UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

June 28, 2012

Mr. Joseph W. Shea
Corporate Manager- Nuclear Licensing
Tennessee Valley Authority
3R Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

SUBJECT: BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2, AND 3 - REQUEST FOR ADDITIONAL INFORMATION RELATED TO CORE PLATE BOLT STRESS ANALYSIS (TAC NOS. ME6615, ME6616, AND ME6617)

Dear Mr. Shea:

By letter dated June 15, 2011, the Tennessee Valley Authority (TVA or the licensee), submitted a report on the plant-specific stress analysis of the Browns Ferry Nuclear Plant (BFN), Units 1, 2, and 3, core plate hold down bolts. This report was submitted in accordance with Commitment 47 in Appendix A to NUREG-1843, whereby TVA committed to perform a plant-specific stress analysis of the BFN core plate hold down bolts, as described in Boiling Water Reactor Vessel Internals Program (BWRVIP)-25, and submit the results of this analysis 2 years prior to the period of extended operation. A proprietary version of this request was transmitted under a separate cover letter.

A response to the enclosed Request for Additional Information is needed before the U.S. Nuclear Regulatory Commission staff can complete the review. This request was discussed with Mr. Tom Hess of your staff on June 15, 2012, and it was agreed that TVA would respond within 30 days of issuance of this letter. If you have any questions, please contact me at (301) 415-2315.

Sincerely

/RA/

Eva A. Brown, Senior Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-259, 50-260, and 50-296

Enclosure:
Request for Additional Information

cc w/enclosure: Distribution via ListServ

REQUEST FOR ADDITIONAL INFORMATION

CORE PLATE HOLD DOWN BOLT STRESS ANALYSIS

PERFORMED TO ADDRESS LICENSE RENEWAL COMMITMENT

TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2, AND 3

DOCKET NOS. 50- 259, 50-260 AND 50-296

1. Provide the details of the fast neutron fluence that the core plate hold down bolts have seen to date and the evaluation that was used to determine projected total fast neutron fluence for a 60-year life of each unit. This should include the assumptions made in performing the projection taking into account both approved and submitted power uprates for all three plants.

2. Provide a summary of the inspection history for the core plate hold down bolts from each unit. Justify any deviations from the inspection plan recommended in Boiling-Water Reactor Vessel Internals Program (BWRVIP)-25, "BWR Core Plate Inspection and Flaw Evaluation Guidelines."

3. Section 3.2.2 of the BWRVIP-25 report appears to indicate that wedges should be installed. If wedges are not installed, the core plate bolts need to be inspected to ensure adequate number of bolts are intact to prevent lateral displacement of the core plate.

   In the submittal Tennessee Valley Authority indicates that Browns Ferry Nuclear Plant, Units 1, 2, and 3 (BFN) did not install wedges, but elected to submit a plant-specific analysis, which is currently being reviewed by the staff. However, the licensee did not submit either the inspection method or inspection frequency that is to be used to monitor intergranular stress-corrosion cracking in the bolts. Per Section 3.2.2 of the BWRVIP-25, the inspection criteria, inspection method and inspection frequency shall be submitted with the structural analysis.

4. Section 5.0 of Enclosure 1 to June 15, 2011, letter (or the submittal) documents the loads and load combinations considered in the analysis of the BFN core plate hold down bolts. It was stated that [[_____ _____ _____ _____.]] However, the annulus pressurization (AP) due to a postulated circumferential pipe break at the reactor pressure vessel (RPV) nozzle safe-end interface weld or any nuclear steam supply system piping that penetrates the biological shield wall causes AP dynamic loading due to the mass and energy release into the annular cavity between the RPV and shield wall and into the drywell. This AP loading does not appear to be due to [[_____]] and may have an impact on the stress analysis of core plate bolts.

Enclosure

[[ ]]

5. Table 5-1 of Enclosure 1 to the submittal indicates that an acoustic (AC) load was imposed on the shroud as part of the structural analysis of the BFN core plate hold down bolts due to the AC effects resulting from a postulated recirculation suction line break event. However, no basis is provided for the [[ ]]

   With respect to the values outlined in [[ ]] confirm that the [[ ]] are consistent with those that have been previously approved for use at BFN and provide the applicable references documenting the regulatory acceptance of these values. Additionally, confirm that the values used for the aforementioned AC loads adequately consider the issues regarding potential AC load nonconservatisms raised in General Electric Hitachi Safety Information Communication SC 09-03, "Shroud Screening Criteria Reports."

6. Section 5.6 of Enclosure 1 to the submittal discusses the preload that was accounted for in the BFN core plate hold down bolt stress analysis. However, there is no discussion regarding the value of preload used or the basis for this value.

   State the value of the preload stress used in the analysis. Provide a justification for why the value of preload used in the analysis is representative of the condition of the hold down bolts at BFN. This justification should also demonstrate that the loss in preload due to fluence and [[ ]] as described in Section 5.0 of the submittal, has been adequately considered.

7. Section 5.7 of Enclosure 1 to the submittal provides a description of the friction factor [[ ]] It is indicated in this section that [[ ]] based on information contained in BWRVIP-51A, "[BWRVIP]: Jet Pump Repair Design Criteria," [[ ]]

   [[ ]]

8. Section 5.8 of Enclosure 1 to the submittal indicates that the effect of bolt preload loss due to fluence [[ ]]

   Address whether the [[ ]]

[redacted].]]

9. Section 7.1 of Enclosure 1 to the submittal states [[[redacted].]]

Based on the fact that the [[[redacted].]] provide a technical justification which demonstrates that [[[redacted]]] provides reasonable assurance that the BFN core plate hold down bolts will maintain their structural integrity under the BFN design basis loading cases.

10. Tables 7-1 and 7-2 of Enclosure 1 to the submittal present [[[redacted].]]

Address whether the core plate hold down bolts [[[redacted].]]

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