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

February 25, 2010

Mr. R. M. Krich
Vice President, Nuclear Licensing
Tennessee Valley Authority
3R Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

SUBJECT: BROWNS FERRY NUCLEAR PLANT UNIT 1 - WITHDRAWAL OF AN AMENDMENT REQUEST TO UTILIZE AREVA FUEL AND ASSOCIATED ANALYSIS METHODOLOGIES (TAC NO. ME2451)

Dear Mr. Krich:

By letter dated October 23, 2009, as supplemented by letter dated November 17, 2009, the Tennessee Valley Authority (TVA) submitted a license amendment request for Browns Ferry Nuclear Plant, Unit 1. The proposed amendment would add the AREVA NP analysis methodologies to the Technical Specifications list of approved methods to be used in determining the core operating limits. The purpose of this letter is to provide the results of the U.S. Nuclear Regulatory Commission (NRC) staff's acceptance review of this amendment request. The acceptance review was performed to determine whether there was sufficient technical information in scope and depth to allow the NRC staff to complete its detailed technical review. The acceptance review was also intended to identify whether the application had any readily apparent information insufficiencies in its characterization of the regulatory requirements or the licensing basis of the plant.

Consistent with Section 50.90 of Title 10 of the *Code of Federal Regulations* (10 CFR), an amendment to the license (including the Technical Specifications) must fully describe the changes requested, and following as far as applicable, the form prescribed for original applications. Section 50.34 of 10 CFR addresses the content of technical information required. This section stipulates that the submittal address the design and operating characteristics, unusual or novel design features, and principal safety considerations.

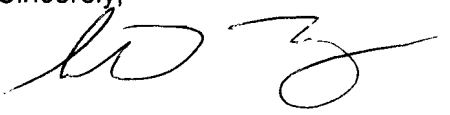
By letter dated February 2, 2010, TVA requested to withdrawal the application from NRC review. The NRC staff acknowledges TVA's request to withdraw the application. NRC staff activities on the review have ceased and the associated Technical Assignment Control number has been closed.

The NRC staff notes that its review to date has identified that TVA's application did not provide the information, delineated in the enclosure to this letter, in sufficient detail to enable the NRC staff to complete its detailed review. Therefore, if TVA decides to re-submit the amendment request, it must include the information in the enclosure.

No Notice of Consideration of Issuance of the proposed amendment has been published in the *Federal Register*.

If you have any questions, please contact me at (301) 415-1321.

Sincerely,



Stewart N. Bailey, Senior Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-259

Enclosure: As stated

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INFORMATION NEEDS IDENTIFIED DURING ACCEPTANCE REVIEW

AMENDMENT TO UTILIZE AREVA FUEL AND

ASSOCIATED ANALYSIS METHODOLOGIES

TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT, UNIT 1

DOCKET NO. 50-259

By letter dated October 23, 2009, as supplemented by a letter dated November 17, 2009, the Tennessee Valley Authority (TVA) submitted an amendment request for Browns Ferry Nuclear Plant, Unit 1. The proposed amendment would add the AREVA NP analysis methodologies to the list of approved methods to be used in determining the core operating limits. The U.S. Nuclear Regulatory Commission (NRC) staff performed an acceptance review of this request to determine whether there was sufficient technical information in scope and depth to allow the NRC staff to complete its detailed technical review. The acceptance review was also intended to identify whether the application had any readily apparent information insufficiencies in its characterization of the regulatory requirements or the licensing basis of the plant. The NRC staff concluded that additional information was necessary and, by letter dated December 23, 2009, requested supplemental information in 20 technical areas.

By letter dated January 15, 2010, TVA responded to the staff's request. The staff reviewed the supplemental information and determined that TVA still had not provided sufficient information in four areas to allow the staff to complete its technical review. These areas include questions 4, 6, 9, and 14 of the staff's letter dated December 23, 2009, as follows:

Question 4

In question 4, the staff asked TVA to address failure modes and effects for the automatic depressurization system (ADS) during postulated loss-of-coolant accidents (LOCAs), including high pressure coolant injection (HPCI) line breaks. TVA's January 15, 2010, supplement was not fully responsive to the staff's request. TVA identified that the ADS automatic actuation could be disabled by a single failure, and that a failure of the ADS could yield more limiting LOCA analysis results than those included in the license amendment request. TVA stated that additional analysis would be performed, taking credit operator action to initiate ADS, and the LOCA analyses would be supplemented in March 2010. Therefore, the January 15, 2010, supplement did not contain sufficient information on the LOCA analysis.

