



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

June 29, 1990

Rocket

Docket Nos. 50-390
and 50-391

Mr. Oliver D. Kingsley, Jr.
Senior Vice President, Nuclear Power
Tennessee Valley Authority
6N 38A Lookout Place
1101 Market Street
Chattanooga, Tennessee 37402-2801

Dear Mr. Kingsley:

SUBJECT: WATTS BAR, UNITS 1 AND 2 - TMI ITEM II.K.3.1, AUTOMATIC PORV
ISOLATION SYSTEM (TAC 63631)

In the Watts Bar Safety Evaluation Report, the subject issue was identified as unresolved (proposed License Condition 34) pending the staff's review of a Westinghouse topical report, WCAP-9804, "Probabilistic Analysis and Operational Data in Response to NUREG-0737, Item II.K.3.2 for Westinghouse Plants."

In your letter dated September 14, 1981, you stated that this report is applicable to the Watts Bar facility. We have made an independent assessment of the frequency of an SBLOCA resulting from a stuck-open PORV or safety valve (SV). Because of the similarity of the SVs (Crosby model HP-BP-86) to those used by many other Westinghouse plants and on the basis of Electric Power Research Institute (1982) test results, we estimate the failure of the Watts Bar SVs to be similar to that of other Westinghouse plants, 1×10^{-2} per demand. Because the design and operation of the Watts Bar facility is similar to that of many other Westinghouse plants, we expect an SV challenge frequency at Watts Bar similar to that at other Westinghouse plants. Therefore, our estimate of the SBLOCA frequency due to a stuck-open SV is 3×10^{-4} per reactor-year.

The solenoid-operated PORVs used at the Watts Bar facility are manufactured by Target Rock, while most other Westinghouse plants use air-operated PORVs manufactured by other companies. Combustion Engineering (CE) and Babcock and Wilcox (B&W) plants also use solenoid-operated PORVs. For CE and B&W plants, we have used a probability of 2×10^{-2} per demand of failing to close and estimate a similar probability for the PORVs at the Watts Bar plant. We estimate a PORV challenge frequency for Watts Bar that is similar to that at other Westinghouse plants because of similarities in design and operation. The PORV challenge frequency is estimated very conservatively at three per reactor-year and the operator error probability in failing to close the PORV is conservatively estimated at 0.05 per demand. One obtains 3×10^{-3} per reactor year as the SBLOCA frequency resulting from a stuck-open PORV, which is within the range of the SBLOCA frequency of 10^{-4} to 10^{-2} per reactor-year given in WASH-1400.

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Mr. Oliver D. Kingsley, Jr.

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We, therefore, determined that the requirements of Item II.K.3.2 of NUREG-0737 are met with the existing PORV, SV, and high-pressure reactor trip setpoints for Watts Bar, Units 1 and 2. According to the criteria set forth in the clarification of Item II.K.3.2 in NUREG-0737, there is no need for an automatic PORV isolation system and therefore, this issue is closed. We note that a cost-benefit analysis was not done. However, we have determined a priority ranking of "medium" for Generic Issue No. 70, "PORV and Valve Reliability," and have an ongoing effort to address this issue on a generic basis. This review was performed by Mr. Peter Hearn.

Sincerely,

Original signed by

Peter S. Tam, Senior Project Manager
Project Directorate II-4
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cc: See next page

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