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SUBJECT: Forwards response to 880726 ltr re seismic program interim operability criteria safety evaluation open item & concerns.

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AUG 23 1988

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

Gentlemen:

In the Matter of)
Tennessee Valley Authority)

Docket No. 50-260


BROWNS FERRY NUCLEAR PLANT (BFN) - RESPONSE TO SEISMIC PROGRAM INTERIM OPERABILITY CRITERIA SAFETY EVALUATION OPEN ITEMS AND CONCERNS (TAC 00023, 00296, 00299, 00302)

This letter provides TVA's response to your letter from S. Black to S. A. White, dated July 26, 1988. In your letter, TVA was requested to provide within 30 days a submittal addressing: (1) consideration of the tangential component of the relative seismic displacement between the two ends of the radial platform support beam in the platform evaluation; (2) the use of $F_y/(0.75 \times 2.3)$ as the interim allowable stress for conduit; and (3) buckling criteria for aluminum conduits and HVAC ductwork. In addition, TVA was also requested to address the staff's other concerns as discussed in Section 3.0 of the Safety Evaluation. TVA's response to each of these open items and concerns is provided as Enclosure 1 to this letter. In addition, TVA has provided comments to Section 2.0 of the Safety Evaluation as Enclosure 2 to this letter. A listing of commitments made in this submittal is provided as Enclosure 3 to this letter.

Please refer any question regarding this submittal to M. J. May, Manager, BFN, Site Licensing, (205) 729-3570.

Very truly yours,

TENNESSEE VALLEY AUTHORITY


R. Grädley, Manager,
Nuclear Licensing and
Regulatory Affairs

Enclosures
cc: See page 2

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U.S. Nuclear Regulatory Commission

AUG 23 1988

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ENCLOSURE 1
RESPONSE TO SAFETY EVALUATION
OPEN ITEMS AND CONCERNS

Safety Evaluation Section 3.1 - Lower Drywell Steel Platforms

NRC Concern:

"Establish a project procedure for the control of additional loads that might be imposed to the platforms resulting from modification activities during plant operation to justify the use of a live load $L = 0$ in the restart evaluation."

TVA Response:

Procedure 2-GOI-200-2 "Drywell Close Out" ensures that trash, loose tools or equipment, scaffolding, and temporary hoses, lighting and shielding are removed from the drywell before drywell closure. After drywell closure, the drywell is inerted with nitrogen and as such no modification activity, and thus no live load, can occur during plant operation.

NRC Concern:

"Justify, under the DBVP program, that the exclusion of the jet impingement load Y_j does not constitute a violation of the FSAR requirements for lower steel platforms."

TVA Response:

It is TVA's understanding that NRC will identify this concern in the Inspection Report from the April 18-22, 1988 review of Browns Ferry's Design Baseline Verification Program. TVA will respond to open items which are identified in that Inspection Report.

NRC Concern:

"Include the tangential component of the relative seismic displacement between the two ends of the radial platform support beams in the platform restart evaluation."

TVA Response:

TVA will evaluate the effect of the tangential component of the relative seismic displacement between the two ends of the radial platform support beams before restart. Based on our initial assessment, TVA feels that the overall structural integrity of the platform steel will not be adversely affected.

NRC Concern:

"In addition, as a post-restart item, TVA is required to address the adequacy of applying the 1978 edition of the AISC Specification for the restart evaluation of the platforms with respect to the FSAR design criteria which were based on the 1963 AISC Specification."

TVA Response:

TVA will, as a post-restart item, address the adequacy of applying the 1978 edition of the American Institute of Steel Construction (AISC) specification with respect to the Final Safety Analysis Report (FSAR) design criteria which were based on the 1963 AISC specification.

Safety Evaluation Section 3.2 - Miscellaneous Steel

NRC Concern:

"Consideration of the tangential component of the relative seismic displacement between the two ends of the radial platform support beams in the restart evaluation of the upper steel platform."

TVA Response:

The upper steel platforms are cantilevered off the sacrificial shield wall and therefore have no restraint from the drywell wall on the opposite end of the radial beams. Subsequently, there are no relative seismic displacements associated with the upper drywell platforms.

Safety Evaluation Section 3.3 - Electrical Conduit and Conduit Supports

NRC Concern:

"The use of $2.0 \times F_y / (0.75 \times 2.3)$ as the interim allowable stress for conduit is not acceptable. TVA should use the allowable accepted for SQN 2 restart, $F_y / (0.75 \times 2.3)$."

TVA Response:

TVA contends that the use of $2.0 \times F_y / (0.75 \times 2.3)$ is an acceptable stress level for the purposes of restart. This is based upon the following:

1. This stress allowable is equivalent to the operability stress criteria for piping. This allowable is less than $0.7F_u$ which has been allowed for steel structures.
2. This stress allowable is equivalent to the faulted requirements as specified in the American Society of Mechanical Engineers (ASME) Code, 1986 Subsection ND3653 and Subsection ND3655.

NRC Concern:

"TVA should provide buckling criteria for aluminum conduits."

TVA Response:

TVA does not consider a buckling evaluation of aluminum conduit to be a standard design practice nor a critical failure mode. Full scale shaker table tests have been performed on aluminum conduit at seismic levels in excess of twice the BFN design basis earthquake and no failures were observed due to buckling of conduit.

Safety Evaluation SE Section 3.4 - HVAC Ductwork and Supports

NRC Concern:

The staff found the interim criteria for the HVAC ductwork and duct supports acceptable, pending TVA's submittal of buckling criteria for the ductwork.

TVA Response:

Browns Ferry's HVAC ductwork was originally designed and built to Sheet Metal and Air Conditioning National Association (SMACNA) standards. The current SMACNA standards, and the SMACNA standards at the time BFN was licensed for operation, do not require an evaluation for buckling. TVA's initial assessment is that an evaluation for buckling will not yield any additional modifications beyond that which would be required to meet the existing design criteria. TVA will perform a study to verify the adequacy of the original design criteria before restart.



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ENCLOSURE 2
COMMENTS ON SAFETY EVALUATION - SECTION 2.0

Section 2.1 - Drywell Access Steel Platforms

Subparagraph 2.1 d states "During the May 18, 1988 meeting, TVA committed to combine these dynamic reactions on an absolute sum basis, regardless of their phase relationship."

TVA Comment:

As committed to in the meeting, TVA will, before restart, revise the operability criteria to reflect that the absolute summation of loads was utilized, for the restart evaluation of the Drywell Access Steel Platforms. However, TVA plans to utilize phasing of the seismic loads for it's long-term evaluation of the drywell platforms and will reflect this in the long-term criteria.

Section 2.2 - Miscellaneous Steel

Subparagraph 2.2a states that the interim criteria for the structural members is acceptable.

TVA Comment:

The criteria utilizes $0.9F_{cr}$, whereas the safety evaluation refers to $0.8F_{cr}$. It appears that $0.8F_{cr}$ in the safety evaluation was a typographical error. TVA requests NRC concurrence that $0.9F_{cr}$ is acceptable for the interim criteria.

ENCLOSURE 3
LISTING OF COMMITMENTS

- 1) TVA will evaluate the effect of the tangential component of the relative seismic displacement between the two ends of the radial platform support beams before restart.
- 2) TVA will, as a post-restart item, address the adequacy of applying the 1978 edition of the AISC specification with respect to the FSAR design criteria which were based on the 1963 AISC specification.
- 3) TVA's initial assessment is that an evaluation for HVAC buckling will not yield any additional modifications beyond that which would be required to meet the existing design criteria. TVA will perform a study to verify the adequacy of this original design criteria before restart.