

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

April 4, 2012

Mr. Joseph W. Shea Manager, Corporate Nuclear Licensing Tennessee Valley Authority 3R Lookout Place 1101 Market Street Chattanooga, TN 37402-2801

SUBJECT: BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2, AND 3, AND SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2 – CLOSEOUT OF BULLETIN 2011-01, "MITIGATING STRATEGIES" (TAC NOS. ME6404, ME6405, ME6406, ME6484 AND ME6485)

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). Tennessee Valley Authority (TVA or the licensee) provided responses to the bulletin by letters dated June 10 and July 11, 2011 (ADAMS Accession Nos. ML11167A098 and ML11195A148 respectively) for both Browns Ferry Nuclear Plant (BFN), Units 1, 2, and 3, and Sequoyah Nuclear Plant (SQN), Units 1 and 2. As summarized in the enclosure, the NRC staff verified that the licensee provided the information requested in the bulletin. The NRC staff has reviewed the licensee's submitted information, and concluded that its response to the bulletin is acceptable. No further information or action is required by the licensee for Bulletin 2011-01 for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2.

If you have any questions regarding this matter, I can be reached at 301-415-1564.

Sincerely,

Sira p. Xingam

Siva P. Lingam, Project Manager Plant Licensing Branch II-2 Division of Operating Reactor Licensing Office of Nuclear Reactor Regulation

Docket Nos. 50-259, 50-260, 50-296, 50-327 and 50-328

Enclosure: Summary of NRC Bulletin 2011-01 Response Review

cc w/encl: Distribution via Listserv

SUMMARY OF NRC BULLETIN 2011-01,

"MITIGATING STRATEGIES" RESPONSE REVIEW

BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2, AND 3

SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-259, 50-260, AND 50-296

DOCKET NOS. 50-327 AND 50-328

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), Tennessee Valley Authority (TVA or the licensee) provided responses to this first set of questions (first response) for Browns Ferry Nuclear Plant (BFN), Units 1, 2, and 3, and Sequoyah Nuclear Plant (SQN), Units 1 and 2. The second responses were due 60 days after issuance of the bulletin. By letter dated July 11, 2011 (ADAMS Accession No. ML11195A148), the licensee provided its response to this second set of questions (second response). As summarized below, the NRC staff has verified that the licensee provided the information requested in the bulletin for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2.

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 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.

By letters dated August 16, 2007 (ADAMS Accession No. ML072270181), and August 9, 2007 (ADAMS Accession No. ML072180026), the NRC staff issued its Safety Evaluation (SE) for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2 respectively, to document the final disposition of information submitted by the licensee regarding Section B.5.b of the ICM Order for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2. Along with the SE, the NRC staff issued a conforming license condition to incorporate the B.5.b mitigating strategies into the licensing basis.

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. At that time, licensee compliance with the conforming license

conditions was sufficient to demonstrate compliance with 10 CFR 50.54(hh)(2) (74 FR 13926) so no further actions were required on the part of current licensees.

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 issuing 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 the licensee's first response to determine if it had adequately addressed these questions for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2.

2.1 Question 1: Availability and Capability of Equipment

In its first response, the licensee 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 for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2. The NRC staff verified that this confirmation covered equipment needed for Phases 2 and 3 of B.5.b mitigation strategies, but the first response did not clearly indicate that equipment needed for Phase 1 had been included in the confirmation. During a subsequent telephone conversation, the licensee stated that its confirmation included equipment needed for Phase 1 and that it had inadvertently left out a reference for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2. In its second response, the licensee corrected its 30-day response to include the missing reference for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2. In its each reference for Phase 1. Therefore, the NRC staff finds that the licensee has adequately responded to Question 1 for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2.

2.2 Question 2: Guidance and Strategies Can Be Executed

In its first response, the licensee 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's skills for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2. Since the licensee has considered its current facility configuration, staffing levels, and staff's skills, and confirmed that it can execute its implemented guidance and strategies for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2, the NRC staff finds that the licensee has adequately responded to Question 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 the licensee's second response to determine if it had adequately addressed these questions for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2. The NRC staff also reviewed the August 9, 2007, SE to determine what equipment, training, and offsite resources at BFN, Units 1, 2, and 3, and SQN, Units 1 and 2 were relied upon by NRC staff to conclude that the licensee's actions would ensure compliance with Section B.5.b of the ICM Order and the conforming license condition.

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, the licensee listed the equipment used to support the 10 CFR 50.54(hh)(2) mitigating strategies which receives maintenance or testing for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2. For each item, the licensee described the maintenance and testing performed, including the frequency and basis for the maintenance or testing activity for BFN, Units 1, 2, and 3, and SQN, Units 1 SQN, Units 1 and 2.

