REQUEST FOR ADDITIONAL INFORMATION FOR THE WESTINGHOUSE

ELECTRIC COMPANY (WESTINGHOUSE) TOPICAL REPORT WCAP-17769-P/NP,

REVISION 0, "REFERENCE FUEL DESIGN SVEA-96 OPTIMA3," (MF3367)

PROJECT NO. 700

1. Given that page 2-3 states that the Optima3 design could lead to increased fuel loading, and that the longer part-length rods could similarly increase loading, justify the statement that the Optima2 and Optima3 designs are neutronically the same (page 4-73).

2. Section 3.2.5 mentions using collapse load analysis criteria as an alternative to the design limits for stress determined by the American Society of Mechanical Engineers (ASME) boiling and pressure vessel committee (BPVC), yet the discussion also says it is based on the ASME BPVC. Please clarify this contradiction. Assuming both methods are part of the ASME BPVC, there should be some discussion regarding the criteria used to determine the appropriate method. Describe how the collapse load analysis will be selected as opposed to the nominal ASME BPVC approach to establish design limits for stress during normal operation and anticipated operational occurrences.

3. It is unclear whether or not predictions based on data collected from tie plates and spacers irradiated to an **[   ]** respectively, is adequate justification for reaching **[   ]** Please justify the use of data collected at lower assembly-average (or rod-average) burnup to reach **[   ] respectively. Please state if there is intent to re-use irradiated fuel channels in new fuel assemblies.

4. Are there weld qualifications that should be referenced? Aside from irradiation experience, is there any documentation that can be cited to indicate that the welds have undergone a rigorous weld qualification that ensures the laser beam welds are as robust as the electron beam welds?

5. The TR does not specifically state which of the uncertainties will be used for rod internal pressure. On TR page 4-79 it is stated that the following uncertainties are typically considered for rod internal pressure. How does the methodology decide which uncertainties are actually considered? On page 4-81 sample calculation of the critical lift-off pressure concludes that it is **[   ]** Where does the **[   ]** come from since evaluation seems to be done for worst case models (lower bound swelling and upper bound creep rate, max clad inner diameter, min clad outer diameter)?

6. The use of ANSYS was approved for determining assembly stress in Reference 2 of the submittal, but not for determining cladding stress. The description of the ANSYS model is very limited. With regard to Table 4.3.3-1 on page 4-89, please explain what is meant by items in the first column. Also, how is maximum allowed differential pressure calculated?

7. On page 4-90 the sample application for cladding strain does not show in the table how cladding corrosion is used (e.g., max, min, model parameter maximized). **[   ]** Please provide details of how cladding corrosion is used in the uncertainty analysis for cladding strain.

8. Although the methodology is unchanged, NRC staff recommends that, moving forward, it may be better to have an approved hydrogen pickup model in STAV7.2 rather than no approved model and a methodology that relies on data. An approved model is also recommended to support reactivity insertion accident and loss-of-coolant-accident criteria.
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9. On TR page 4-108 the cladding temperature methodology does not specify that
[   ] be accounted. Please provide justification for not considering
[   ] in the cladding temperature analysis.

10. It is unclear if Westinghouse will use the boiling water reactor (BWR) pellet-clad mechanical interaction (PCMI) fuel cladding failure criteria from Standard Reactor Plan 4.2 for control rod drop accident (CRDA). Also, it is not clear if dose will be calculated for CRDA with failed fuel. Such calculations should be checked against Regulatory Guide (RG) 1.3 and RG 1.25. Will the BWR PCMI fuel cladding failure criteria be applied to CRDA? Will a dose be calculated for a CRDA assuming failed fuel and, if so, how will the dose be calculated?

11. A cladding strain sample application previously applied to Optima2 for **[   ]** hours was repeated for Optima3 for only **[   ]** Show the sensitivity to hold time or justify why
[   ] is not realistic.

12. Are rod burnup limits the same for full and part-length fuel rods? What is the peak pellet burnup limit?