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JUN 18 1992

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Gentlemen:

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

BROWNS FERRY NUCLEAR PLANT (BFN) - HEATING, VENTILATION AND AIR
CONDITIONING (HVAC) SEISMIC DESIGN CRITERIA - RESPONSE TO REQUEST FOR
ADDITIONAL INFORMATION

- References:
1. TVA letter dated November 15, 1991, Heating Ventilation and Air Conditioning (HVAC) Seismic Design Criteria
 2. TVA letter dated May 6, 1992, Heating, Ventilation and Air Conditioning (HVAC) Seismic Design Criteria, Response to Request For Additional Information

This letter provides clarification regarding revisions to BFNs Seismic Design Criteria for Class I HVAC duct and supports. This information is being submitted to address staff questions.

BFN submitted Seismic Design Criteria for ductwork and supports of Class I HVAC systems (BFN-50-C-7104 Revision 6) in reference 1 as a post restart TVA Nuclear Performance Plan commitment. TVA met with the staff on January 23, 1992, at NRC headquarters in Rockville, Maryland to support technical review of the criteria. Subsequently, BFN and the staff technical reviewer(s) held several teleconferences to resolve emergent technical questions. As a result of the meeting and teleconferences mentioned above, TVA agreed to revise specific sections of the Class I HVAC seismic design criteria. Reference 2 identified the sections revised and provided a summary of the revisions. However, the staff requested that the specific revised sections be submitted for their review.

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The Enclosure to this letter identifies the staff questions/requests and provides the corresponding revised section(s) to the BFN Class I HVAC Seismic Design Criteria. The revised criteria, BFN-50-C-7104, Revision 7, in its entirety, is available for review at the TVA Rockville, Maryland office. TVA considers that the information requested by NRC has been provided and requests the issuance of a supplemental Safety Evaluation Report.

There are no new commitments contained in this letter. If you have any questions, contact R. R. Baron, Manager of Site Licensing, at (205) 729-7566.

Sincerely,



O. J. Zeringue

Enclosure

cc: (Enclosure)
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ENCLOSURE

BROWNS FERRY NUCLEAR PLANT
HEATING, VENTILATION AND AIR CONDITIONING (HVAC)
SEISMIC DESIGN CRITERIA

1. NRC Question

Clarify section 1.3.1.3 of the Class I HVAC Seismic Design Criteria (BFN-50-C-7104) with respect to the methodology for summation of two sets of seismic forces.

TVA Response

Section 1.3.1.3 of the Class I HVAC Seismic Design Criteria has been revised to more clearly explain the methodology to be used in the determination of the resultant of two sets of loading combinations. The revised section reads as follows:

1.3.1.3 "Design and evaluation of the ductwork shall be performed using the Housner Response Spectra from the Master Acceleration Response Spectra (MARS) Report (Reference 1.9.8). Seismic forces from the vertical and each of the two orthogonal horizontal earthquake components, i.e., East-West and North-South, will be determined. The seismic design of the duct and supports will be based on forces from an earthquake with the vertical and one of the horizontal components. The governing resultant seismic forces shall be the larger of the absolute sums (ABS) of the vertical with one of the horizontal component earthquake forces."

2. NRC Question

Does the Class I HVAC Seismic Criteria adequately accommodate normal operating and accident load combinations (excluding earthquake loads)?

TVA Response

Section 1.6 on page I-7, Section 1.7.1 on page I-8, and paragraph 1 of Section 1.8.1 on page I-9 of the Class I HVAC Seismic Design Criteria have been revised to require evaluation for normal operating conditions and to specify allowables to be used in the evaluation. The revised sections read as follows:

1.6 DESIGN LOADING COMBINATIONS FOR DUCTWORK AND SUPPORTS

"Ductwork and supports shall be designed for normal and emergency loading conditions. In general, the normal condition consists only of dead load, and the emergency condition is the combination of dead load and DBE (SSE) seismic loads.

For ductwork exposed to weather, it may be necessary to consider additional loads due to weather effects such as wind or tornado depressurization.

All loading combinations shall be by absolute sum (ABS)."

TVA Response (continued)

1.7.1 Bending

"Bending stresses in ductwork shall be limited to the following allowables:

Rectangular duct: 8000 psi, normal condition
12000 psi, emergency condition

Round duct: 10000 psi, normal condition
15000 psi, emergency condition"

1.8.1 Allowable Stresses for Supports

"Allowable stresses for normal condition loads for structural steel, connection bolts, and welds shall be as specified in the AISC manual (Reference 1.9.7). These allowables may be increased by 1.5 for emergency condition loads. However, in no case shall allowables after the increase exceed 90 percent of the specified minimum yield stress for steel for tension and bending, 90 percent of critical buckling for axial compression, or $0.9 F_y/\sqrt{3}$ for shear, including shear on base metal for welded connections."