TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

September 9, 1981

YCRD-50-566/81-20

Mr. James P. O'Reilly, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Region II - Suite 3100
101 Marietta Street
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

YELLOW CREEK NUCLEAR PLANT UNIT 1 - CANTILEVER SUPPORTS SUPPLIED BY BECHTEL - YCRD-50-566/81-20 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector D. Quick on August 10, 1981 in accordance with 10 CFR 50.55(e) as NCR YCN YCP 8105. Enclosed is our final report. We consider 10 CFR Part 21 to be applicable to this deficiency.

If you have any questions concerning this matter, please get in touch with D. L. Lambert at FTS 857-2581.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills, Manager
Nuclear Regulation and Safety

Enclosure
cc: Mr. Victor Stello, Jr., Director (Enclosure)
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, DC 20555

IE27
S
1/1

ENCLOSURE
YELLOW CREEK NUCLEAR PLANT UNIT 1
CANTILEVER PIPE SUPPORTS SUPPLIED BY BECHTEL
YCRD-50-566/81-20
10 CFR 50.55(e)
FINAL REPORT

Description of Deficiency

Values for mass load ratings for "L," T," and simple typical cantilever support structures supplied to TVA by the Bechtel Corporation, Gaithersburg, Maryland, were found to be unconservative when compared to results obtained by TVA using GTSTRUDL program. Mass load ratings are used by TVA to obtain a spring rate for each of the above structure types. The mass load ratings are structural load capacities which correspond to 33 Hz and 20 Hz minimum support natural frequencies. Minimum natural frequency requirements and minimum spring rates for structural pipe supports are required in TVA Design Criteria N8-50-D716 for piping analysis.

The deficiency was discovered by TVA while reviewing the spring rates for the "L" type cantilever typical support drawings (TVA YCP drawing series 3GB0160-00, sheets 75-78, and 80-84). All information from Bechtel was compared to GTSTRUDL runs made by TVA, and Bechtel was notified of the error. This error affects 852 supports on 27 sheets of the YCP drawing series 3GB0160-00. None of these drawings have been issued for construction.

Upon notification of the error, Bechtel immediately investigated the problem. They discovered that the base plate flexibility values supplied by TVA were incorrectly input into their computer programs.

Safety Implications

If the described deficiency had gone uncorrected, it could have caused the "L," "T," and simple typical cantilever supports to be fabricated such that they would not meet the 33 Hz minimum natural frequency. This would not create any safety-related problems since supports with lower natural frequencies can be justified if the support spring rate is determined and documented by the piping analyst.

However, since minimum spring rates are required for rigorous piping analysis, the integrity of rigorously analyzed piping and support systems could have been compromised. Supports would have had actual spring rates lower than those represented in the rigorous piping analysis. Use of incorrect spring rates in the design of pipe supports could result in overstress of piping systems, thus adversely affecting the safety of operations of the plant.

Corrective Action

Bechtel has modified their computer code input and has transmitted corrected data to TVA. TVA is performing the necessary calculations and will revise the drawing series 3GB0160-00, sheets 60-63, 65-69, 75-78, 80-84, 90-93, 95-99. This work is expected to be complete by December 1, 1981. To prevent recurrence of this situation, TVA will continue to spot check work performed by outside firms before issuance of affected construction drawings.