

NRR-DMPSPEm Resource

From: Klett, Audrey
Sent: Thursday, February 01, 2018 9:52 AM
To: Wasik, Christopher J
Subject: Request for Additional Information - Oconee Nuclear Station - Proposed Alternatives to Cable Separation Requirements

Hi Chris,

By application dated February 15, 2016 (ADAMS Accession No. ML16062A052), Duke Energy Carolinas, LLC (the licensee) submitted a proposed alternative to cable separation requirements for Oconee Nuclear Station, Units 1, 2, and 3. In January 2018, the NRC staff performed a regulatory audit using an internet-based portal from the NRC Headquarters office in Rockville MD. The audit plan is available in ADAMS at Accession No. ML18004A012. The audit plan contained draft requests for additional information (RAIs). Based on its audit, the staff revised the draft RAIs in their entirety, which were emailed to you on January 26, 2018. A teleconference was held on January 29, 2018, to discuss the draft RAIs, and it was agreed upon that a revision to the RAIs was not needed. The staff also requested the licensee to respond to the RAIs expeditiously. Per our discussion on January 31, 2018, the NRC staff understands that the licensee has a goal to respond to the RAIs the week of February 12, 2018. If this schedule cannot be met, please inform me as soon as possible. The RAIs are as follows.

RAI 1

During routine discussions with the NRC's licensing project manager for Oconee in summer 2017, the licensee indicated that it has completed the modifications discussed in the proposed alternative. Therefore, the staff requests the licensee to confirm the status of the modifications discussed in the application and discuss any impacts or needed changes or clarifications to the proposed alternatives as a result.

RAI 2

In Sections 4.2.3 and 4.3.2 of the licensee's application, the licensee requested the NRC to allow acceptance of the "as-is" configuration of the normally de-energized 13.8-kV power feed from the KHS to the PSW building as an alternative configuration to meeting the requirements of 10 CFR 50.55a(h)(2). The staff notes that the phrasing of this request would include Trench 3; however, in Section 6 of the application, the licensee states that Trench 3 is not addressed by the submittal. Therefore, the staff requests the licensee to clarify that the scope of the request in Sections 4.2.3 and 4.3.2 does not include Trench 3 and is only applicable to the length of cable present in the applicable areas (i.e., KHS Mechanical Equipment Gallery and the PSW Building Cable Spreading Area).

RAI 3

As discussed in the audit plan dated January 4, 2018 (ML18004A012), the staff reviewed OSC-11504, "Medium Voltage Cable Testing Analysis," during its audit.

- (a) The staff determined that its safety evaluation will rely on the following information contained in this document: (1) Cable testing parameters considered in Section 4.0 of main body; (2) Engineering Report on Medium Voltage Cable Testing at KEMA Labs provided in Appendix C; and (3) MPR Induced Voltage Analysis provided in Attachment 6. Therefore, the staff requests the licensee to provide this information in a supplement to the application.
- (b) Regarding the proposed alternatives for the PSW System Ductbank Manholes (MH-1 through MH-6, "as-is" configuration), the staff identified during its audit of OSC-11504, that Attachment 6 of this document

states that the control cable is armored and shielded with armor grounded at both ends of cable and the shield floating (not grounded) [Page 1 of MPR Calculation No. 0079-0191-CALC-002] and that the total length of the power and control cables between Keowee and Oconee is approximately **2000 meters (6562 feet)** [emphasis added, Page No. 3 of MPR Calculation No. 0079-0191-CALC-002]. OSC-11504 also states that the power and control cables are routed in near vicinity of each other for a distance of **approximately 300 feet** [emphasis added] before the routing of the cables diverge away from each other [Page No. 3 of MPR Calculation No. 0079-0191-CALC-002]. OSC-11504 states that the edge-to-edge separation of the power and control cables along this 300 foot length is 3 inches.

In its application, the licensee mentioned that the potential for power cable to control cable interaction in the manholes represents a small portion of the overall cable run total (**approx. 180 feet out of 4500 feet**) [emphasis added]. The staff requests the licensee to explain and justify the differences between the application and OSC-11504 with regard to the length of cable subject to interaction, and any other differences between cable configurations considered in Attachment 6 of OSC-11504 and the actual cable configurations, including any grounding differences of armor and shields as considered in Attachment 6 versus what is actually installed in the field.

- (c) In order to conclude that the proposed alternative provides an adequate level of safety and quality, the staff needs to confirm that the grounding of armor and shield of various cables minimizes the interactions between the power and control and instrument cables. Therefore, the staff requests the licensee to provide the general criteria considered for grounding the shields and armor of all power, control, and instrument cables associated with the proposed alternative involving the “as-is” configuration.
- (d) In order to conclude that the proposed alternative provides an adequate level of safety and quality, the staff needs to confirm that the faults in the power cables would also not impact the instrument cables routed in parallel to power cables. Therefore, the staff requests the licensee to confirm that the results of induced control voltage analysis provided in Attachment 6 [Page No. 1 of MPR Calculation No. 0079-0191-CALC-002] of OSC-11504 would also apply to instrument cables with no significant difference.

RAI 4

The staff requests the licensee to provide the grounding criteria for the armor and shield of the power, control, and instrument cables, relating to the proposed alternatives for the KHS Mechanical Equipment Gallery and PSW Building Cable Spreading Area.

RAI 5

The staff requests the licensee to provide electrical single line diagrams that show the interconnections of the following switchgears and transformers discussed in the application: CT-4 transformer, KPF switchgear, 1TC switchgear, CX transformer, B6T switchgear, PX13 transformer, and PCB-9.

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