



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

October 14, 2015

Mr. Joseph W. Shea  
Vice President, Nuclear Licensing  
Tennessee Valley Authority  
1101 Market Street, LP 3D-C  
Chattanooga, TN 37402-2801

SUBJECT: WATTS BAR NUCLEAR PLANT, UNIT 2 - CLOSEOUT OF NRC  
BULLETIN 2011-01, "MITIGATING STRATEGIES" (TAC NO. MF6767)

Dear Mr. Shea:

On May 11, 2011, the U.S. Nuclear Regulatory Commission (NRC) issued Bulletin 2011-01, "Mitigating Strategies" (Agencywide Documents Access and Management System (ADAMS) Accession No. ML111250360), to all holders of operating licenses for nuclear power reactors, except those that have permanently ceased operation and have certified that fuel has been removed from the reactor vessel. The purpose of the bulletin was to obtain a comprehensive verification that licensees' mitigating strategies to maintain or restore core cooling, spent fuel cooling, and containment following a large explosion or fire were compliant with Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.54(hh)(2).

The bulletin required two sets of responses pursuant to the provisions of 10 CFR 50.54(f). The Tennessee Valley Authority (TVA) provided its responses to the bulletin for Watts Bar Nuclear Plant (WBN) Unit 1 by letters dated June 10 and July 11, 2011 (ADAMS Accession Nos. ML11167A098, publicly available, and ML11195A148, non-publicly available, respectively). In both letters, TVA noted that since WBN Unit 2 was still under construction, it would respond to the bulletin for Unit 2 prior to receiving the operating license for the unit. By letters dated June 29 and September 24, 2015 (ADAMS Accession Nos. ML15181A362 and ML15268A564), the licensee provided responses to NRC Bulletin 2011-01 for WBN Unit 2.

The NRC staff has reviewed the information submitted by TVA for WBN Unit 2 and concludes that its response to the bulletin is acceptable. As summarized in the enclosure, the staff verified that TVA provided the information requested in the bulletin. No further information or actions under the bulletin are requested at this time.

J. Shea

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If you have any questions, please contact me at (301) 415-2048 or by e-mail at [Justin.Poole@nrc.gov](mailto:Justin.Poole@nrc.gov).

Sincerely,

A handwritten signature in black ink, appearing to read 'Justin Poole', with a long horizontal flourish extending to the right.

Justin Poole, Senior Project Manager  
Watts Bar Special Projects Branch  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-391

Enclosure:  
Safety Evaluation

cc w/encl: Distribution via Listserv



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO NRC BULLETIN 2011-01

TENNESSEE VALLEY AUTHORITY

WATTS BAR NUCLEAR PLANT, UNIT 2

DOCKET NO. 50-391

On May 11, 2011, the U.S. Nuclear Regulatory Commission (NRC) issued Bulletin 2011-01, "Mitigating Strategies" (Agencywide Documents Access and Management System (ADAMS) Accession No. ML111250360), to all holders of operating licenses for nuclear power reactors, except those that have permanently ceased operation and have certified that fuel has been removed from the reactor vessel. The bulletin required two sets of responses pursuant to the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.54(f). The first responses were due 30 days after issuance of the bulletin. By letter dated June 10, 2011 (ADAMS Accession No. ML11167A098), the Tennessee Valley Authority (TVA) provided its response for Watts Bar Nuclear Plant (WBN) Unit 1, to this first set of questions, and stated that "Watts Bar, Unit 2, is currently under construction and will respond as appropriate to the information requested in this bulletin, consistent with [the] approach provided by Watts Bar, Unit 1, during the process of obtaining the operating license." The second responses were due 60 days after issuance of the bulletin. By letter dated July 18, 2011 (ADAMS Accession No. ML11201A303), TVA addressed the second set of questions for WBN Unit 2, stating that "Watts Bar Unit 2 is currently under construction, therefore this is a voluntary response. TVA will respond as appropriate to the information requested in this Bulletin consistent with the approach provided by Watts Bar, Unit 1 prior to licensing Unit 2." By letter dated June 29, 2015 (ADAMS Accession No. ML15181A362), TVA provided its response for WBN Unit 2 for the second set of questions (second response), incorporating by reference answers to questions provided in its 60-day response for WBN Unit 1, dated July 11, 2011 (ADAMS Accession No. ML11195A148, not publicly available). In its second response, in addition to incorporating the July 11, 2011, letter, the licensee also addressed specific WBN Unit 2 equipment required to support the mitigating strategies at the site. By letter dated September 24, 2015 (ADAMS Accession No. ML15268A564), TVA provided its response for WBN Unit 2 for the first set of questions (first response). As summarized below, the NRC staff has verified that TVA provided the information requested in the bulletin for WBN Unit 1.

