UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D. C. 20555

July 15, 1980

The Honorable John F. Ahearne
Chairman
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

SUBJECT: REPORT ON THE SEQUOYAH NUCLEAR POWER PLANT, UNITS 1 & 2

Dear Dr. Ahearne:

During its 243rd meeting, July 10-12, 1980, the Advisory Committee on Reactor Safeguards completed its review of the application of the Tennessee Valley Authority (hereinafter referred to as the Applicant) for authorization to operate the Sequoyah Nuclear Plant, Units 1 & 2 at full power. The Committee had considered aspects of the application during its 242nd meeting, June 5-7, 1980; 236th meeting, December 6-8, 1979; 229th meeting, May 10-12, 1979; and 228th meeting, April 5-7, 1979. A tour of the facility was made by members of the Subcommittee on January 24, 1976 and the application was considered at Subcommittee meetings on July 9, 1980; June 2, 1980; November 5, 1979; and March 12, 1979. During its review, the Committee had the benefit of discussions with representatives and consultants of the Applicant, the Westinghouse Electric Corporation, and the Nuclear Regulatory Commission (NRC) Staff. The Committee also had the benefit of the documents listed. The Committee reported on interim low power operation of Unit 1 on December 11, 1979 and on a construction permit for this plant on February 11, 1970.

In its letter of December 11, 1979 the Committee addressed the proposed special low power test program, to be carried out on Unit 1, the seismic reevaluation of the Sequoyah plant, actions on recommendations resulting from the review of the accident at the Three Mile Island Station, Unit 2, and actions on various generic problems. These generic problems were further discussed in the Committee's report, "Status of Generic Items Relating to Light-Water Reactors: Report No. 7," dated March 21, 1979. The Committee's recommendations in its December 11, 1979 letter are also applicable to Unit 2 except that the special low power test program will not be repeated on Unit 2.

The special low power test program has been reviewed by Westinghouse Electric Corporation and by the NRC Staff. The Applicant began these tests on July 11, 1980 and the Applicant, Westinghouse, and the NRC Staff will review the results of these tests. It is expected that the additional operator training and operator experience will prove to be beneficial.

The Committee has reviewed and reported on NUREG-0660, "NRC Action Plans Developed as a Result of the TMI-2 Accident," Draft 3. The status of the Applicant's compliance with the NTOL licensing requirements as well as a number of non-TMI-related items were reviewed during its 243rd meeting. There are a number of both non-TMI and TMI-related requirements not fully resolved. Both the NRC Staff and the Applicant expect that the complete resolution of these outstanding items is essentially a procedural or documentary matter which will be completed within a very few weeks. These items should be resolved to the satisfaction of the NRC Staff. The Committee wishes to be kept informed. The Committee believes that the implementation of the Action Plan as it will be realized at Sequoyah is adequate to assure the safe operation of this plant.

The Committee, in its March 11, 1980 report on the NTOL items, recommended that the licensees develop reliability assessments for their plants and that design studies of possible hydrogen control and filtered vented containment systems be required. The Applicant has conducted studies of a number of means for hydrogen control, and as an interim measure, has proposed installation of a distributed array of ignition sources which it expects to have in place by the fall of 1980. The Applicant has concluded that by this means the containment would be able to cope with the pressure resulting from the combustion of hydrogen released by the reaction with water of up to about 70% of the zirconium in the core. This compares with the 25% which the containment could cope with without any additional control measures and the 30 to 50% estimated to have reacted in the accident at TMI. The NRC Staff plans to review the proposed system in detail to assure itself of its efficacy and that all safety aspects have been taken into account. The Committee wishes to be kept informed of the further conclusions reached by the Staff and the Applicant in their continuing consideration of these matters. The Applicant has conducted reliability assessments of some features of the plant and has considered some aspects of the effects of a possible filtered vented containment. Though the work accomplished to date is limited in scope, these studies are definitely responsive to the Committee's recommendations on these points. The Applicant proposes to continue studies of this nature and to extend the range of their application. While these efforts, as well as those concerned with hydrogen control, should be vigorously pursued, in view of the commitments made by the Applicant, it is the opinion of the Committee that their present incomplete status need not delay the issuance of a full power operating license.

Early this year a differing professional opinion was advanced by a member of the NRC Staff concerning the acceptability of a particular weld repair in the piping to a pressurizer relief valve of Sequoyah Unit No. 1. All other qualified and responsible members of the NRC Staff, as well as professional personnel on the staff of the Applicant, take the position that the weld should be regarded as acceptable since there is no evident reason why it should not be at least as capable as other (more standard) welds which would

be considered acceptable. The differing opinion is not that the weld is demonstrably less capable than it need be, but 1) that the evidence available is inconclusive on this point, and 2) that more specifically relevant information could be obtained without serious difficulty. This could be done by constructing a mock-up of the weld in question using material and procedures as similar as possible to those which apply in the actual case and subjecting the mock-up to a through-wall metallographic examination. The results of this examination could then (for example) be compared with those from a full penetration weld in the same material, which has been performed in the standard fashion and deemed acceptable based on satisfactory operational experience with which the majority opinion has compared the present weld. This has not been done. The Committee does not consider it to be particularly likely that this weld repair presents a serious hazard; but it does believe the evidence on this point could be improved. The Committee believes that, in the interest of resolving the question that has been raised to the maximum extent readily possible, steps of the nature outlined should be taken.

The Committee believes, that if due consideration is given to the items mentioned above, the Sequoyah Nuclear Plant, Units 1 and 2 can be operated at levels up to full power without undue risk to the health and safety of the public.

Sincerely,

Milton S. Plesset

Milton S. Plesset
Chairman

References:

1. Tennessee Valley Authority, "Final Safety Analysis Report, Sequoyah Nuclear Power Plant," Volumes 1-13, and Amendments 1-63.
2. U.S. Nuclear Regulatory Commission, "Safety Evaluation Report Related to the Operation of Sequoyah Nuclear Plant Units 1 and 2," NUREG-0011, March 1979.
3. U.S. Nuclear Regulatory Commission, "Safety Evaluation Report Related to the Operation of Sequoyah Nuclear Plant Units 1 and 2," Supplement No. 1, NUREG-0011, February 1980.
4. U.S. Nuclear Regulatory Commission, "NRC Action Plan Developed as a Result of the TMI-2 Accident," NUREG-0660, May 1980.
5. U.S. Nuclear Regulatory Commission, "TMI-Related Requirements for New Operating Licenses," NUREG-0694, June 1980.