

March 25, 1987

Docket Nos.: 50-390  
and 50-391

Mr. S. A. White  
Manager of Nuclear Power  
Tennessee Valley Authority  
6N 38A Lookout Place  
1101 Market Street  
Chattanooga, Tennessee 37402-2801

Subject: Request for Additional Information Regarding RTD Bypass Removal  
Modification on the Watts Bar Nuclear Plant

The staff has reviewed your January 27, 1987 submittal regarding FSAR Chapter 15 on the RTD bypass removal modification on the Watts Bar Nuclear Plant, Units 1 and 2, and have determined the need for additional information. An advance copy of this request was forwarded to your staff on March 13, 1987.

Please respond to this request on the time schedule consistent with your proposed schedule presented during the October 14, 1986 meeting on this subject. Note that additional information was requested on January 16 and February 2, 1987, concerning the staff's review of draft FSAR Chapter 5 and 7 as discussed during that October 14, 1986 meeting. If you have any questions concerning this matter, please contact the Project Manager, R. Auluck, at (301) 492-7798.

Sincerely,  
Original signed by  
John A. Zwolinski, Assistant Director  
for Projects  
Division of TVA Projects  
Office of Special Projects

Enclosure: As stated

cc: See next page

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Tennessee Valley Authority

Watts Bar Nuclear Plant

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## Questions on Watts Bar RTD Bypass Loop Removal

### References

1. Meeting Summary from T.J. Kenyon, NRC to NRC Staff Attendees, dated October 23, 1986.
2. Letter from R. Gridley, Tennessee Valley Authority, to B.J. Youngblood, NRC, dated January 27, 1987

The Reactor Systems Branch has reviewed the above references from a thermal hydraulic viewpoint in regards to the RTD bypass loop removal. Reference 1 is a summary of the meeting with the Tennessee Valley Authority (TVA) on October 14, 1986, with representatives of NRC, TVA, and Westinghouse to discuss TVA's proposal to remove the RTD bypass system at Watts Bar and includes a copy of TVA's presentation as an enclosure. Reference 2 provides marked up pages for accident analyses in Chapter 15 affected by the RTD bypass removal. These include uncontrolled bank withdrawal at power, loss of load/turbine trip, and RCS depressurization.

1. It is noted that the modified scoop (Reference 1) for the RTD thermowell is cut back so that the RTD is directly exposed to the flow rather than receiving flow through holes in the scoop. Is the temperature sensed at a radial dimension equivalent to the middle hole of the original scoop or at a distance which would give the true weighted average value? (It is noted that holes at a greater radius represent a larger flow area). Is there a turbulence effect from the edge of the cutoff scoop that would affect the accuracy of the RTD sensor value?
2. Table 15.1-3 of Reference 2 shows that the time delay assumed in the accident analysis for the trip function for overtemperature  $\Delta T$  and overpower  $\Delta T$  is 7.0 seconds. Reference 1 states that although the time delay is 6.5 seconds, 7.0 seconds is used for conservatism. In a similar RTD bypass loop modification for another plant, it was reported that the measured response time was found to be as high as 11.5 seconds instead of 6.5 seconds. Is Watts Bar able to confirm the RTD response time value of 6.5 seconds?
3. FSAR pages 15.2-8 and 15.2-25 (Reference 2) have a modification insert - "pressurizer pressure - 46 psi allowance for steady state fluctuations and measurement error." Has this value been modified because of the RTD bypass removal? Is there any effect from the RTD bypass removal on the accuracy and value of the RCS average temperature? If so, what is the change and has this affected the reactor protection system setpoints?
4. For the FSAR Chapter 15 accident reanalysis, you have presented information on the following:
  - a. Uncontrolled bank withdrawal at power (Figures 15.2-4 to 8)
  - b. Loss of load/turbine trip (Figures 15.2-19 to 26)
  - c. RCS depressurization (Figures 15.2-37 to 39)

Please provide a discussion of the results comparing the effects from before and after the RTD bypass removal and justify their acceptability. It is noted that in the DNBR vs. time curve in Figure 15.2-5, the DNBR value is very close to the 1.30 limiting value. It is difficult to tell if the value is at, slightly above or below 1.30. If it is above, have the correct uncertainties for the new RTD and flow measurement analysis been included? Reference 1 indicated that the uncontrolled boron dilution accident would be reanalyzed. The results of this analysis were not in Reference 2. Please provide the results and the discussion for justifying its acceptability.