1.0 BACKGROUND

On February 25, 2002, the NRC issued EA-02-026, "Order for Interim Safeguards and Security Compensatory Measures" (ICM Order). Section B.5.b of the ICM Order required licensees to develop specific guidance and strategies to maintain or restore core cooling, containment, and

Enclosure

spent fuel pool cooling capabilities using readily available resources (equipment and personnel) that can be effectively implemented under the circumstances associated with the loss of large areas of the plant due to explosions or fire.

On March 27, 2009, the NRC issued 10 CFR 50.54(hh)(2) as a new rule, in order to capture the B.5.b mitigating strategies and related license conditions as regulatory requirements for both current and future licensees. By letter dated November 28, 2011 (ADAMS Accession No. ML111220447), the NRC rescinded section B.5.b of Order EA-02-026 based on the imposition of the corresponding requirements as 10 CFR 50.54(hh)(2). In Appendix II to its "Safety Evaluation Report Related to the Operation of Watts Bar Nuclear Plant, Unit 2," NUREG-0847, Supplement 28 (ADAMS Accession No. ML15229A195), the NRC staff issued its Safety Evaluation (SE) to document the final disposition of information submitted by TVA regarding compliance with 10 CFR 50.54(hh)(2).

## 2.0 30-DAY REQUEST

In order to confirm continued compliance with 10 CFR 50.54(hh)(2), the bulletin requested that licensees address the following two questions within 30 days of the date of the bulletin:

1. Is the equipment necessary to execute the mitigating strategies, as described in your submittals to the NRC, available and capable of performing its intended function?
2. Are the guidance and strategies implemented capable of being executed considering the current configuration of your facility and current staffing and skill levels of the staff?

The NRC staff reviewed TVA's first response to determine if it had adequately addressed these questions for WBN Unit 2.

### 2.1 Question 1: Availability and Capability of Equipment

In its first response dated September 24, 2015, TVA stated it confirmed that equipment it needs to execute the 10 CFR 50.54(hh)(2) mitigating strategies is available and capable of performing its intended function. The NRC staff verified that this confirmation covered equipment needed for each of the three phases of the mitigation strategies. Based on the above, the NRC concludes that TVA has adequately responded to Question 1 for WBN Unit 2.

### 2.2 Question 2: Guidance and Strategies Can Be Executed

In its first response dated September 24, 2015, TVA confirmed that the guidance and strategies it has implemented for 10 CFR 50.54(hh)(2) are capable of being executed considering the current facility configuration, staffing levels, and staff skills. Since TVA has considered its current facility configuration, staffing levels, and staff skills, and confirmed that it can execute its implemented guidance and strategies, the NRC staff concludes that TVA has adequately responded to Question 2 for WBN Unit 2.

### 3.0 60-Day Request

The bulletin required a response to the following five questions within 60 days of issuing the bulletin:

1. Describe in detail the maintenance of equipment procured to support the strategies and guidance required by 10 CFR 50.54(hh)(2) in order to ensure that it is functional when needed.
2. Describe in detail the testing of equipment procured to support the strategies and guidance required by 10 CFR 50.54(hh)(2) in order to ensure that it will function when needed.
3. Describe in detail the controls for assuring that the equipment is available when needed.
4. Describe in detail how configuration and guidance management is assured so that strategies remain feasible.
5. Describe in detail how you assure availability of offsite support.

The NRC staff reviewed TVA's second response dated June 29, 2015, to determine if it had adequately addressed these questions.

#### 3.1 Questions 1 and 2: Maintenance and Testing of Equipment

Questions 1 and 2 of the 60-day request required licensees to describe in detail the maintenance and testing of equipment procured to support the strategies and guidance required by 10 CFR 50.54(hh)(2) in order to ensure that it is functional when needed. In its second response dated June 29, 2015, TVA listed the equipment used to support the 10 CFR 50.54(hh)(2) mitigating strategies that receive maintenance or testing. For each item, TVA described the maintenance and testing performed, including the frequency and basis for the maintenance or testing activity.

The NRC staff verified that TVA listed equipment that typically requires maintenance or testing that was relied upon to make conclusions in the SE or commonly needed to implement the mitigating strategies. In its second response, TVA stated that the fire engine, portable pump, portable power supply, hoses, nozzles, and communications equipment receive maintenance or testing. The NRC staff noted that the fuel level for the fire engine and portable pump is verified during maintenance. TVA also identified other items that support the mitigating strategies that receive maintenance or testing.

