

May 28, 2010

Mr. Ashok S. Bhatnagar
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6A Lookout Place
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SUBJECT: WATTS BAR NUCLEAR PLANT, UNIT 2 – SUPPLEMENT TO REQUEST FOR
ADDITIONAL INFORMATION REGARDING RADIOLOGICAL EMERGENCY
RESPONSE PLAN (TAC NO. ME0853)

Dear Mr. Bhatnagar:

In a letter dated March 11, 2010, the U.S. Nuclear Regulatory Commission (NRC) staff informed the Tennessee Valley Authority (TVA) that additional information was needed from TVA to complete the review of Section 13.3, "Emergency Planning," of the Watts Bar Nuclear Plant (WBN), Unit 2 Final Safety Analysis Report. In support of the operating license application for WBN Unit 2, the NRC staff was reviewing the TVA Radiological Emergency Plan (REP), Revision 89, including its Appendix C, "Watts Bar Nuclear Plant," Revision 88. On April 27, 2010, TVA provided its response to the request for additional information (RAI).

The NRC staff is reviewing the evacuation time estimate (ETE) as part of the review of the WBN REP and finds the additional information is needed. The specific information is described in the enclosed supplement to the RAI. The staff notes that Section IV to Appendix E to Part 50 of Title 10 of the *Code of Federal Regulations* requires that the applicant provide an analysis of the time required to evacuate. The ETE for the WBN site is located in Annex H of the Tennessee Multi-jurisdictional REP, which TVA submitted on December 3, 2009.

The NRC staff requests a response to this RAI supplement within 30 days of receipt of this letter. If you should have any questions, please contact me at 301-415-1457.

Sincerely,

/RA/

Patrick D. Milano, Senior Project Manager
Watts Bar Special Projects Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-391

Enclosure: RAI

cc w/encl: Distribution via Listserv

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OFFICIAL AGENCY RECORD

REQUEST FOR ADDITIONAL INFORMATION

WATTS BAR NUCLEAR PLANT, UNIT 2

RADIOLOGICAL EMERGENCY PLAN

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-391

On March 4, 2009, the Tennessee Valley Authority (TVA) updated its operating license (OL) application for the Watts Bar Nuclear Plant (WBN) Unit 2, which had been submitted pursuant to Section 50.34, "Contents of construction permit and operating license applications; technical information," of Title 10 of the *Code of Federal Regulations* (10 CFR). Specifically, 10 CFR 50.34(b)(6)(v) requires an applicant to provide its plans for coping with emergencies, which shall include the items specified in Appendix E to 10 CFR Part 50. Section IV to Appendix E requires that the applicant provide an analysis of the time required to evacuate (i.e., an evacuation time estimate, or ETE). The ETE for the Watts Bar site is located in Annex H of the Tennessee Multi-jurisdictional Radiological Response Plan, which TVA submitted on December 3, 2009, in support of the OL application for WBN Unit 2.

The U.S. Nuclear Regulatory Commission staff is reviewing the ETE as part of its review of TVA's proposed extension of the WBN Radiological Emergency Plan (REP) approved for WBN Unit 1 to WBN Unit 2. The staff finds that additional information is needed to complete its review. The specific information is described as follows in this request for additional information (RAI), which supplements the RAI dated March 11, 2010:

13. Subject: Methodology [Basis: 10 CFR 50 Appendix E (IV); Appendix 4 to NUREG-0654 Section I.C]

Section III, "Assumptions," Item D, states that travel speeds were assumed to be one value and Section IV, "Methodology," Item C, states that travel times are based on a different travel speed value. Explain whether different travel speeds were assumed in the analysis.

14. Subject: Demand Estimation; Permanent Residents [Basis: 10 CFR 50 Appendix E (IV); Appendix 4 to NUREG-0654 Section II.A]

Section V, "Demand and Population Estimate," Item C, "Special Population," states that evacuation time for the transportation dependent population includes time for buses to travel the bus routes during the permanent population evacuation. Identify the number of transportation dependent people and buses that are assumed in the analysis for the evacuation of transportation dependent people.

15. Subject: Special Facility Population [Basis: 10 CFR 50 Appendix E (IV); Appendix 4 to NUREG-0654 Section II.C]

The ETE references county procedures that identify special facilities within the emergency planning zone (EPZ). The special facilities in the county procedures include

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the Brookewood Nursing Center, Meigs County Criminal Detention Center, Spring City Health Care Nursing Home, and Golden Years Retirement Resort.

