that they are as capable as the SRNFMs to detect the onset of neutron activity events in the core during Mode 6.