



Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402-2801

September 21, 2009

10 CFR 50.4
10 CFR 50.54(f)

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-0001

Browns Ferry Nuclear Plant, Unit 2
Facility Operating License No. DPR-52
NRC Docket No. 50-260

Subject: **Nine-Month Supplemental (Post-Outage) Response to NRC Generic Letter 2008-01: Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems**

- References:
1. NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems," dated January 11, 2008
 2. TVA Three-Month Response to NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems," dated May 5, 2008
 3. TVA Three-Month Response to NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems," dated June 6, 2008
 4. TVA Three-Month Response to NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems," dated July 11, 2008
 5. TVA Nine-Month Response to NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems," dated October 11, 2008
 6. Letter from NRC to Browns Ferry Nuclear Plant, Units 1, 2, and 3 – Re: Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems" Proposed Alternative Course of Action (TAC Nos. MD7799, MD7800, and MD7801), dated September 25, 2008

ABY
NRR

7. TVA Browns Ferry Nuclear Plant, Unit 1 - Nine-Month Supplemental (Post-Outage) Response to NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems," dated March 2, 2009
8. Letter from NRC to the Nuclear Energy Institute (NEI), "Preliminary Assessment of Responses to Generic Letter 2008-01, 'Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems,' and Future Nuclear Regulatory Commission Staff Review Plans," dated May 28, 2009
9. Letter from NRC to Browns Ferry Nuclear Plant, Units 1, 2, and 3 – Re: Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems" Request for Additional Information, dated August 24, 2009

The purpose of this letter is to provide The Tennessee Valley Authority's (TVA's) "Nine-Month (Post-Outage)" response to NRC Generic Letter (GL) 2008-01, Reference 1, for Browns Ferry Nuclear Plant, Unit 2. TVA's initial responses and the "Nine-Month" response were provided in References 2, 3, 4, and 5 above. NRC acceptance review of the Nine-Month response is provided in Reference 6.

The NRC issued GL 2008-01 to request that each licensee evaluate the licensing basis, design, testing, and corrective actions for the emergency core cooling, decay heat removal, and containment spray systems to ensure that gas accumulation is maintained less than the amount that challenges operability of these systems, and that appropriate action is taken when conditions adverse to quality are identified.

This supplemental response is being submitted within 90 days of startup from the outage in which the deferred actions were completed (Browns Ferry Nuclear Plant, Unit 2 Cycle 15 Refueling Outage). GL 2008-01 response activities that remain to be accomplished, such as the long-term items identified in Reference 6, are considered to be confirmatory.

This Unit 2 response is similar to the Browns Ferry Nuclear Plant, Unit 1 response (Reference 7) and addresses applicable NRC requests for additional information (Reference 9) including NRC guidance (Reference 8).

TVA concludes that the subject Browns Ferry Nuclear Plant, Unit 2 systems are operable and that Unit 2 is currently in compliance with the licensing basis documentation and applicable regulations, including 10 CFR 50 Appendix B, "Quality Assurance Criteria for Nuclear Plants and Fuel Reprocessing Plants," Criteria III, V, XI, XVI, and XVII, with respect to the concerns outlined in GL 2008-01 regarding managing gas accumulation in these systems.

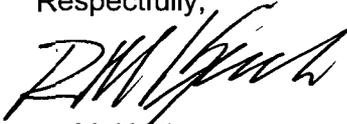
There are no new regulatory commitments contained in the letter.

U.S. Nuclear Regulatory Commission
Page 3
September 21, 2009

Please direct any questions concerning this matter to Dan Green at (423) 751-8423.

I declare under penalty of perjury that the foregoing is true and correct.
Executed on 21st day of September, 2009.

Respectfully,



R. M. Krich
Vice President
Nuclear Licensing

Enclosure: Nine-Month Supplemental (Post-Outage) Response to NRC GL 2008-01 for
Browns Ferry Nuclear Plant, Unit 2

cc (Enclosure):

Regional Administrator - Region II

NRC Senior Resident Inspector - Browns Ferry Nuclear Plant

ENCLOSURE

TENNESSEE VALLEY AUTHORITY (TVA) BROWNS FERRY NUCLEAR PLANT (BFN) UNIT 2

NINE-MONTH SUPPLEMENTAL (POST-OUTAGE) RESPONSE TO NUCLEAR REGULATORY COMMISSION (NRC) GENERIC LETTER (GL) 2008-01

This Enclosure provides the TVA Browns Ferry Nuclear Plant, Unit 2 Nine-Month Supplemental (Post-Outage) Response to GL 2008-01 for actions that were deferred until the next refueling outage as requested by NRC letter dated September 25, 2008 (Reference 2).

