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

July 22, 1992

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

Tennessee Valley Authority
ATTN: Dr. Mark O. Medford, Vice President
Nuclear Assurance, Licensing and Fuels
3B Lookout Place
1101 Market Street
Chattanooga, Tennessee 37402-2801

Dear Dr. Medford:

SUBJECT: TVA APPROACH FOR ADDRESSING INTER-UNIT DEPENDENCIES AS PART OF THE INDIVIDUAL PLANT EXAMINATION FOR THE BROWNS FERRY NUCLEAR PLANT (TAC NOS. M74384, M74385, AND 74386)

By letter dated February 7, 1992, the Tennessee Valley Authority (TVA) submitted its approach for addressing staff concerns regarding the potential impact of system interactions between units during various multi-unit operating modes on the effectiveness of the Individual Plant Examination (IPE) process to identify all significant probabilistic risk vulnerabilities at the Browns Ferry Nuclear Plant (BFN). In its letter, TVA committed to perform an expanded probabilistic risk assessment (PRA) that focused on 10 selected shared systems during the most limiting multi-unit operating mode (i.e., all three units operating). On May 28, 1992, the staff met with TVA to discuss the implications of the February 7th submittal.

Enclosed for TVA's consideration are staff comments regarding TVA's expanded approach to the IPE process as described in the February 7, 1992 submittal, and subsequently discussed at the meeting on May 28, 1992. In general, from a qualitative perspective, TVA's proposed approach appears to be responsive to staff concerns raised in previous correspondence, in that inter-unit dependencies through shared systems should be considered in analyzing severe accident sequences. However, as discussed in the May 28, 1992 meeting with TVA, their proposal is based on certain critical assumptions that explicitly limit their expanded PRA to only ten shared systems, for just two initiating events, during the singular operating configuration of all three units at full power. Detailed justification for these types of limitations should be provided in TVA's expanded IPE submittal for BFN. These and other areas where TVA should provide additional supporting information as part of their expanded IPE submittal are outlined in the enclosure.

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TVA's commitment to submit a summary report of its expanded PRA results prior to the restart of Unit 3 is acceptable. The staff further agrees that this report need not be considered as a prerequisite for the restart of Unit 3. However, TVA is requested to formally notify the staff if its schedule should slip beyond the end of 1993 and to provide an updated completion date.

This requirement(s) affects 9 or fewer respondents and, therefore, is not subject to Office of Management and Budget review under P. L. 96-511.

Sincerely,

Thierry M. Ross, Senior Project Manager
Project Directorate II-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosure:
As stated

cc w/enclosure:
See next page

*SEE PREVIOUS CONCURRENCE

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DATE	7/22/92	7/22/92	7/21/92	7/22/92	7/22/92

Tennessee Valley Authority
ATTN: Dr. Mark O. Medford

cc:
Mr. John B. Waters, Director
Tennessee Valley Authority
ET 12A
400 West Summit Hill Drive
Knoxville, Tennessee 37902

Mr. J. R. Bynum, Vice President
Nuclear Operations
3B Lookout Place
1101 Market Street
Chattanooga, Tennessee 37402-2801

Mr. R. R. Baron, Site Licensing Manager
Browns Ferry Nuclear Plant
Tennessee Valley Authority
P.O. Box 2000
Decatur, Alabama 35602

Mr. O. J. Zeringue, Vice President
Browns Ferry Nuclear Plant
Tennessee Valley Authority
P.O. Box 2000
Decatur, Alabama 35602

Mr. M. J. Burzynski, Manager
Nuclear Licensing and Regulatory Affairs
5B Lookout Place
Chattanooga, Tennessee 37402-2801

TVA Representative
Tennessee Valley Authority
11921 Rockville Pike
Suite 402
Rockville, Maryland 20852

General Counsel
Tennessee Valley Authority
ET 11H
400 West Summit Hill Drive
Knoxville, Tennessee 37902

