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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

OCT 30 1986

Docket Nos. 50-327
and 50-328

Mr. C. C. Mason
Acting Manager of Nuclear Power
Tennessee Valley Authority
6N, 38A Lookout Place
1101 Market Street
Chattanooga, Tennessee 37402-2801

Gentlemen:

SUBJECT: INSPECTION REPORT 50-327/86-27 AND 50-328/86-27

This refers to your letter dated July 28, 1986, in response to our letter dated April 22, 1986, which forwarded the report of a special inspection to examine design control practices for the Sequoyah Nuclear Power Plant conducted by the NRC's Office of Inspection and Enforcement (IE). IE has evaluated the corrective and preventive actions documented in your letter.

Certain of the items require additional information and review to assess their acceptability. The enclosure to this letter describes these items, including specific concerns regarding individual responses.

Resolution and follow-up inspection for the items in the report will be handled by IE and/or Region II. The enclosure to this letter describes areas that will be inspected by the team. However, the team will not necessarily be limited to the items in the enclosure; the team may also inspect other inspection items before drawing final conclusions regarding the adequacy of your response to the subject inspection report.

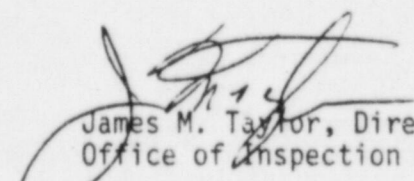
Please have the information described in the enclosure to this letter available by November 17, 1986, which coincides with the second phase of the upcoming NRC design control inspection. No reply to this letter is requested.

In accordance with 10 CFR 2.790 (a), a copy of this letter, the enclosure, and your response letter dated July 28, 1986, will be placed in the NRC's Public Document Room.

Should you have any questions concerning this letter, please contact me or Mr. Gene Imbro at 301-492-9671.

Sincerely,

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Q


James M. Taylor, Director
Office of Inspection and Enforcement

Enclosure: Sequoyah Inspection Items
Requiring Additional Information

cc w/encl: See Page 2

Mr. C. C. Mason

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cc w/encl:

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1. BACKGROUND

The TVA response (Reference 1) to the NRC Special Design Control Inspection report (Reference 2) has been evaluated by the Office of Inspection and Enforcement. Certain items are considered open based on a need for additional information, confirmatory inspection, clarification of the response, or an inadequate response. In addition, the corrective actions relating to these items and other items identified in Reference 2 are subject to confirmatory inspection. The references are listed in Section 7 of this enclosure. The section numbering in this enclosure is consistent with that used in the original report.

2. MECHANICAL SYSTEMS

No additional information is needed in this area.

3. MECHANICAL COMPONENTS

Deficiency D3.3-5, Pump Fundamental Frequency

TVA's response to Deficiency D3.3-5 is inadequate. TVA designed and installed pumps and associated piping at Sequoyah based on a pump fundamental frequency criterion of 33 Hz, a criterion that TVA did not meet for the pump and associated piping identified in this deficiency, or for other pump/piping subsystems, since TVA indicates that the "extent of this condition has not been established at this time." TVA considers that the design of the pump and associated piping identified in this deficiency "is a representative situation for existing floor-mounted safety-related equipment with rigid attached piping." The team believes that reanalysis of this configuration with a pump spring-mass model derived from the pump dynamic analysis is necessary to substantiate the adequacy of this subsystem. The deficiency remains open. The generic implications of this item should also be assessed.

4. CIVIL/STRUCTURAL

Deficiency D4.3-1, Evaluation of Structures for Reinforcing Bar Cuts

This item concerned TVA's lack of analysis and evaluation of the impact on structural integrity in cases where steel reinforcing bars were cut during modifications. An example was steel bars cut during installation of a new penetration in the pressurizer compartment.

The team considers that the response by TVA is not adequate. TVA has not performed any analytical work to resolve this issue. TVA stated that the reinforcing bar cuts were approved, reviewed, and verified by engineering judgment. The team is concerned that this engineering judgment was not adequately documented, at least to the extent of identifying whether the reinforcing bars cut were in the low stress zones. TVA should evaluate, at least on a sample basis, the effects of cutting reinforcing bars at the Sequoyah site.