The NRC staff verified that TVA described the process used for corrective actions and listed the testing performed to ensure that the strategies were initially feasible. TVA stated in its second response that its 10 CFR Part 50, Appendix B, corrective action program is used to document equipment failure, establish priorities, and perform trending.

Based on the above, the NRC staff concludes that TVA has provided the information requested by Questions 1 and 2 for WBN Unit 2.

### 3.2 Question 3: Controls on Equipment

Question 3 of the 60-day request required licensees to describe in detail the controls on equipment, such as inventory requirements, to ensure that the equipment is available when needed. A list of inventory deficiencies and associated corrective actions to prevent loss was also requested.

The NRC staff verified that TVA described its process for ensuring that B.5.b equipment will be available when needed. In its second response, TVA identified equipment included in its inventory, the inventory frequency, storage requirements, and items verified. Items verified include proper quantity, location, and accessibility of equipment; compressed gas bottle pressures, equipment shelf lives; calibrations; and control of storage locations. TVA stated that at the time of its second response there were no outstanding inventory deficiencies that would render the strategies not viable.

The NRC staff verified that TVA inventoried equipment that was relied upon to make conclusions in the SE or commonly needed to implement the mitigating strategies. In its second response, TVA stated that procured nonpermanently installed B.5.b equipment is inventoried at least annually in accordance with station procedures, and indicated that most equipment specifically listed in response to Question 3 is inventoried more frequently. The second response specifically states that the following items are included in the inventory: fire engines; portable pump; hoses; communications equipment; nozzles; appliances; and firefighter turnout gear. TVA also identified other items that support the mitigating strategies that are inventoried.

Based on the above, the NRC staff concludes that TVA has provided the information requested by Question 3 for WBN Unit 2.

### 3.3 Question 4: Configuration and Guidance Management

Question 4 of the 60-day request required licensees to describe in detail how configuration and guidance management is assured so that the mitigation strategies remain feasible. The NRC staff verified that TVA described its measures to evaluate plant configuration changes for their effects on the mitigating strategies and to ensure its procedures are current. In its second response, TVA stated that plant configuration changes are procedurally required to be evaluated against the licensing basis, which includes evaluating changes for their effect on the B.5.b mitigating strategies. TVA states that the design change process requires a review of affected procedures and that procedure changes are validated to ensure that the B.5.b mitigating strategies remain viable.

The NRC staff verified that TVA described measures it has taken to validate the procedures or guidelines developed to support the mitigating strategies. In its second response, TVA identified testing in response to Question 2 that demonstrated the ability to execute some strategies. TVA also stated that "initially, B.5.b mitigating strategies were validated by walkdowns, engineering evaluations and/or table top reviews," and they were similarly revalidated in 2011.

The NRC staff verified that TVA described the training program implemented in support of the mitigating strategies and how its effectiveness is evaluated. In its second response, TVA identified the training provided to its operations personnel, emergency response organization, fire operations, security personnel, and others. TVA also identified the frequency with which each type of training is provided and the methods for training evaluating.

Based on the above, the NRC staff concludes that TVA has provided the information requested by Question 4 for WBN Unit 2.

### 3.4 Question 5: Offsite Support

Question 5 of the 60-day request required licensees to describe in detail how offsite support availability is assured.

The NRC staff verified that TVA listed the offsite organizations it relies upon for emergency response, including a description of agreements and related training. The NRC staff compared the list of offsite organizations that TVA provided in its second response with the information relied upon to make conclusions in the SE. TVA stated that it maintains letters and memorandum of understanding with these offsite organizations, which are reviewed annually, and that these agreements were current at the time of its second response. TVA also described the training and site familiarization it provides to these offsite organizations. TVA stated that it reviewed its corrective action program back to 2008 and found no issues involving lapsed agreements related to offsite support for B.5.b events.

Based on the above, the NRC staff concludes that TVA has provided the information requested by Question 5 for WBN Unit 2.

## 4.0 CONCLUSION

As described above, the NRC staff has verified that TVA provided the information requested in Bulletin 2011-01. Specifically, TVA responded to each of the questions in the bulletin as requested. The NRC staff concludes that TVA has completed all of the requirements of the bulletin for WBN Unit 2, and no further information or actions under the bulletin are requested at this time.

Principal Contributor: Eric E. Bowman

Date: October 14, 2015

J. Shea

- 2 -

If you have any questions, please contact me at (301) 415-2048 or by e-mail at [Justin.Poole@nrc.gov](mailto:Justin.Poole@nrc.gov).

Sincerely,

**/RA/**

Justin Poole, Senior Project Manager  
Watts Bar Special Projects Branch  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-391

Enclosure:  
Safety Evaluation

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