- a. Provide the special facility population for each facility used in calculating the ETE.
 - b. Describe the type and availability of any specialized transportation resources required to support evacuation of special facility residents.
 - c. Provide a map that identifies the location of special facilities and schools within the EPZ.
16. Subject: Roadway Segment Characteristics [Basis: 10 CFR 50 Appendix E (IV); Appendix 4 to NUREG-0654 Section III.B]
- Tab E, "Roadway Characteristics," provides information for use in the capacity analysis and calculation of the ETE.
- a. Tab E includes a column titled "Evac Demand Total Permanent/Transient Vehicles," indicating that both permanent resident and transient vehicles are included. However, the total for this column equals the total Permanent Resident vehicles. Provide the total number of vehicles used in the analysis including the transient population vehicles.
 - b. Segment A-2 in Tab E shows the evacuation demand is greater than the roadway capacity and indicates a time delay on Segment A-2. Explain how the time delay was calculated for this segment.
 - c. Tab E provides a table of evacuation routes including capacity and vehicle demand. Provide a list of estimated delay times for all roadways identified in Tab E where the vehicle demand exceeds the roadway capacity.
17. Subject: Emergency Planning Zone and Sub-Areas [Basis: 10 CFR 50 Appendix E (IV); Appendix 4 to NUREG-0654 Section II.D]
- Section IV, "Methodology," Item G, states that a summary of the results of the evacuation time for each major route within the 2-, 5-, and 10-mile areas is shown in Tab G, "Summary of Evacuation Time Analysis." Tab F, "Distribution Times for EPZ Evacuation," also provides ETEs for the 2, 5, and 10-mile areas. Explain the difference in the evacuation time provided for "General Population Evacuation Time, Normal Conditions 0-10 Mile Area," in Tab G which indicates a maximum evacuation time, and the maximum ETE identified in Tab F, Item 4c, "Auto Owning Population Evacuated," which shows a different value.
18. Subject: Reporting Format [Basis: 10 CFR 50 Appendix E (IV); Appendix 4 to NUREG-0654 Section IV.A]
- Section IV, "Methodology," Item F, states that outlying sector populations were evacuated separately.

- a. Identify the outlying sectors that were evacuated separately.
 - b. Identify the population used in these separate calculations, and explain if this population was deducted from the remaining ETE analysis presented in Tab F, "Distribution Times for EPZ Evacuation."
19. Subject: Methodology [Basis: 10 CFR 50 Appendix E (IV); Appendix 4 to NUREG-0654 Section IV.B]

Section V, "Demand and Population Estimate," Item C, "Special Population," states that a tabulation of the school enrollments in the 10-Mile EPZ is contained in the respective county implementing procedures. The school enrollments in the county procedures only identify public schools.
 - a. Describe how private schools such as Fairview Christian Academy and Spring City Christian Academy are included in the ETE analysis.
 - b. It appears that additional buses may be required to carry out the evacuation of the Meigs County Schools. Explain the agreements to obtain these resources.
20. Subject: Methodology [Basis: 10 CFR 50 Appendix E (IV); Appendix 4 to NUREG-0654 Section I.C]

Tab F, "Distribution Times for EPZ Evacuation," discusses the 10-mile EPZ ETE for the auto-owning population. Given the assumed mobilization time and evacuation speed described in Section III, "Assumptions," explain how analysis results in that estimated time.
21. Subject: Emergency Planning Zones and Sub-Areas [Basis: 10 CFR 50 Appendix E (IV); Appendix 4 to NUREG-0654 Section II.D]

Section III, "Assumptions," Item E, states a maximum preparation time that is reflected in all distribution curves. Tab G, "Summary of Evacuation Time Analysis," identifies a different preparation time for the permanent population. Explain which preparation time value was used in the analysis.
22. Subject: Emergency Planning Zones and Sub-Areas [Basis: 10 CFR 50 Appendix E (IV); Appendix 4 to NUREG-0654 Section II.D]

The times provided in Tab G, "Summary of Evacuation Time Analysis," for columns "Permanent Population Response Normal Conditions," and "Transient Population Response Normal Conditions," are greater than the evacuation times provided for the "General Population Evacuation Time" in Tab G. Describe the activities included in Tab G, columns "Permanent Population Response Normal Conditions," and "Transient Population Response Normal Conditions."

The following question relates to Appendix C of the TVA Nuclear (TVAN) REP.

23. Subject: On Shift Emergency Response Organization [10 CFR 50.47(b)(2); Evaluation Criterion II.B.5, Table B-1]

On March 4, 2009, you submitted a copy of Revision 88 of Appendix C to the TVAN REP. In reviewing Appendix C Figure 1-C, "On-Shift Staffing," the staff observed that the figure had been revised from previous revisions to show an additional Unit Supervisor and an additional Reactor Operator, presumably to reflect the licensing of Unit 2. On December 3, 2009, TVA submitted Revision 89 of the TVAN REP and Revision 89 of Appendix C. Revision 89 of Figure 1-C does not show these additional positions. The staff notes that Table B-1 of NUREG-0654, including Footnote 1, provides that "for each unaffected nuclear unit in operation, maintain at least one shift foreman, one control room operator, and one auxiliary operator except that units sharing a control room may share a shift foreman if all functions are covered." If it is your intent to propose the use of the staffing shown in Revision 89 Figure 1-C, provide a justification that shows that all functions required in Table B-1 are covered at the affected unit, while providing adequate staffing to maintain safe operations at the unaffected unit.