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

December 13, 1982

Honorable Nunzio J. Palladino
Chairman
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Dr. Palladino:

SUBJECT: ACRS REPORT ON SEQUOYAH NUCLEAR PLANT UNITS 1 AND 2 HYDROGEN CONTROL SYSTEM

During its 272nd meeting, December 9-11, 1982, the Advisory Committee on Reactor Safeguards reviewed the design features of the hydrogen control system which has been proposed by the Tennessee Valley Authority (TVA) for use in the Sequoyah Nuclear Plant Units 1 and 2. This matter was discussed during a Subcommittee meeting held on December 7, 1982. During our review we had the benefit of discussions with representatives of TVA and the NRC Staff. The Committee has previously reported on issues related to hydrogen control for the Sequoyah Nuclear Plant in two letters dated July 15, 1980 and in a letter dated September 8, 1980.

The hydrogen control system reviewed during this meeting has been designated by TVA as the Permanent Hydrogen Mitigation System (PHMS) and replaces the Interim Distributed Ignition System (IDIS). The PHMS utilizes igniters of a different type than those used in the IDIS, and incorporates system changes which are intended to increase the reliability of the igniter system. The TVA proposal for hydrogen control is supported by extensive research and development programs carried out by TVA, the nuclear industry, and the NRC. Some of these programs are currently ongoing and will be continued. We believe that igniter systems represent a viable method for hydrogen control. In addition, we believe that the PHMS is an adequate hydrogen control system and that it will perform its intended function in a manner that provides adequate safety margins.

The NRC Staff has proposed that additional igniters be installed in the upper compartment of the containment. The additional igniters may not be necessary but will do no harm. The NRC Staff has also proposed that the performance of the igniters be tested in a containment spray environment. These proposed tests are intended to ensure the capability of the system to burn small quantities of hydrogen. We are not fully persuaded at this point that the Staff's concern is warranted. We wish to be kept informed on this matter since the questions raised are also relevant to distributed ignition systems in other plants.

The PHMS as presently proposed by TVA uses either offsite power or the emergency diesels as a power source. The PHMS would consequently not control a hydrogen release from a degraded core coincident with a station blackout. We believe that this should be further considered by the NRC Staff and TVA and that, in particular, the use of special emergency procedures should be considered. We wish to be kept informed regarding this matter.

Sincerely,

P. Shewmon
Chairman

Reference:

1. U.S. Nuclear Regulatory Commission "Safety Evaluation Report Related to the Operation of Sequoyah Nuclear Plant Units 1 and 2," NUREG-0011, Supplement No. 6, draft dated December, 1982