

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

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MAY 01 1989

WBRD-50-390/87-20
WBRD-50-391/87-24

10 CFR 50.55(e)

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

Gentlemen:

In the Matter of the Application of)
Tennessee Valley Authority)

Docket Nos. 50-390
50-391

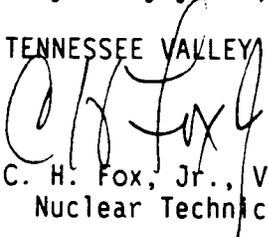
WATTS BAR NUCLEAR PLANT (WBN) UNITS 1 AND 2 - DEFICIENCIES IN THE DESIGN OF
THE HYDROGEN RECOMBINER ACCESS PLATFORM AND STEAM GENERATOR LOWER LATERAL
SUPPORT - WBRD-50-390/87-20 AND WBRD-50-391/87-24 - SECOND INTERIM REPORT

The subject deficiency was initially reported to NRC Region II Inspector Steve Elrod on October 22, 1987, in accordance with 10 CFR 50.55(e) as Condition Adverse to Quality Reports (CAQRs) WBP 870759 and WBP 870760 for unit 1. CAQRs WBP 871084 and WBP 871174 were subsequently initiated to document the deficiency for unit 2. Our interim report was submitted to NRC on November 25, 1987. Enclosure 1 contains our second interim report. Enclosure 2 contains all new commitments made in this submittal. We expect to submit our final report on or about November 30, 1989.

If there are any questions, please telephone G. R. Ashley at (615) 365-8527.

Very truly yours,

TENNESSEE VALLEY AUTHORITY


C. H. Fox, Jr., Vice President and
Nuclear Technical Director

Enclosures
cc: See page 2

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U.S. Nuclear Regulatory Commission

MAY 01 1989

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ENCLOSURE 1

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
DEFICIENCIES IN THE DESIGN OF THE HYDROGEN RECOMBINER
ACCESS PLATFORM AND STEAM GENERATOR LOWER LATERAL SUPPORT
WBRD-50-390/87-20 AND WBRD-50-391/87-24
CONDITION ADVERSE TO QUALITY REPORTS (CAQRs)
WBP 870759, WBP 870760, WBP 871084 AND WBP 871174
10 CFR 50.55(e)

SECOND INTERIM REPORT

Description of Deficiency

Deficiencies have been identified with the design calculations performed for the hydrogen recombiner access platforms and the lower steam generator lateral supports. These structures were designed with the help of the Georgia Tech Structural Analysis Design Language (GT STRUDL) computer program. This is a revision to the STRUDL program originally written at the Massachusetts Institute of Technology. Although the GT STRUDL computer program itself was adequate, the output from this computer program may not have been correctly interpreted and incorporated into the design of the structures. As a result, these structures may be stressed beyond the allowable limits.

The items listed below represent the significant deficiencies identified during a review of the structures for additional attachments.

For the hydrogen recombiner access platform:

- Default values for GT STRUDL 69AISC code check parameters (such as the effective length factor for buckling and unbraced length) were used for all members. The automatically generated values may not correctly specify the values for an accurate analysis and may not be conservative.
- Deflections were not checked in the design. A later analysis indicates a deflection of approximately 4.6 inches at one corner of the structure.

Because of the above deficiencies, the computed stresses may be unconservative and, consequently, some structural steel details for weld sizes and connections may not have adequate evaluations.

For the steam generator lower lateral supports:

- GT STRUDL 69AISC code checks were used for stress analysis without including torsional stresses in the stress combination.

TVA attributes the root cause of this deficiency to an inadequate design criteria.

Safety Implications

These structures, which were designed with improper evaluations of the structural members and their associated connections, could be overstressed. This could lead to failure of the structure/support during a seismic event.

The hydrogen recombiner access platform is located inside containment about 22 feet above the refueling deck and holds one of the two hydrogen recombiners. The main concern with this platform is that it may fall during a seismic event and damage other safety-related equipment. Two containment isolation valves and lines (one supply line and one return line for the ice condenser floor cooling system) are located under this platform and could fail if the platform strikes them.

The steam generator lower lateral supports provide only lateral support of each steam generator in the event of a main steam line break. However, they also provide primary support to various safety-related piping attached to them. Should these supports fail, subsequent failure of those safety-related pipes could occur.

Either of the above two failure modes could adversely affect safe operation of the plant.

Interim Progress

Since the affected equipment was installed, TVA has revised design criteria WB-DC-20-21, "Miscellaneous Steel Components for Category I Structures," to ensure that requirements, such as checking deflections, torsional design, connection design, and weld design, are adequately specified. This will prevent recurrence of the subject deficiencies.

As committed in our previous interim report, TVA will evaluate the subject structures, based on the appropriate design criteria requirements, to determine if they are adequate, and will perform rework if necessary. TVA also plans to evaluate similar structures to determine the extent of this deficiency. A final report which addresses the extent of the deficiency and any additional corrective actions will be submitted to NRC on or about November 30, 1989.

ENCLOSURE 2

LIST OF COMMITMENTS

Provide a final report to NRC on Condition Adverse to Quality Reports (CAQRs) WBP 870759, WBP 870760, WBP 871084, and WBP 871174 on or about November 30, 1989.