Tennessee Valley Authority, Post Office Box 2000, Decatur, Alabama 35609-2000

April 14, 2003

TVA-BFN-TS-421

10 CFR 50.90

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop: OWFN P1-35
Washington, D.C. 20555-0001

Gentlemen:

| | | |
|---|---|---|
| In the Matter of | ) | Docket Nos. 50-259 |
| Tennessee Valley Authority | ) | 50-260 |
| | | 50-296 |

**BROWNS FERRY NUCLEAR PLANT (BFN) - UNITS 1, 2, AND 3 - TECHNICAL SPECIFICATIONS (TS) CHANGE 421 - FRAMATOME FUEL DESIGN AND STORAGE - SUPPLEMENTAL INFORMATION**

This letter is in response to a March 10, 2003, teleconference with NRC staff regarding proposed BFN TS change 421, which was submitted on February 13, 2003. The proposed amendment revises TS 4.2.1, Fuel Assemblies, to modify the fuel design description to encompass Framatome Advanced Nuclear Power fuel assemblies and also modifies TS 4.3, Fuel Storage, to remove nomenclature specific to Global Nuclear Fuels (GNF) fuel storage criticality analysis methods. The TS-421 changes are needed to take receipt of Framatome fuel assemblies in the Fall of 2003. In the teleconference, NRC requested supplemental justification for the proposed change to TS 4.3 related to the removal of GNF-specific fuel storage criticality criteria. Please refer to the Enclosure to this letter for the TVA response.

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TVA has determined this supplemental information does not change the determination in the February 13, 2003, TS-421 submittal that there are no significant hazards considerations associated with the proposed change and that the TS change qualifies for a categorical exclusion from environmental review pursuant to the provisions of 10 CFR 51.22(c)(9). Additionally, in accordance with 10 CFR 50.91(b)(1), TVA is sending a copy of this letter and the Enclosure to the Alabama State Department of Public Health.

There are no regulatory commitments associated with this submittal. This letter is being sent in accordance with NRC Regulatory Issue Summary 2001-05, Guidance on Submitting Documents to the NRC by Electronic Information Exchange or on CD-ROM. If you have any questions about this submittal or TS-421, please contact me at (256) 729-2636.

I declare under penalty of perjury that the foregoing is true and correct. Executed on April 14, 2003.

Sincerely,

T. E. Abney
Manager of Licensing
and Industry Affairs

Enclosure:
Supplemental Justification

cc: (Enclosure)
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s:lic/submit/TechSpec/TS 421 Supplemental Justification

Enclosure

# Technical Specifications (TS) Change 421
# Framatome Fuel Design And Storage

## Browns Ferry Nuclear Plant (BFN)
## Units 1, 2, and 3

## Supplemental Justification

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Criticality criteria for the spent fuel storage racks and new fuel storage racks are provided in Sections 3.6.6, "Reactivity of Fuel in Storage," 10.2, "New Fuel Storage," and 10.3, "Spent Fuel Storage," of the BFN Updated Final Safety Analysis Report (UFSAR). The spent fuel racks are commonly referred to as the fuel pool storage racks, and are used for the storage of spent fuel and temporary storage of new fuel prior to placement in the reactor. For the fuel pool racks, the UFSAR criticality criterion is that the effective multiplication factor will be $\leq$0.95. This criterion is reiterated in TS 4.3.1.1.b. The UFSAR criticality criteria for the new fuel racks is $\leq$0.90/0.95 for dry/wet conditions and is reiterated in TS 4.3.1.2.b and 4.3.1.2.c. This multiplication factor criticality criteria has been in BFN TS since 1978.

In July 1998, two new K-infinity TS provisions (TS 4.3.1.1.a and 4.3.1.2.a) were added to the fuel storage TS when the BFN custom TS were converted to Standard TS (STS) format. BFN's practice during the conversion effort was to, whenever practical, adopt NUREG-1433 model STS provisions, which include the subject K-infinity criteria.

As explained in Section 3.5 of NEDE-24011-P-A-14, "General Electric (GE) Standard Application for Reactor Fuel," June 2002, the K-infinity criteria in TS 4.3.1.1.a and 4.3.1.2.a are the uncontrolled lattice K-infinity criteria used in the Global Nuclear Fuels (formerly GE) criticality methodology to ensure the storage rack multiplication factor criteria (TS 4.3.1.1.b, 4.3.1.2.b, and 4.3.1.2.c) are satisfied for GE fuel types. The addition of this K-infinity methodology criteria was not a problem in 1998 since, at the time, only GE fuel was being used at BFN. Further, the TS addition was in keeping with BFN's goal to incorporate STS model TS.

With regard to Boiling Water Reactor (BWR) fuel criticality calculations, fuel vendors perform lattice calculations based on the maximum reactivity of their own fuel. This is a conservative approach since the analysis demonstrates that the effective multiplication factor acceptance criteria is met assuming an infinite lattice of their most reactive bundles. Since the vendor analyses are based on their own highest reactivity bundle type, the criticality analyses are independent of the presence of other vendors fuel in storage. As discussed in the March 10, 2003, TS-421 submittal, Framatome Advanced Nuclear Power (FANP) fuel storage criticality methodology involves an in-rack analysis approach as opposed to GE's in-core K-infinity analysis method. Both approaches are technically satisfactory, however, TS 4.3.1.1.a and 4.3.1.2.a, if unchanged, would create a TS incongruity since the GE K-infinity criteria is not used by FANP.

If the GE K-infinity criteria were to be retained, a distinction would need to be made that TS 4.3.1.1.a and 4.3.1.2.a apply only to GE fuel. However, a review of TS from the several BWR plants that already use both GE and FANP fuel showed it was not customary to have the vendor specific acceptance criteria in TS (i.e., these plants did not have the equivalent of STS 4.3.1.1.a and 4.3.1.2.a in their TS). So, for consistency with other mixed fuel plants, it was determined that TS 4.3.1.1.a and 4.3.1.2.a should be eliminated, which would make TS 4.3.1 compatible with the storage of both GE and FANP fuel. This approach was proposed in TS-421 and has the net effect of returning to the BFN fuel storage TS to those that existed prior to STS conversion.

With the proposed elimination of these two provisions, TS 4.3.1.1.b, 4.3.1.2.b, and 4.3.1.2.c remain in force and adequately specify the pertinent baseline UFSAR fuel storage multiplication factor criticality requirements for GE or FANP fuel storage. Additionally, the GE K-infinity criteria will be retained in UFSAR Section 3.6.6 as the licensing basis for the storage of GE fuel. Therefore, the deletion of 4.3.1.1.a and 4.3.1.2.a, as proposed in TS-421, does not reduce BFN's licensing commitments regarding fuel storage and is, therefore, acceptable.