The NRC staff verified that the licensee listed equipment that typically requires maintenance or testing which was relied upon to make conclusions in the SE or commonly needed to implement the mitigating strategies for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2. In its second response, the licensee stated that the fire truck/engine, portable pump, hoses, nozzles, and communications equipment receive maintenance or testing for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2. The licensee also stated in its second response that portable power supply receives maintenance or testing for BFN, Units 1, 2, and 3. The NRC staff noted that the fuel level for the fire truck/engine and portable pump is verified during maintenance. The licensee also identified other items that support the mitigating strategies that receive maintenance or testing for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2.

The NRC staff verified that the licensee described the process used for corrective actions and listed the testing performed to ensure that the strategies were initially feasible for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2. The licensee 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 for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2.

Based upon the information above, the NRC staff finds that the licensee has provided the information requested by Questions 1 and 2 for BFN, Units 1, 2, and 3, and SQN, Units 1 and 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 the licensee described its process for ensuring that B.5.b equipment will be available when needed for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2. In its second response, the licensee identified equipment included in its inventory, the inventory frequency, storage requirements, and items verified for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2. Items verified include proper quantity, location, and accessibility of equipment; compressed gas bottle pressures, equipment shelf lives; calibrations; and control of storage locations. The licensee stated that at the time of its second response there were no outstanding inventory deficiencies that would render the strategies not viable for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2.

The NRC staff verified that the licensee inventoried equipment which was relied upon to make conclusions in the SE or commonly needed to implement the mitigating strategies for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2. In its second response, the licensee stated that procured non-permanently 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 for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2. The second response specifically states that the following items are included in the inventory: fire truck/engine; portable pump; hoses; communications equipment; nozzles, adapters; and firefighter turnout gear. The licensee also identified other items that support the mitigating strategies that are inventoried for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2.

Based upon the information above, the NRC staff finds that the licensee has provided the information requested by Question 3 for BFN, Units 1, 2, and 3, and SQN, Units 1 and 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 the licensee 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, the licensee 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 for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2. The licensee 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 for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2.

The NRC staff verified that the licensee described measures it has taken to validate the procedures or guidelines developed to support the mitigating strategies for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2. In its second response, the licensee identified testing in response to Question 2 that demonstrated the ability to execute some strategies for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2. The licensee also stated that "initially, mitigating strategies were validated by walkdowns, engineering evaluations and/or table top reviews" and they were similarly revalidated in 2011, for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2.

The NRC staff verified that the licensee described the training program implemented in support of the mitigating strategies and how its effectiveness is evaluated for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2. In its second response, the licensee identified the training provided to its operations personnel, emergency response organization, fire brigade, security personnel, and others for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2. The licensee also identified the frequency with which each type of training is provided and the methods for training evaluation for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2.

Based upon the information above, the NRC staff finds that the licensee has provided the information requested by Question 4 for BFN, Units 1, 2, and 3, and SQN, Units 1 and 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 the licensee listed the offsite organizations it relies upon for emergency response, including a description of agreements and related training for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2. The NRC staff compared the list of offsite organizations that the licensee provided in its second response with the information relied upon to make conclusions in the SE for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2. The licensee stated that it maintains agreement letters with these offsite organizations, which are reviewed annually, and that these agreements were current at the time of its second response for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2. The licensee also described the training and site familiarization it provides to these offsite organizations for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2. The licensee 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 for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2.

Based upon the information above, the NRC staff finds that the licensee has provided the information requested by Question 5 for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2.

4.0 CONCLUSION

As described above, the NRC staff has verified that the licensee has provided the information requested in Bulletin 2011-01 for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2. Specifically, the licensee responded to each of the questions in the bulletin as requested for BFN, Units 1, 2,

and 3, and SQN, Units 1 and 2. The NRC staff concludes that the licensee has completed all of the requirements of the bulletin and no further information or action for Bulletin 2011-01 is needed from the licensee for BFN, Units 1, 2, and 3, and SQN, Units 1 and 2.

Mr. Joseph W. Shea Manager, Corporate Nuclear Licensing Tennessee Valley Authority 3R Lookout Place 1101 Market Street Chattanooga, TN 37402-2801

SUBJECT: BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2, AND 3, AND SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2 – CLOSEOUT OF BULLETIN 2011-01, "MITIGATING STRATEGIES" (TAC NOS. ME6404, ME6405, ME6406, ME6484 AND ME6485)

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If you have any questions regarding this matter, I can be reached at 301-415-1564.

Sincerely, /**RA**/ Siva P. Lingam, Project Manager Plant Licensing Branch II-2 Division of Operating Reactor Licensing Office of Nuclear Reactor Regulation

Docket Nos. 50-259, 50-260, 50-296, 50-327 and 50-328 Enclosure: Summary of NRC Bulletin 2011-01 Response Review cc w/encl: Distribution via Listserv

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