The following information is provided in this response:

- a) A description of the results of evaluations that were performed pursuant to GL 2008-01 on the previously incomplete activities, such as system piping walkdowns, at Unit 2, (see Section A of this Enclosure),
- b) A description of any additional corrective actions determined necessary to assure system operability and compliance with the quality assurance criteria in Sections III, V, XI, XVI, and XVII of Appendix B to 10 CFR Part 50 and the licensing basis and operating license with respect to the subject systems, including a schedule and a basis for that schedule (see Section B1 of this Enclosure), and
- c) A summary of any changes or updates to previous corrective actions, including any schedule change and the basis for the change (See Section B2 of this Enclosure).

This supplemental Unit 2 response is similar to the March 2, 2009, Browns Ferry Nuclear Plant, Unit 1 response (Reference 3) and, as applicable, addresses the August 24, 2009, NRC request for additional information (Reference 5) and implements the guidance provided in the NRC letter to the Nuclear Energy Institute dated May 28, 2009 (Reference 4).

The original conclusions documented in the Nine-Month response (Reference 1) with respect to the licensing basis evaluation, testing evaluations, and corrective action evaluations have not changed. This supplement will only discuss the results of design evaluation reviews conducted during the recent refueling outage associated with previously uncompleted activities.

A. EVALUATION RESULTS

1. Design Basis Documents

There is no additional information or changes to report since the TVA Browns Ferry Nuclear Plant Nine-Month Response to NRC GL 2008-01 dated October 11, 2008 (Reference 1).

2. Confirmatory Walkdowns

Portions of the Residual Heat Removal (RHR), Core Spray, and High Pressure Coolant Injection (HPCI) Systems not previously accessible were walked down during the Unit 2 Cycle 15 Refueling Outage (RFO) using the same criteria as the previous walkdowns. The walkdown scope consisted of the RHR Loop I and II injection piping, which is downstream of the injection valves, the RHR Shutdown Cooling suction piping, the Core Spray Loop I and II injection piping, which is downstream of the injection valves, and the HPCI injection piping.

For the RHR Loop I and II injection piping, the RHR Shutdown Cooling suction piping, and the Core Spray Loop I and II injection piping, the walkdowns showed an acceptable pipe slope for horizontal sections for the RHR piping and Core Spray piping. Due to the configuration of the HPCI piping (as confirmed by walkdowns), it cannot contain a void that exceeds acceptance criteria and no measurements were required. The acceptance criteria and the basis for acceptance of this condition are described in the NRC GL 2008-01 request for additional information (RAI) response to Question 9 dated September 21, 2009 (Reference 6).

For the RHR Loop I and II injection piping, it was identified that both are elevated above the vent locations used in loop venting procedures, 2-SR-3.5.1.1(RHR I) and (RHR II), with Loop I containing an inverted U. The Core Spray Loop II injection piping also contained an inverted U. The Core Spray Loop II slopes upward and then drops down before the Loop II Testable Check Valve, 2-CKV-075-0054, which creates an inverted U. Loop I of Core Spray contains a previously unvented high point in a similar geometric location as Loop II.

Furthermore, it was found that each Loop of RHR and Core Spray injection piping has an existing vent line at the top of the inverted U or highpoint. These vent lines were not identified in any of the procedures reviewed for venting the systems during return to service prior to the Unit 2 walkdowns in the Spring of 2009. Both of the RHR lines are vented dynamically when placed in service for Shutdown Cooling. Technical Specification (TS) Surveillance 3.5.1.1 verifies, for each Emergency Core Cooling System (ECCS) injection/spray subsystem, the piping is filled with water from the pump discharge valve to the injection valve.

As stated in our October 11, 2008 response (Reference 1), an analysis of ECCS piping downstream of the injection valves was completed and a determination was made that the existence of air voids in this piping would have no adverse consequences related to accident conditions. Even if small voids did exist, the pressure transient would not be greater than the normal injection pressure. A discussion of this transient and the basis for acceptance of this condition are described in the NRC GL 2008-01 RAI response to Question 10 dated September 21, 2009 (Reference 6). As an enhancement, actions have been initiated that will add the venting of these portions of piping to the system operating instruction fill and vent procedures (Table 1, Item 8).

No confirmatory ultrasonic test (UT) (nondestructive) examinations were performed on previously inaccessible piping.

3. Vent Valves

For the RHR Loop I and II injection piping, the RHR Shutdown Cooling suction piping, the Core Spray Loop I and II injection piping, and the HPCI injection piping, no new vent valve locations were identified and no modifications to existing vent valves were required.

