Vogtle PEmails

From: Gleaves, Bill
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To: Vogtle PEmails
Cc: Gleaves, Bill
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Attachments: Vogtle LAR-16-030R1S1 clarifications questions edited.docx

This is being sent so that the Vogtle Units 3 & 4 LAR-16-030R1S1 Clarification Questions (3) may be added to Public ADAMS.

Billy
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Clarification Questions for Discussion Regarding
LAR-16-030 Revision 1, Supplement 1, March 23, 2018

1. Clarification Questions Regarding Question 1.

   The purpose of these questions are to ensure that the ventilation system is designed appropriately to provide reasonable assurance that the requirements of 10 CFR Part 20 are being met (mainly 10 CFR 20.1101(b), 10 CFR 20.1701, and 10 CFR 20.1702). In particular 10 CFR 20.1701 and 10 CFR 20.1702 require that process and engineering controls be used to the extent practicable to minimize airborne activity. High airborne activity concentrations in the fuel handling area could significantly increase occupational radiation exposure and/or result in the need to take protective actions that could complicate the refueling process. The Vogtle UFSAR commits to maintain the dose rate to operators on the refueling platform to 2.5 millirem per hour.

   a. The licensee's response includes daughter products in secular equilibrium in the fuel handling area airborne activity source term, provided in Table 12.2-25, but does not provide any information regarding other daughter products not in secular equilibrium (except to explain that other nuclides with sufficiently short half-lives and with a minimal production or in-growth source term after shutdown, produce negligible contribution). Please explain if the design criteria of less than 1.0 DAC will be met with the inclusion of missing daughter radionuclides or justify not including them.

   b. For most radionuclides the airborne activity source term, provided in Table 12.2-25, is higher than what would be anticipated during normal refueling operations (e.g., the plant would not be expected to routinely operate at 0.25% failed fuel and the partition factors for some radionuclides are likely conservative). However, the tritium concentration provided in Table 12.2-25 is near what is anticipated during normal plant operations (i.e. the tritium concentration is not effected by the amount of failed fuel and the partition coefficient for tritium appears realistic).

      If an individual were to breathe in the tritium concentration in Table 12.2-25 alone (not considering any other radionuclides) for a work week, it would be slightly above 0.6 the annual limit on intake. Consistent with the definition of an airborne activity area in 10 CFR 20.1003, if an area exceeds 1.0 DAC or an area is such that if an individual present in the area without respiratory protective equipment could exceed, during the hours an individual is present in a week, an intake of 0.6 percent of the annual limit on intake or 12 DAC-hours, then the area is an airborne activity area. Therefore, the licensee's response indicates that, based on their proposed design, there is a reasonable likelihood that the fuel handling area may be classified an airborne activity area during normal operations, including refueling, based on the anticipated source term. Please explain how the proposed design is consistent with the previously mentioned requirements and how the dose to workers will be acceptable during refueling.

2. Clarification Questions Regarding Question 2, Part 2.

   In LAR-16-030, Revision 1, the licensee proposes reducing the nominal spent fuel pool (SFP) purification flow rate. Less purification flow typically leads to an increase in SFP water activity. The licensee also proposed removing a statement from UFSAR Subsection 9.1.3.1.4, specifying that an activity level in the water of approximately 0.005 microcuries per gram for the dominant gamma emitting isotopes at the time of refueling, corresponds to the design objective of 2.5 mrem/hour specified in the UFSAR. The 2.5 mrem/hour criteria specified in the UFSAR is used to show that radiation exposure during refueling operations remains ALARA.

   In Question 2, Part 2, the staff requested that the licensee provide a revised source term and specify how the changes affect the dose to operators. In the response, the licensee specified that different assumptions were used to develop the SFP water source term, than were used to calculate the dose rate for airborne activity. The licensee also provided information indicating that 0.001 microCi/cc of Cobalt-60 and 0.07 microCi/cc of Chromium-51 would result in approximately 2.5 mrem/hour, but it is unclear how these concentrations apply to the revised design (including a mixture of all relevant radionuclides). The information provided does not demonstrate that the dose to operators on the refueling platform remains below 2.5 mrem/hour. Information is needed that describes the SFP water source term and assumptions made to develop the source term to show that the dose criteria of 2.5 mrem/hour described in the UFSAR is still being met.

3. Clarification Questions Regarding the Response to Question 4, Part 1.

   The staff is seeking to understand how the response is consistent with the licensing basis. In addition, the staff would like to understand how the airborne activity source term for the Auxiliary Building was calculated in order to verify its adequacy.

   The response is unclear and appears to be inconsistent with UFSAR Figure 9.4.3-1. In Part a, the licensee states that the only Annex Building rooms that exhaust through the radiologically controlled area VAS towards the plant vent are 40357, 40551, and 40552. However, UFSAR Figure 9.4.3-1 shows that in addition to rooms 40357, 40551, and 40552, the Radwaste Building Access Corridor (40362), Corridor (unnamed, possibly room 40415), and the staging and storage area room (40550) are also in the Annex Building, are part of the radiologically controlled area VAS, and are exhausted to the plant vent. If the Radwaste Building Access Corridor, Corridor (unnamed), and the staging and storage area rooms do not exhaust through the plant vent as shown in UFSAR Figure 9.4.3-1, please indicate to where do they exhaust? Is the exhaust from these areas still monitored for radioactivity, as shown in UFSAR Figure 9.4.3-1? Does UFSAR Figure 9.4.3-1 need to be revised?

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