Sequoyah Inspection Items Requiring Additional Information (cont'd)

5. ELECTRIC POWER

Deficiency D5.3-1, Temporary Alterations Using Temporary Alteration Control Forms (TACFs)

This item concerned the use of TACFs for permanent changes to the plant, and a lack of independent verification of drawing changes associated with TACFs. TVA stated that a procedure, to be issued by September 1, 1986, will address Division of Nuclear Engineering safety evaluation of open TACFs.

However, the TVA response did not address team concerns regarding procedural controls for TACFs, including requirements for independent verification of the as-built drawings, review of TACFs and the associated follow-up documents by a responsible design organization, and restriction of use of TACFs to temporary changes in the plant. TVA should address requirements for these activities to allow resolution of this item.

Unresolved Item U5.3-3, Motor Operated Valve Thermal Overload Trip Setting

From TVA's response for this item, it was not clear that TVA's operating experience with the current setting of overloads (between 15-30 seconds of locked rotor current) adequately reflects design basis situations (For example, operation during degraded voltage conditions considering that the travel time for several motor operated valves exceeds 30 seconds.) Similarly, relative to testing, it is not clear that the testing was conducted by simulating degraded voltage conditions. It appears that TVA has not demonstrated that the thermal overload settings of safety-related motor operated valves will not cause a spurious trip during travel when operating under worst case degraded voltage conditions where duration of the travel can be more than 30 seconds.

This item will remain open pending determination of testing and/or analysis by TVA which demonstrates that the existing settings will not cause a spurious trip during travel while operating under worst case design conditions.

Unresolved Item U5.3-5, Loss of Control Power Annunciation

This item concerned the lack of annunciation of loss of control power to the auxiliary feedwater pump. In their response, TVA noted that this was a generic condition, and that this function had been previously implemented by a status monitoring system which was removed during a modification. TVA plans to restore annunciation for loss of control power as originally committed to when the licensee proposed transfer of this annunciation to a technical support center system. The licensee stated that NRR will review the final design concept and the interim measures for implementation of requirements of Regulatory Guide 1.47. This item is closed for the purpose of this inspection as this constitutes an open licensing issue to be resolved between TVA and NRR.

6. INSTRUMENTATION AND CONTROL

Deficiency D6.1-1, AFW Pump Discharge Pressure Switch Ratings

AFW pump discharge pressure switches 1-PS-3-148, -156, -164, and -171 that provide a safety-related interlock to position AFW bypass control valves were replaced on two separate occasions with equipment from different manufacturers. For each of these replacements, the team found no evidence that apparent

Sequoyah Inspection Items Requiring Additional Information (cont'd)

pressure integrity before and after the seismic qualification test, a second vendor that supplied instruments connected to the reactor coolant system had not.

TVA response states that the requirements for seismic qualification and hydrostatic pressure test are totally independent of one another. The team disagrees with this position on the basis that a hydrostatic test after seismic qualification testing is the only effective means to demonstrate that the pressure boundary safety function of the instrument has not deteriorated. For example, IEEE Std. 344-1975, Section 8.1 requires that equipment performance requirements be demonstrated when the equipment was subjected to seismic test conditions, and section 8.4 requires that test data be provided to support this proof of performance. IEEE Std. 323-1974, Section 4.3 requires that qualification demonstrate that the equipment was capable of meeting its performance specifications under the service conditions. The absence of a hydrostatic test requirement after seismic qualification testing requires TVA to make an assumption that seismic qualification testing did no damage to the instrument pressure boundary.

To validate this assumption for the Static-O-Ring (SOR) NX-JJTTX6 differential pressure indicating switch, TVA committed to an onsite pneumatic pressure test to 2982 psig for the onsite instruments and a pressure test to 3000 psig by the instrument supplier or Action Laboratories for the particular unit used during the seismic qualification. The team intends to review these test results during a follow-up inspection.

The TVA response did not indicate whether this condition was limited only to the SOR instrument procurement identified by the team. The response also did not provide a commitment that future safety-related pressure boundary instrument procurement activities would require a post-seismic hydrostatic pressure test. Additional information is required from TVA on these topics.

7. REFERENCES

- (1) Letter and enclosure, R. Gridley, TVA, to Dr. Grace, USNRC Region II regarding Inspection Report 50-327/86-27 and 50-328/86-27, "Response to Deficiencies and Unresolved Items," dated July 28, 1986.
- (2) Inspection Report 50-327/86-27 and 50-328/86-27, forwarded by J. Taylor letter dated April 28, 1986.

Mr. S. A. White

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