T/C
50-327

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401
500A Chestnut Street Tower II

JUN 12 June 9, 1980

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:

OFFICE OF INSPECTION AND ENFORCEMENT BULLETIN 80-12 - RII:JPO 50-327 - SEQUOYAH NUCLEAR PLANT UNIT 1

In response to your letter dated May 13, 1980, which transmitted Office of Inspection and Enforcement Bulletin 80-12 on Decay Heat Removal System Reliability, we are enclosing the results of our investigation for Sequoyah Nuclear Plant unit 1. This information is submitted pursuant to 10 CFR 50.54(f).

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

J L Cross

J. L. Cross
Executive Assistant to the
Manager of Power

Enclosure
cc: Director, Division of Reactor Operations Inspection (Enclosure)
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Sworn to and subscribed before
me this 9th day of June 1980

Bryant M. Lowery
Notary Public

My Commission Expires 4/4/82

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ENCLOSURE

RESPONSE TO IE BULLETIN 80-12
FOR SEQUOYAH NUCLEAR PLANT UNIT 1

We have performed the required reviews and analyses specified in Items 1 through 6 of this bulletin. Our results are described in the below response to Item 7.

Item 7, Part A: Changes to Procedure

Plant operating instructions address loss of decay heat removal (DHR) capability for the following modes of operation.

a. Reactor coolant system (RCS) filled and the reactor vessel head installed.

b. Reactor vessel head removed and the refueling cavity filled.

These procedures will be revised to include instructions on loss of decay heat removal capability during the following modes of operation:

a. The RCS partially drained but before reactor vessel head detensioning.

b. The reactor vessel head detensioned but still in place.

c. The reactor vessel head removed, but before filling of the refuel cavity.

In addition, these procedures will address inadvertent safety injection actuation during decay heat removal.

Administrative procedural changes will be instituted to require at least two independent means of supplying adequate decay heat removal flow to the core during all modes of operation. These requirements will take into consideration the amount of decay heat present in the core during the applicable mode as well as backup means for decay heat removal.

These procedural changes will be completed before the first refueling outage on Sequoyah unit 1. We do not anticipate entering a mode of operation not covered by existing procedures until this time. That is, until reactor vessel water level is dropped in preparation for a vessel head removal with decay heat present.

Item 7, Part B: Adequacy of DHR Capabilities

Modes 1-3 — Technical Specifications require two independent emergency core cooling subsystems including two residual heat removal loops (RHR).

Modes 4-5 — Technical Specifications require one operating RHR loop. Upon loss of this loop, and assuming the second loop is inoperable, the following methods can be used for DHR:

a. Starting a reactor coolant pump and utilizing the steam generators as a heat sink.

b. Using natural circulation which would be established as core temperatures rise, utilizing the steam generators as a heat sink.

If RCS draining for removing the head has been started, neither of the two methods mentioned above will be adequate for core cooling. It is for this situation that the plant operating procedures will be revised.

Mode 6 One operating RHR loop is required by technical specifications. Upon loss of this loop, and assuming the second loop is inoperable, the following DHR method can be used.

a. With the vessel head removed and the refueling cavity filled, present instructions specify using temporary connections from the spent fuel pool cooling system to the RHR heat exchangers. This method establishes a cooling path from the core to the refueling cavity through the fuel transfer tube and into the spent fuel pit. From there coolant is run through the spent fuel pool heat exchangers and then through the RHR heat exchangers and back to the RCS by way of the cold leg injection piping.

If the cavity is not filled, a gravity feed from the refueling water storage tank can supply cooling water through the core and simultaneously fill the cavity. From this point the spent fuel pool cooling described above can be established.

As described in IE Bulletin No. 80-12 the sequence of events leading to the loss of DHR capability experienced at Davis-Besse unit 1 could not occur at Sequoyah because of differences in the control logic of our safety feature actuation system. Although Sequoyah utilizes a two-out-of-four logic for automatic switchover from raw water storage tank (RWST) to the containment sump, the instrumentation is non-fail safe design. This implies that upon loss instrument power, both the RWST and containment sump level instrumentation would be in a normal state and no switchover actuation would take place. One reason for this design is to cover the situation where plant technical specifications allow a reduction in safety system redundancy in certain modes.