



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

July 12, 2010

Mr. Ashok S. Bhatnagar  
Senior Vice President  
Nuclear Generation Development  
and Construction  
Tennessee Valley Authority  
6A Lookout Place  
1101 Market Street  
Chattanooga, TN 37402-2801

SUBJECT: WATTS BAR NUCLEAR PLANT, UNIT 2 – REQUEST FOR ADDITIONAL  
INFORMATION REGARDING LICENSEE'S FINAL SAFETY ANALYSIS  
REPORT AMENDMENT RELATED TO ACCIDENT DOSE (TAC NO. ME3091)

Dear Mr. Bhatnagar:

By letter dated January 11, 2010 (Agencywide Document Access and Management System Accession No. ML100191686), to the U.S. Nuclear Regulatory Commission (NRC), the Tennessee Valley Authority provided an update (Amendment No. 97) to the Final Safety Analysis Report (FSAR) for the Watts Bar Nuclear Plant (WBN), Unit 2. This update contained changes to a number of sections of the WBN Unit 2 FSAR, including Section 15.5, "Environmental Consequences of Accidents." The NRC staff has reviewed this section and has identified additional information that is needed to complete the technical review of the operating license application.

A response is required within 30 days of receipt of this letter.

If you should have any questions, please contact me at 301-415-6606.

Sincerely,

A handwritten signature in cursive script that reads "Joel S. Wiebe".

Joel S. Wiebe, Senior Project Manager  
Watts Bar Special Projects Branch  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-391

Enclosure: Request for Additional Information

cc w/encl: Distribution via Listserv

REQUEST FOR ADDITIONAL INFORMATION  
WATTS BAR NUCLEAR PLANT, UNIT 2  
FINAL SAFETY ANALYSIS REPORT AMENDMENT NO. 97  
TENNESSEE VALLEY AUTHORITY  
DOCKET NO. 50-391

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Accident Dose Branch – FSAR 15.5

1. For calculations of atmospheric dispersion factors ( $\chi/Q$  values) using the ARCON96 methodology, please provide the input files (electronic files for data input into computer codes) and a discussion of the assumptions used to generate the  $\chi/Q$  values. Include one or more scaled figures with true north clearly shown, when appropriate, from which distance, height, and direction inputs can be reasonably approximated. Provide the scale of each figure. Highlight all postulated sources and receptors, including the location of the control room envelop with respect to the postulated release locations. Please explain how distance inputs into the ARCON96 calculations were estimated (e.g., horizontal straight line distances). Please explain how the procedure used to estimate the distances properly factored in differences in heights between each source and receptor pair. Were any sources modeled as diffuse or high energy releases? If so, what is the basis for determination of the inputs specific to those cases?
2. Which  $\chi/Q$  values were used in the dose assessments to model unfiltered inleakage into the control room envelope and why is use of these  $\chi/Q$  values appropriate?
3. Please explain if any source/receptor pairs other than those resulting in the  $\chi/Q$  values listed in Table 15.5-14 were considered. If so, which source/receptor pairs and  $\chi/Q$  values were compared to determine the limiting control room  $\chi/Q$  values for each design basis accident? Please explain how limiting releases were determined (quantitatively or subjectively). If only three source/receptor pairs were considered, as implied by the  $\chi/Q$  values listed in Table 15.5-14, explain why they were the limiting cases. For example, was this determined by examination of plant drawings or plant walk-downs? Do the postulated accident scenarios and generated  $\chi/Q$  values model the limiting doses considering multiple release scenarios, including those due to loss of offsite power or other single failures?
4. Please provide an electronic copy of the PAVAN computer code input, if available. Otherwise, provide a list of all inputs and assumptions used in the PAVAN calculations. A copy of the summary pages of the PAVAN outputs is acceptable to show inputs.

5. The choice of wind speed categories used in the PAVAN computer code calculations appears to result in some clustering of the data in the lower categories. NRC Regulatory Issues Summary (RIS) 2006-4, "Experience with Implementation of Alternative Source Terms," states that input to PAVAN should have a large number of wind speed categories at the lower wind speeds in order to produce the best results. Therefore, please provide justification that the wind speed categories used in the PAVAN calculations have produced adequate estimates of the exclusion area and low population zone  $\chi/Q$  values for the Watts Bar site.

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*/RA/*

Joel S. Wiebe, Senior Project Manager  
Watts Bar Special Projects Branch  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

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ADAMS Accession No. ML101600278

\*via memo

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