



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

September 28, 2009

10 CFR 50.4

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

Browns Ferry Nuclear Plant, Unit 1
Facility Operating License No. DPR-33
NRC Docket No. 50-259

Subject: **Response to Request for Additional Information for Extended Power Uprate – Round 26 (TAC No. MD5262) (TS-431)**

- References:
1. Letter from NRC to Mr. Preston D. Swafford (TVA), "Browns Ferry Nuclear Plant, Unit 1, Request for Additional Information for Extended Power Uprate – Round 26 (TAC No. MD5262) (TS-431)," dated August 28, 2009
 2. Letter from NRC to Mr. Preston D. Swafford (TVA), "Browns Ferry Nuclear Plant, Units 1, 2, and 3 – Revised Schedule for Extended Power Uprate Amendment Request Review (TAC Nos. MD5262, MD5263, and MD5264) (TS-431)," dated September 18, 2009
 3. Letter from R.M. Krich (TVA) to NRC, "Browns Ferry Nuclear Plant Extended Power Uprate Review," dated September 23, 2009

By letter dated August 28, 2009 (Ref. 1), the NRC transmitted a Request for Additional Information (RAI) concerning the Tennessee Valley Authority's (TVA's) amendment request to change the Browns Ferry Nuclear Plant, Unit 1 operating license to increase the maximum authorized power level by approximately 14 percent. This letter transmits TVA's response to the RAI within 30 days of issuance of the NRC's letter, in accordance with the requirements of 10 CFR 50.4, "Written Communications," paragraph (a), i.e., by September 28, 2009. The NRC requests and TVA's responses are given below.

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HRR

NRC Request 81./87.

During a recent inspection at Browns Ferry Nuclear Plant (BFN) from April 20-24, 2009 [See inspection report (IR) 50-259(260)(296)/2009-007] the response to a significant fire was reviewed. Based on this review and information provided in support of the BFN extended power uprate (EPU) review, it is the Nuclear Regulator Commission (NRC) staff's understanding that upon detection of a significant fire the reactor operators would first enter the emergency operating instructions (EOIs). From there the operators may stay in the EOIs or subsequently enter the safe shutdown instructions (SSIs), if the conditions for entry are satisfied. Observations by the inspection staff of a simulated significant fire [IR 50-259(260)(296)/2009-007] indicated the possibility that, at the time of entry into the SSIs, the suppression pool temperature may be greater than the initial suppression pool temperature of 95 degrees Fahrenheit (degrees F) assumed in the net positive suction head (NPSH) Appendix R analyses due to the discharge of steam from the reactor vessel to the suppression pool.

Explain how this sequence of events is consistent with the timing assumed in the Appendix R Fire analyses provided in a letter dated March 12, 2009, to demonstrate adequate NPSH for the residual heat removal (RHR) pump credited with cooling the suppression pool and the core. Also, justify the use of an initial suppression pool temperature of 95 degrees F, if entry into the SSIs is not made at the time of reactor trip. Address how a higher initial suppression pool temperature (the suppression pool temperature at entry into the SSIs) will affect the peak suppression pool temperature and the timing of assumed operator actions (manually opening the main steam relief valves and terminating the cooling of the containment fan coolers).

Response

TVA is currently evaluating certain SSIs. The possibility of the availability of off-site power to power equipment such as condensate pumps is being assessed. The time that operators have to take actions before blowing down the fire-affected unit and the non-fire-affected units is also being reassessed. Preliminary indications are that the affected SSIs can be revised to allow the operators additional flexibility with respect to actions that can be taken to safely shut down the fire-affected and non-fire-affected units. However, any changes to the SSIs will account for the necessity to maintain suppression pool water temperature within required limits. Upon completion of this evaluation, TVA will notify the NRC of the results.

NRC Request 82./88.

Provide detailed justification for each fire area that demonstrates that during a significant fire spurious actuations of containment isolation valves or maloperation of other systems or components will not result in loss of containment integrity.

Response

The effect of fire induced spurious actuations, including spurious actuations of containment isolation valves, or maloperation of other systems or components, is being reassessed. License conditions C.(13), C.(14), and C.(7) for Browns Ferry Nuclear Plant, Units 1, 2, and 3, respectively, incorporate NRC Safety Evaluation (SE) dated April 25, 2007. As stated in that SE, TVA indicated that it would follow guidance regarding spurious actuations provided by NRC generic communications. The SE also states that the compensatory measures in place at the Browns Ferry Nuclear Plant to address spurious actuations give assurance that in the short term adequate protection can be maintained. Subsequently, TVA submitted a letter dated March 4, 2009 in which it stated its intention to adopt National Fire Protection Association (NFPA) Standard 805, "NFPA 805, Performance Based Standard for Fire Protection for Light-Water Reactor Electric Generation Plants," 2001 Edition, in accordance with 10 CFR 50.48, "Fire Protection," paragraph (c). TVA planned on including the reassessment of spurious actuations as part of adopting NFPA 805. The NRC acknowledged TVA's letter of intent in its letter dated September 17, 2009. In this letter, the NRC stated that a 36-month enforcement discretion period, starting on March 4, 2009 and expiring on March 4, 2012, for the Browns Ferry Nuclear Plant, Units 1, 2, and 3 was granted. The NRC letter also delineated the conditions that must be met to receive enforcement discretion, including implementing and maintaining appropriate compensatory measures.

However, in order to support the resolution of this issue for the EPU amendment request, TVA is evaluating the schedule for the reassessment of fire induced spurious actuations stated above. Accordingly, we will inform the NRC of the results of this schedule evaluation.

NRC Request 83./89.

The March 12, 2009 letter to the NRC revising the BFN Appendix R Fire NPSH analyses assumes a required NPSH value corresponding to at 3-percent head loss. By definition, the RHR pump will be operating with a level of cavitation greater than the level of cavitation assumed in previous Appendix R analyses. Provide an explanation why the RHR Pump can be expected to perform its safety function at the 3-percent head loss value of required NPSH.

Response

By letter dated September 18, 2009 (Ref. 2), the NRC informed TVA that it determined that additional time is warranted for the NRC to develop additional regulatory guidance regarding the application of containment accident pressure (CAP) credit with respect to net positive suction head (NPSH). TVA acknowledged the NRC's letter by letter dated September 23, 2009 (Ref. 3). TVA will review this regulatory guidance once it is issued, and will respond to this request, if appropriate, after it completes its review.

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There are no regulatory commitments associated with this letter.

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 this 28th day of September 2009.

Respectfully,



R. M. Krich
Vice President
Nuclear Licensing

cc:

NRC Regional Administrator – Region II
NRC Senior Resident Inspector – Browns Ferry Nuclear Plant
State Health Officer – Alabama Department of Public Health