

TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE
37401



December 13, 1974

Mr. F. E. Kruesi, Director
Directorate of Regulatory Operations
U. S. Atomic Energy Commission
Washington, DC 20545

Dear Mr. Kruesi:

TVA made an initial report to the AEC-DRO Region II office by telephone on October 1, 1973, of a potential design deficiency of Sequoyah Nuclear Plant units 1 and 2 Interior Concrete Structure. On October 29, 1973, we submitted an interim report stating by mid-December 1973, a schedule of work to be done and an estimated time for submittal of a final report. The enclosed report is submitted as a second interim report on the potential design deficiency.

Very truly yours,

J. E. Gilleland
Assistant to the Manager of Power

Enclosure
CC (Enclosure):

Mr. Norman C. Moseley, Director
Directorate of Regulatory Operations
U. S. Atomic Energy Commission
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SEQUOYAH NUCLEAR PLANT
REACTOR BUILDINGS - UNITS 1 AND 2
INTERIOR CONCRETE STRUCTURE

POTENTIAL DESIGN DEFICIENCY

INTERIM REPORT NO. 2

An initial report of a potential design deficiency in the interior concrete structure of the reactor buildings for units 1 and 2 of our Sequoyah Nuclear Plant was made by telecon to the AEC-DRO Region II Office on October 1, 1973, in compliance with 10CFR50.55(e). An interim report was submitted to AEC-DRO Headquarters on October 29, 1973. This report constitutes the second interim report on the deficiency.

The seismic response loads of the interior concrete structure of the reactor building have been reduced; accordingly, additional structural analysis will not be required.

The effects of the shift in the location of peak response of the floor response spectra are continuing to be evaluated. A summary of the major items, with an evaluation to date is as follows:

I. ICE CONDENSER

Numerous runs have been made, all of which indicate seismic loadings will either remain essentially the same or be slightly reduced.

II. AUXILIARY EQUIPMENT

The regenerative heat exchanger, excess heat exchanger, and accumulators have been designed to seismic umbrella values and appear to be unaffected. The manipulator crane appears also to be unaffected and work is continuing on other items.

III. NUCLEAR STEAM SUPPLY SYSTEM (NSSS) AND NSSS/SUPPORTS

- a. Reactor internals have apparently been qualified to a higher seismic environment than Sequoyah and appear unaffected.
- b. SCRAM time is being evaluated; however, it is not expected to be affected based on the above.

- c. CRDM supports seismic loads are apparently reduced.
- d. NSSS piping seismic loads are apparently within allowables.
- e. NSSS/supports seismic loads apparently increase; however, the supports were apparently sized for a higher seismicity plant and increased loads appear to be within allowables.

IV. AUXILIARY PIPING

All auxiliary piping systems have not been designed to date. Those systems that have been designed are being evaluated for the revised spectra and those that have not will be designed for the revised spectra.

Complete evaluation of the design adequacy of the Reactor Building equipment and piping therein will be available by February 1, 1974.

During the course of the re-analysis of the reactor building, it was determined that for seismic analysis a modulus based on expected long range concrete strengths would be more appropriate than an analysis based on 28-day design strengths (since we have found that continuing hydration does occur in the relatively massive concrete members associated with these structures). Modulus for seismic analysis shall therefore be based on previous test experience for 180-day strengths with the fly ash concrete using the ACI 318-71 code formula in section 8.3.1.

This decision extended the problem to include all Category I structures since the 28-day specified strength was used in determining the concrete modulus for all of these structures in the original seismic analysis. We are preceeding to re-analyze all Category I structures to determine if safety related equipment and piping in the structures will be affected by this revised requirement. A schedule for this re-analysis of other Category I structures will be furnished the Commission as soon as it can be developed.