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SUBJECT: Requests review of Lead Civil Engineer Instruction BFEP-TI-C3, "Operability Criteria for Misc Steel."

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U.S. Nuclear Regulatory Commission
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Gentlemen:

In the Matter of)
Tennessee Valley Authority)

Docket Nos. 50-260

BROWNS FERRY NUCLEAR PLANT (BFN) - SEISMIC QUALIFICATION OF MISCELLANEOUS STEEL - (NRC TAC NO. 00296)

This letter describes the BFN program for the seismic qualification of miscellaneous steel. This letter supplements the information provided by section III.3.9 of revision 1 to the BFN Performance Plan which was transmitted by S. A. White's letter dated July 1, 1987 and by my letters dated March 10, 1988 and April 28, 1988. This letter incorporates resolutions to the NRC staff's concerns as discussed in our meeting, dated May 18, 1988.

Enclosure 1 to this letter describes the BFN program for resolving this issue. Enclosure 2 to this letter is the interim operability criteria for miscellaneous steel, revision 2. TVA requests your review of this program and the issuance of a written statement documenting the programs acceptability.

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

Very truly yours,

TENNESSEE VALLEY AUTHORITY

R. Gridley, Director
Nuclear Licensing and
Regulatory Affairs

Enclosures
cc: See page 2

D030

U.S. Nuclear Regulatory Commission

MAY 26 1988

cc (Enclosures):

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ENCLOSURE 1

TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT
UNIT 2
MISCELLANEOUS STEEL

This report gives TVA's plan to demonstrate the adequacy of miscellaneous steel.

Issue

A corrective action report identified discrepancies between the as-constructed condition and design drawings for miscellaneous steel framing that was used for supporting pipes. Additionally, there was not adequate assurance that the miscellaneous steel framing was analyzed to confirm structural adequacy.

Background

Miscellaneous steel was installed based on typical framing details which were intended primarily for engineered and field-routed piping supports although HVAC, conduit, and cable tray supports may have been attached. This typical framing is not part of the plant's main structural support framing or structural features such as stairways or equipment access platforms.

Corrective Action Report 85-059 identified weld and steel details that were not on drawings. Investigation of this CAR identified generic deficiencies that included installation of miscellaneous steel without documentation on drawings, modifications to steel without drawing update, load changes, or additions that were not evaluated and no engineering documentation for miscellaneous steel framing details.

Resolution

To address the concerns regarding miscellaneous steel framing, an evaluation program was initiated to review miscellaneous steel consistent with the IE Bulletin 79-14 and torus piping programs. The present scope of this program includes approximately 350 miscellaneous steel frames.

For each of the frames that are being evaluated, a walkdown for attachments will be performed. Using loads from the appropriate program, the miscellaneous steel structures will be qualified to design criteria requirements and modifications will be prioritized based on an interim operability criteria similar to that used for large bore pipe supports. The large bore operability criteria is similar to that used on Sequoyah Nuclear Plant-Unit 2. For a comparison of the Sequoyah and Browns Ferry operability criteria, see table 1. Miscellaneous steel which does not meet the design criteria, but is within the interim operability criteria, will be modified to meet the design criteria prior to restart from the next refueling outage. The miscellaneous steel which does not meet the interim operability criteria will be modified to meet the design criteria unless specifically requested and approved by NRC on a case by case basis prior to restart.

The Long-Term Torus Integrity Program has been completed. The framing which supports the piping analyzed under the torus program has 75 supports and is being evaluated to determine its as-constructed acceptability. Any modifications to the torus framing will be evaluated for generic implications to the entire scope of miscellaneous steel framing.

The balance of the miscellaneous steel will be evaluated concurrently with the IE Bulletin 79-14 program. As support loads are developed for the IE Bulletin 79-14 program, the associated miscellaneous steel will be evaluated.

The FSAR commits that systems supported by miscellaneous steel remain functional under seismic loadings. The design criteria for miscellaneous steel are consistent with the requirements of the FSAR.

Licensing Issues

Issue:

The schedule for the evaluation of the miscellaneous steel will be consistent with the ongoing IE Bulletin 79-14 program. Modifications will be prioritized based on an interim operability criteria.

Justification:

The use of the operability criteria to prioritize modifications is acceptable, since the structural adequacy and system function will be maintained. The piping analyzed under the torus program provides a critical case evaluation, since the loads changed significantly due to the Mark I hydrodynamic loads. Modifications resulting from the walkdown and structural adequacy reviews will be evaluated for generic implications.

The miscellaneous steel qualification program is comprehensive and assures that the steel framing is acceptable. Modifications required to meet design criteria will be implemented prior to start up after the next refueling outage.

ENCLOSURE 1

TABLE 1

BROWNS FERRY UNIT 2
COMPARISON OF OPERABILITY CRITERIA
TECHNICAL ATTRIBUTES

TECHNICAL ATTRIBUTES	BROWNS FERRY UNIT 2 MISC STEEL OPERABILITY CRITERIA	SEQUOYAH UNIT 2 OPERABILITY CRITERIA
ALLOWABLE STRES TENSION - AXIAL AND BENDING	SMALLER OF $1.2F_Y$ OR $0.7F_U$	SMALLER OF $1.2F_Y$ OR $0.7F_U$
ALLOWABLE STRESS COMPRESSION - AXIAL AND BENDING	$0.9F_{CR}$	$0.9F_{CR}$
ALLOWABLE STRESS SHEAR	SMALLER OF $0.72F_Y$ OR $0.42F_U$	SMALLER OF $0.72F_Y$ OR $0.42F_U$
ALLOWABLE BOLT STRESS (TENSION)	$F_{Y\ MIN}$ OR $0.7F_U$ WHEN $F_{Y\ MIN}$ IS NOT SPECIFIED	$F_{Y\ MIN}$
CONCRETE EXPANSION ANCHORS FACTOR OF SAFETY WEDGE AND SHELL TYPE ANCHORS	FACTOR OF SAFETY - 2 FOR ALL ANCHORS	FACTOR OF SAFETY - 2 FOR ALL ANCHORS