TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
830 Power Building

November 14, 1978

Director Nuclear Reactor Regulations
Attention: Mr. S. A. Varga, Chief
Light Water Reactors Branch No. 4
Division of Project Management
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Varga:

In the Matter of the Application of ) Docket Nos. 50-327
Tennessee Valley Authority ) 50-328

Enclosed are TVA's responses to Reactor Systems Branch questions 15, 24, and 25 transmitted by Roger S. Boyd's letter dated June 28, 1978, to N. B. Hughes. Responses to 22 of the 25 questions in the June 28 letter have previously been incorporated into the Sequoyah Nuclear Plant Final Safety Analysis Report (FSAR). The enclosed responses will be incorporated into Amendment 58 of the FSAR.

Very truly yours,

for J. E. Gilleland
Assistant Manager of Power

Enclosure: 10

7811160098 A

B001
S
1/1

ENCLOSURE

QUESTION

Q6.57 (RSB-Q15) Item 8, "Close RWST valve 6.31" in Table 6.3-3a should be deleted. This valve is to be normally locked open and repositioning as an added safety factor can be delayed until later into the accident when more time is available for operator action and attention. Justify the ability of the operator to perform the tasks for changeover from the injection to the recirculation mode following a LOCA in the times indicated in Table 6.3-3a. Describe the operating procedures the operator must follow.

RESPONSE

FSAR tables 6.3-3 and 6.3-3a have been revised to show FCV63-1 closure as the last step in the switchover sequence.

The switchover sequence evaluation in FSAR table 6.3-3a documents the most rapid sequence possible. It was developed assuming maximum possible two-train pump flow from the RWST, upper limits on valve travel times, and ten seconds per individual operator actions.

Full flow through any valve was assumed until valve closure was complete.

The sequence has been proven on the Sequoyah Nuclear Plant training simulator and will be further verified by preoperational testing. The Emergency operating procedures are in the same format as FSAR table 6.3-3 and provide the same degree of step-by-step detail.

QUESTION

Q6.58 (RSB-Q24) Justify that during switchover from the injection to recirculation flow, the RHR pumps receive adequate suction flow. Provide system drawings and interlocks for this automatic action.

RESPONSE

The automatic switchover sequence, which ensures that the RHR pumps receive adequate suction flow, is described in section 6.3.2.2 and table 6.3-3. The interlocks associated with the automatic opening of the sump isolation valves and closing of the RHR/RWST valves are presented in revised section 7.6.5 and figure 7.6-4. Evaluation of available NPSH is discussed in section 6.3.2.14. The minimum NPSH available to the pumps during the switchover procedures is 26.9 ft. A curve of required NPSH flow is shown in figure 6.3-2. The NPSH required by the RHR pumps at maximum ECCS flow conditions is 17.5 ft.

Piping and instrumentation drawings are provided in figure 5.5-7 (TVA 47W610-74-1R6) and figure 6.3-1 (TVA 47W811-1R10).

QUESTION

Q5.28 (RSB-Q25) The Regulatory Requirements Review Committee, in a memorandum from E. Case, Committee Chairman, to L. Gossick, Executive Director for Operations (dated February 16, 1978), has approved a new staff position (BTP RSB 5-1) for the Residual Heat Removal System (RHR). The technical requirements for your plant are described below. Please respond to these requirements in sufficient detail to enable the staff to review your compliance in an expeditious fashion.

1. Provide safety-grade steam generator dump valves, operators, air and power supplies which meet the single failure criteria.

2. Provide the capability to cooldown to cold shutdown in less than 36 hours assuming the most limiting single failure and loss of offsite power or show that manual actions inside or outside containment or return to hot standby until the manual actions or maintenance can be performed to correct the failure provides an acceptable alternative.

3. Provide the capability to depressurize the reactor coolant system with only safety-grade systems assuming a single failure and loss of offsite power or show that manual actions inside or outside containment or remaining at hot standby until manual actions or repairs are complete provides an acceptable alternative.

4. Provide the capability for borating with only safety-grade systems assuming a single failure and loss of offsite power or show that manual actions inside or outside containment or remaining at hot standby until manual action or repairs are completed provides an acceptable alternative.

5. Provide the system and component design features necessary for the prototype testing of both the mixing of the added borated water and the cooldown under natural circulation conditions with and without a single failure of a steam generator atmospheric dump valve. These tests and analyses will be used to obtain information on cooldown times and the corresponding AFW requirements.

6. Commit to providing specific procedures for cooling down using natural circulation and submit a summary of these procedures.

7. Provide or require a seismic Category I AFW supply for at least 4 hours at Hot Shutdown plus cooldown to the DHR system cut-in based on the longest time (for only onsite or offsite power and assuming the worst single failure), or show that an adequate alternate seismic Category I source will be available.

RESPONSE

TVA is currently reviewing the residual heat removal concern on all of the TVA dockets. We will provide a detailed response concerning your request of the Sequoyah Nuclear Plant by January 1, 1979.