TVA's supplement also provided an evaluation of the high pressure coolant injection line break that is based on other injection line breaks, but a HPCI line break LOCA with a signal failure of the ADS would result in a total loss of high pressure emergency core cooling system. The staff believes that this postulated LOCA and single failure combination needs to be explicitly analyzed to demonstrate compliance with Title 10 of the *Code of Federal Regulations* (10 CFR) 50.46(a)(i).

Enclosure

Question 6

In question 6, the staff asked TVA to describe the method of determining the cold shutdown margin of the standby liquid control system. TVA's response provided much of the requested information; however, it was unresponsive to Item (d) and was incomplete in terms of addressing the applicability to GE14 fuel.

The response did not provide justification of the standby liquid control system shutdown margin accuracy. To initiate its review, the staff requires information justifying of the acceptance criterion. The January 15, 2010, supplement did not address the following sources of uncertainty:

- operation of the plant that is different than projected
- fuel manufacturing tolerances
- methodology approximations
- inexact tracking of the actual plant parameters
- depletion of absorber material in control blades

The uncertainty for the control blade depletion is relevant because the generic analysis method may be applied for conditions where control blades are partially inserted, in accordance with the description provided in the January 15, 2010, supplement.

The supplement also did not provide or justify any assumptions regarding GE14 manufacturing tolerances, and did not describe how the Technical Specification (TS) limit and the associated method uncertainties are incorporated in the acceptance criterion.

Question 9

In question 9, the staff requested supplemental information on the Core Operating Limits Report (COLR) Reference Section of the TSs. Specifically, the staff asked about several AREVA licensing topical reports that the staff expected to be listed in this section. TVA's supplement was generally responsive; however, the absence of the stability analysis methods (i.e., STAIF and RAMONA5-FA) does not appear to be consistent with the reload licensing analysis process at Browns Ferry Unit 1.

The Boiling Water Reactor Owners' Group long term stability (LTS) detect and suppress solution (DSS) at Browns Ferry Unit 1 is based on Option III. This LTS DSS requires the specification of cycle-specific oscillation power range monitor (OPRM) setpoints. The Period Based Detector Algorithm setpoints and the Delta per Initial Critical Power Ratio versus Oscillation Magnitude slope are generally determined using cycle-specific analyses. Additionally, the Option III Backup Stability Protection generally requires the calculation of an exclusion region based on the STAIF code. This approach appears inconsistent with the proposed TS revision.

The OPRM setpoints are directly tied to the safety limits because the OPRM provides automatic protective action, during instabilities, to assure that the safety limit minimum critical power ratio is not exceeded. Thus, the OPRM setpoints are limiting safety system settings subject to 10 CFR 50.36(c)(1)(ii)(A). Therefore, cycle-specific parameter limits are within the scope of Generic Letter 88-16 and need to be included in the TSs and COLR, accordingly.

The supplementary information was unresponsive to the staff concern. The supplement confirms that the regulatory basis for the proposed change does not appropriately treat 10 CFR 50.36 requirements.

Question 14

The supplemental response to request Question 14 did not address the staff's question.

The staff asked TVA to specifically describe how differences in bundle fuel mass are accounted for in the parameterized function. The response does not provide details as to how gross changes in bundle fuel mass are taken into account or how modern fuel geometries (e.g., GE14) are taken into account. The figure of merit in the analysis is the enthalpy change as measured in units of calories per gram. The response references studies performed by AREVA to demonstrate the conservatism in the application of the parameterized function to newer fuel designs (e.g., 8X8, 9X9, and 10X10 designs); however, these studies have not been provided to the staff.

No Notice of Consideration of Issuance of the proposed amendment has been published in the *Federal Register.*

If you have any questions, please contact me at (301) 415-1321.

Sincerely,

/RA/

Stewart N. Bailey, Senior Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
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