For the RHR Loop I and II and Core Spray Loop I and II injection piping downstream of the injection valves, revisions to the system operating instructions to add the use of the existing vent valves to the system fill and vent procedures as discussed in Section A.2.

4. Procedures

Core Spray System Operating Instruction, 2-OI-75, has been revised to address venting of piping downstream of the injection valves. Revisions to the RHR System Operating Instruction, 2-OI-74, to address the venting of the piping downstream of the injection valves have been initiated (Table 1, Item 8).

B. DESCRIPTION OF NECESSARY ADDITIONAL CORRECTIVE ACTIONS

1. Additional Corrective Actions

Revisions to the RHR and Core Spray System Operating Instructions, 2-OI-74, and 2-OI-75, respectively, to address venting of piping downstream of the injection valves have been initiated (Table 1, Item 8).

2. Corrective Action Updates

The following corrective actions, described in TVA's October 11, 2008 response (Reference 1), are repeated in Table 1 for clarity, changed where needed, and include a status as of the completion of the Unit 2 Cycle 15 Refueling Outage.

a. Changed Corrective Actions

The expected completion date of Table 1, Item 7, has been changed.

b. Additional Completed Corrective Actions

As an enhancement, revisions to the RHR and Core Spray System Operating Instructions, 2-OI-74, and 2-OI-75, respectively, to address venting of piping downstream of the injection valves have been initiated (Table 1, Item 8). These actions were identified during the confirmatory walkdowns.

c. Additional Planned Corrective Actions

No additional corrective actions are required as a result of the outage activities and evaluations.

C. CONCLUSION

TVA has evaluated the previously unevaluated portions of the applicable systems at Unit 2 that perform the functions described in the GL and has concluded that these systems are operable as defined in the Browns Ferry Nuclear Plant TS and are in conformance with commitments to the applicable General Design Criteria, as stated in the Updated Final Safety Analysis Report.

REFERENCES

1. TVA Nine-Month Response to NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems," dated October 11, 2008
2. Letter from NRC to Browns Ferry Nuclear Plant, Units 1, 2, and 3 – Re: Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems" Proposed Alternative Course of Action (TAC Nos. MD7799, MD7800, and MD7801) dated September 25, 2008
3. TVA Browns Ferry Nuclear Plant, Unit 1 - Nine-Month Supplemental (Post-Outage) Response to NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems," dated March 2, 2009
4. Letter from NRC to the Nuclear Energy Institute (NEI), "Preliminary Assessment of Responses to Generic Letter 2008-01, 'Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems,' and Future Nuclear Regulatory Commission Staff Review Plans," dated May 28, 2009
5. Letter from NRC to Browns Ferry Nuclear Plant, Units 1, 2, and 3 – Re: Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems" Request for Additional Information dated August 24, 2009
6. TVA Browns Ferry Nuclear Plant, Units 1, 2, and 3 - Response to Request for Additional Information for Regarding Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems," dated September 21, 2009

TABLE 1

Item Description	Status October 11, 2008	Status Unit 1 Cycle 7 RFO	Status Unit 2 Cycle 15 RFO
1. TVA will evaluate adopting the revised Integrated Improved Standard Technical Specification (ISTS)	Within 6 months of NRC approval of the Traveler	Unchanged	Unchanged
2. The design change review checklist is revised to include an explicit item to determine if the design change introduces or increases the potential gas accumulation beyond established acceptance criteria.	Complete	Unchanged	Unchanged
3. The procedure for venting the LPCI injection lines is revised to use the vent valve on the bonnet of the LPCI injection isolation valve.	Complete	For BFN Unit 1, procedures have been revised to require that UT examinations be used in lieu of bonnet venting.	Unchanged
4. The ECCS and DHR System operating procedures are being revised to require UT inspection or dynamic venting of locations that could contain a significant void should this pipe be drained.	11/26/2008	Complete	Unchanged
5. The venting procedures for LPCI discharge pipe are revised to include a time requirement on water flow from the vent.	Complete	Unchanged	Unchanged
6. The Core Spray Pump flow test procedures are revised to require the monthly vent procedures to be used for verifying the system is full of water prior to testing the pump.	Complete	Unchanged	Unchanged
7. Periodic venting The procedures that are used for to meeting SR 3.5.1.1 are being revised to require that gas releases be timed and results trended. The revised venting procedures will also require that, in the event of an extended gas release, a report is entered into the Corrective Action Program.	4/31/2009 5/4/2009 9/30/2009	Prior to this review, it was determined that this item (action) was not as intended. Corrections are as shown. The new date supports this change.	The completion date for this item has changed.
8. The ECCS and DHR System operating procedures are being revised to address venting of piping downstream of the injection valves.	9/25/2009	Complete	New Item