Chairman, Limestone County Commission
P.O. Box 188
Athens, Alabama 35611

Claude Earl Fox, M.D.
State Health Officer
State Dept. of Public Health
State Office Building
Montgomery, Alabama 36130

Regional Administrator
U.S.N.R.C. Region II
101 Marietta Street, N.W.
Suite 2900
Atlanta, Georgia 30323

Mr. Charles Patterson
Senior Resident Inspector
Browns Ferry Nuclear Plant
U.S.N.R.C.
Route 12, Box 637
Athens, Alabama 35611

Enclosure

NRC COMMENTS REGARDING THE TENNESSEE VALLEY AUTHORITY'S PROPOSED INDIVIDUAL PLANT EXAMINATION APPROACH TO ADDRESS INTER-UNIT DEPENDENCIES

In a letter dated June 28, 1991, the staff concluded that commitments made by the Tennessee Valley Authority (TVA) for performing an Individual Plant Examination (IPE) of the Browns Ferry Nuclear Plant (BFN) "appears to be in accordance with the information currently requested by GL 88-20 and its supplements". However, in this and other correspondence, the staff expressed some specific concerns regarding how TVA was going to address inter-unit dependencies. In response to these concerns TVA proposed to expand its IPE process, as described in its letter of February 7, 1992. Additionally, TVA met with the staff on May 28, 1992 to discuss the rationale and specific details of their proposed approach for addressing staff concerns.

The staff has reviewed TVA's proposed approach of February 7, 1992, as clarified during the meeting of May 28, 1992, and concludes that this approach is responsive to staff concerns. However, the staff does have some substantive comments germane to TVA's proposal.

In general, it is important to note that the IPE program is not based on merely submitting a specific set of information for the purpose of "complying" with GL 88-20. Rather, the analysis made and the information provided should be sufficient to demonstrate that a thorough and comprehensive individual plant examination has been performed to purposefully discover previously unrecognized vulnerabilities to severe accidents. This process would also include a structured approach for implementing cost effective plant modifications that may be necessary in order to minimize the risk significance of identified vulnerabilities.

Specific areas that the staff believes need to be addressed by TVA are outlined below.

- TVA assumes that BFN Units 1 and 3 are sufficiently similar to Unit 2, so that a Level 1 Probabilistic Risk Assessment (PRA) and limited containment analysis of Unit 2 will be applicable to Units 1 and 3. The BFN IPE should justify this assumption.

- TVA is committed to submit a BFN IPE based on Unit 2 operating, while Units 1 and 3 are shut down, by September 1992. A subsequent submittal is to include an expanded PRA that addresses all three units in operation. The expanded PRA is to include the consideration of ten shared systems and their effect on Unit 2 core damage frequency in the event of either a loss of offsite power or a loss of plant air.

The expanded PRA approach involves three major assumptions. First, it is assumed that analyses of the ten selected shared systems are sufficient to cover all significant vulnerabilities associated with BFN systems. Second, the assumption is made that the analysis can be limited to the two selected initiating events on the basis that they lead directly to the automatic shutdown of all three units. Third, the identification and assessment of plant vulnerabilities is to be made assuming all three units are in operation, this presumes that three units operating is a bounding configuration and no significant vulnerabilities exist associated with other site operating mode configurations (e.g., two units at power).

Each of these assumptions need to be justified. It is important to look systematically at all shared systems, and to provide a basis for those that are eliminated. Similarly, all initiators need to be evaluated and the basis for eliminating any of them should be explained. Furthermore, the effect of operations and conditions in shut down units on operating units, through the shared systems, needs to be evaluated.

In summary, the licensee should provide sufficient information in their IPE submittals so that the staff may conclude, with reasonable assurance, that TVA has performed an adequate analysis of the design and operation of the entire plant for the purpose of identifying vulnerabilities to core melt or unusually poor containment performance, given a core melt accident.

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