SURRY POWER STATION UNITS 1 AND 2

REQUEST FOR ADDITIONAL INFORMATION REGARDING

THE STEAM GENERATOR LICENSE AMENDMENT REQUEST TO REVISE TECHNICAL SPECIFICATION FOR PERMANENT ALTERNATE REPAIR CRITERIA

References:

1. Dominion letter, 11-403, "Surry Power Station Units 1 and 2 – License Amendment Request – Permanent Alternate Repair Criteria for Steam Generator Tube Inspection and Repair," July 28, 2011, ADAMS Accession No. ML112150144. This letter enclosed WCAP 17345, Revision 2, as a technical support document.

2. NRC letter, "Catawba Nuclear Station, Request for Additional Information Regarding the Steam Generator License Amendment Request to Revise Technical Specification for Permanent Alternate Repair Criteria," date, ADAMS Accession No. XXXX.

The NRC staff has the following request for additional information related to Dominion's license amendment request dated July 28, 2011:

1. WCAP-17345-P, Revision 2 - The footnote on page 3-53 states that Figure 3-36 shows the same data as Figure 3-32 in Revision 0 of the WCAP, but without the data that correspond to negative tubesheet CTE variation. The footnote states that while only a few percent of the data shown in Figure 3-32 of Revision 0 reflect negative values of tubesheet CTE, these cases do result in upward scatter, but must be included to properly represent the top 10% of the Monte Carlo rank order results. This being the case, why does Figure 3-36 in Revision 2 properly represent the top 10% of the Monte Carlo rank order results? Why are the minimum H* values in Figure 3-36 of Revision 2 substantially different from those in Figure 3-32 of Revision 0?

2. Blank (*to preserve question number consistency with recently issued RAI for Catawba 2. Question 2 for Catawba 2 is not applicable to the Model 51F SGs at Surry.*)

3. WCAP-17345-P, Revision 2, Section 3.4 – Confirm that the Monte Carlo analyses performed for the Model 51F SGs using the thick shell model are based upon sampling of the full H*/CTE response surfaces in Figure 8-5 of WCAP 17092 Rev 0. If this is incorrect, and only a "reduced" response surface is used, explain how the reduced response surfaces are used in the Monte Carlo analysis. If for a particular Monte Carlo iteration a negative variation of tubesheet CTE is randomly generated, what is done with this value (e.g., is tubesheet CTE assumed to have nominal value)? Why doesn't the use of a reduced response surface bias the rank ordering above 90% in the non-conservative direction?

ENCLOSURE

4. WCAP-17345-P, Revision 2, Table 3-28 - Provide a similar table applicable to the Model 51F NOP case, for the appropriate range of rank orders centered about the 9874 rank order value.

5. WCAP-17345-P, Revision 2, Table 3-29 - Provide C^2 H* values for rank orders 9888 and 9892. This will lend additional confidence to inferences drawn from this table on page 3-56. In addition, provide a similar table applicable to the Model D5 SLB case. [*Note, this question is essentially the same as question 5 in the Catawba RAI. Although the requested information is specific to Model F and D5 SGs, the staff believes that the inferences to be drawn from this information should be equally applicable to the Surry Model 51F SGs. Thus, the staff is not requesting a table similar to 3-29 that is specifically applicable to the Model 51F SGs. However, if the data already exists for Model 51F SGs, please submit that in lieu of the data for the Model D5 SGs.*]

6. Blank (*to preserve question number consistency with recently issued RAI for Catawba 2. Question 6 for Catawba 2 is not applicable to the Model 51F SGs at Surry.*)

7. WCAP-17345-P, Revision 2, Tables 3-34 to 3-48 - The numerical methods used to generate the accumulated pullout loads in these tables appear to contain two sources of non-conservatism. One, the distance below the top of the tubesheet (TTS) where the contact pressure transitions from zero to a positive non-zero value is assumed to be the lowermost elevation for which a C^2 calculation was performed and yielding a zero value contact pressure. The staff believes a more realistic and more conservative estimate of the contact pressure zero intercept value can be obtained by extrapolating the C^2 results at lower elevations to the zero intercept location. Two, the method used to interpolate the H* distance between specific locations where C^2 analyses were performed assumes that the distribution of contact pressure between these locations is a constant value equal to average value between these locations. Provide revisions to Tables 3-34 to 3-48, if and as needed, to address the staff's concern.

8. WCAP-17345-P, Revision 2, Figures 3-48 and 3-49 - These figures were generated with the thick shell model. Were "spot checks" performed with the C^2 model to determine whether adjustments to the curves in these figures are needed to approximate what the curves would look like if entirely generated with the C^2 model? If not, why are the curves in their present form conservative?

9. In addition to the potential non-conservatisms in the H* estimate discussed in Question 7 above, there is uncertainty associated with the computed probabilistic H* values calculated with the C^2 model as illustrated in Table 3-29. Depending on the response to question 8 above, there also may be some uncertainty associated with the H* adjustments for the crevice pressure distribution. What change to the proposed H* value of 17.89-inches is needed to ensure that it is a conservative value?

10. Blank (*Question 10 in Catawba RAI is not applicable to Surry.*)

11. Blank (*Question 11 in Catawba RAI is not applicable to Surry.*)

12. BET measurements for Surry 2, documented in Westinghouse letter LTR-SGMP-09-111 P-Attachment, Revision 1, range to a maximum of 0.91 inches. BET measurements for Surry 1 led to the plugging of 6 tubes (Dominion letter 11-289 dated May 24, 2011) with BETs exceeding 1-inch. Apart from tubes with this reported range of BETs, Dominion letter 10-715, Attachment 1, page 10 of 23, states that a total of 20 tubes in the Unit 1 and 2 SGs were identified as not being expanded within the tubesheet and were plugged. Explain how the inspections and analyses performed were sufficiently systematic to ensure that all inservice tubes at Units 1 and 2 have been expanded against the tubesheet to within 1-inch of the top of the tubesheet

13. Blank (*Question 13 in Catawba RAI is not applicable to Surry.*)

14. WCAP-17345-P, Revision 2, Tables 3-50 and 3-51 – Are the footnotes in these tables correct and complete? For Model 51F, Table 3-27 implies we have direct C^2 calculations for rank orders 9025, 9673, and 9901. Thus, for Table 3-51, it seems all four cases are based on interpolated values. Similarly, for Model 44F, Table 3-27 implies we have direct C^2 calculations for rank orders 9158, 9697, and 9760. Thus, for Table 3-50, it seems only the "whole plant, 95/95" case is based on direct C^2 calculations and the other cases are interpolated values. If the staff's understanding is incorrect, clarify for which rank orders direct C^2 calculations were performed and provide the H* calculations for these cases in a form similar to Tables 3-45 to 3-48.

15. Verify that regulatory commitments pertaining to monitoring for tube slippage and for primary to secondary leakage, as described in Dominion letter dated December 16, 2010 (NRC ADAMS Accession No. ML103550206), Attachment 1, page 10 of 23, remain in place. In addition, revise the proposed amendment to include a revision to technical specification limit on primary to secondary leakage from 150 gallons per day (gpd) to 83 gpd (150 divided by the proposed 1.8 leakage factor), or provide a regulatory basis for not making this change.