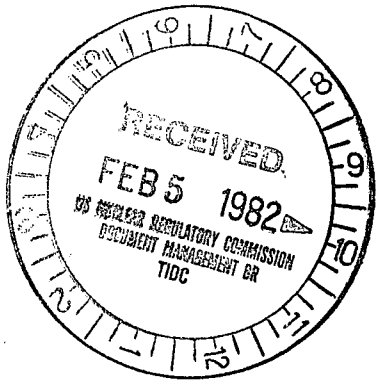
TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

January 28, 1982



Director of Nuclear Reactor Regulation
Attention: Ms. E. Adensam, Chief
Licensing Branch No. 4
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Ms. Adensam:

In the Matter of the Application of	)	Docket Nos. 50-390
Tennessee Valley Authority	)	50-391

In your letter to H. G. Parris dated January 22, 1982, TVA was requested in NRC question 31.150 to provide additional information on Watts Bar Nuclear Plant. Enclosed for NRC information is TVA's response to question 31.150. This response will be included in Amendment 47 to the Final Safety Analysis Report.

If you have any questions concerning this matter, please get in touch with D. P. Ormsby at FTS 858-2682.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills, Manager
Nuclear Regulation and Safety

Sworn to and subscribed before me
this 28th day of January 1982
Paulette H. White
Notary Public
My Commission Expires 9-5-84

Enclosure

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ENCLOSURE
WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
RESPONSE TO NRC QUESTION 31.150

31.150 Question

In response to Question 31.148, TVA included the response given for the Sequoyah plant and noted that it is applicable to Watts Bar. We request that you elaborate further to clarify the specifics of items (1), (2), and (3) with regard to the results for "RCS Inventory and Pressure Control," "Steam Generator Inventory and Pressure Control," and "ECCS Response," as noted on page 31.148-3 of your response.

Further, we request that you address potential failures of power range neutron detectors which could cause rod withdrawal. This item was identified as a potential concern by Westinghouse in a previous analysis related to IE Information Notice 79-22.

Response

RCS Inventory and Pressure Control

(1) There are stem-mounted limit switches and acoustic monitors for the PORVs and temperature sensors with alarms downstream of the PORVs. Both annunciate in the main control room to alert the operator that the PORVs are open.

(2) Adequate time is available for the operator to take corrective action. Even if the operator takes no action, a stuck open PORV is within the scope of the plant's small LOCA analysis (per Westinghouse WCAP-9600 and -9639).

(3) The operator can close the PORV block valves (which have opposite train assignments than the associated PORV) to isolate the loss of primary fluid. However, a stuck open PORV is within the scope of the plant's small LOCA analysis (reference WCAP-9600 and -9639).

Steam Generator Inventory and Pressure Control

(1) There is main control room indication that the steam generator PORVs are open (via stem-mounted limit switches).

(2) Adequate time is available for the operator to take corrective action (reference WBN FSAR section 15.2.13).

(3) The PORV can be closed via a handswitch in the main control room.

ECCS Response

(1) There is control room indication that the reactor building auxiliary floor and equipment drain sump pump is running.

(2) Adequate time is available for the operator to take corrective action.

(3) The pump can be turned off via a handswitch in the main control room.

Potential Failure of Neutron Detectors

An evaluation of control rod withdrawal due to control system environmental consequential failure showed that the physical location of the Nuclear Instrumentation System (NIS) neutron detectors and qualification of the associated cabling will preclude any unacceptable interaction with the control rod system for the required two minutes. After that time, the overpower delta-T trip will insert the rods. Therefore, a safe shutdown can be achieved even if a postulated accident is compounded by environmentally induced effects on the neutron detectors and associated cabling.

The excore neutron detectors and associated cabling were designed per nuclear codes and standards, i.e. IEEE 279. Each detector is provided structural protection in the concrete where it is located, as well as physical separation. Each detector is separated and the associated cabling is qualified for a two-minute hostile environment. Each cable is routed to nuclear qualified protection racks located in the main control room. The cabling is in turn routed through steel conduit to the control circuits in the auxiliary instrument room.

The neutron flux signal per each channel detector is evaluated in the instrument control rack, and only the highest neutron flux signal of the four channels is compared with the T_{ave} from the auctioneer circuit. If a low neutron flux signal was sensed in a faulted channel, it will be rejected in the control rack for a higher neutron flux signal from one of the other three channels; therefore, rod withdrawal would not occur as long as a single channel provides a high neutron flux signal. The detector system is designed to preclude a common mode failure to all four neutron detector channels.