



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

CNL-15-162

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10 CFR 50.4

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

Browns Ferry Nuclear Plant, Units 1, 2, and 3
Renewed Facility Operating License Nos. DPR-33, DPR-52, and DPR-68
NRC Docket Nos. 50-259, 50-260, and 50-296

Subject: **Status of Effort to Resolve Non-Conformance Related to Potential Loss of Spent Fuel Pool Cooling**

- References:
1. Letter from NRC to TVA, "Browns Ferry Nuclear Plant, Units 1, 2 and 3 - Request for Additional Information Related to Potential Loss of Spent Fuel Pool Cooling (TAC No. ME6761)," dated March 24, 2014 (ML14055A295)
 2. Letter from TVA to NRC, "Response to Request for Additional Information Related to Potential Loss of Spent Fuel Cooling," dated September 3, 2014 (ML14248A681)
 3. Letter from TVA to NRC, "Revised Response to Request for Additional Information Related to Potential Loss of Spent Fuel Cooling - NRC RAI 1," dated December 31, 2014
 4. Letter from TVA to NRC, "Status of Effort to Resolve Non-Conformance Related to Potential Loss of Spent Fuel Pool Cooling," dated February 27, 2015
 5. Letter from NRC to Licensees with Mark I and II Containment Designs, "Proposed Director's Decision Under 10 CFR 2.206," dated April 17, 2015 (ML15069A112)

In Reference 1, the Nuclear Regulatory Commission (NRC) requested additional information from Tennessee Valley Authority (TVA) regarding the reliability of the (Spent) Fuel Pool Cooling (FPC) system at Browns Ferry Nuclear Plant (BFN). In Reference 2 and supplemented by Reference 3, TVA responded to the request for additional information. Also in Reference 2, TVA identified a perceived non-conformance with the BFN Licensing Basis and committed to resolve the issue and provide periodic updates on the status of this resolution. The first periodic status was provided by the Reference 4 letter.

Consequently, TVA has reviewed the BFN Licensing Basis of the fuel storage pool (FSP) with regard to a Design Basis Earthquake (DBE) with consequential loss-of-offsite-power (LOOP) and concluded that the perceived non-conformance does not exist. The following discussion provides the basis for that conclusion.

The BFN Licensing Basis for a DBE with consequential LOOP is that safe shutdown must be maintained. The Safe Shutdown Analysis (ND-Q0999-910033), Appendix 32D, "Earthquake," provides the evaluation of that event and concludes that safe shutdown can be maintained. The consequential sustained loss of FSP forced cooling resulting in a significant change in the secondary containment environment was not considered among the original design basis events that create a harsh environment with respect to environmental qualification of equipment, due to the slowly evolving nature of the event. The heat rate of the stored fuel in the FSP corresponds to a considerable time to reach saturation after a loss of cooling, and successful restoration of cooling during that time is likely. This conclusion is consistent with the NRC response to licensees with Mark I and Mark II containment designs provided in Reference 5.

The TVA discussion presented in Reference 3 presumed worst case conditions that would occur for a very short period of time. As discussed in Reference 3, the Residual Heat Removal (RHR) system, the Residual Heat Removal Service Water (RHRSW) system and the portion of the FPC system that provides make-up water to the FSP are qualified to Seismic Class I requirements. The RHR/RHRSW systems can be credited for providing raw make-up water to the FSP by utilizing piping from the RHR system and FPC system. Also, the RHR/RHRSW systems are powered from the emergency diesel generators (EDGs) so they would remain functional when offsite power is not available, i.e., following a LOOP.

The Unit 2 FPC system that forms part of the flow path to the suctions of the RHR pumps has been evaluated to Seismic Class I design requirements, but it is not considered Seismic Class I in the FSAR. As such, there is reasonable assurance that this piping would remain functional following a DBE. The portions of the Unit 1 FPC system and the Unit 3 FPC system that form part of the flow path to the suctions of the RHR pumps are similar in configuration to the Unit 2 piping configurations. This similarity provides reasonable assurance that the Unit 1 and Unit 3 piping system would also remain functional following a DBE.

The original and current Licensing Basis of the BFN units do not include a requirement to mitigate a sustained loss of FSP forced cooling, although there is reasonable assurance that such cooling can be accomplished. Therefore, TVA considers a sustained loss of FSP forced cooling as a beyond-design-basis event. As such, TVA FLEX Instructions contain steps to establish a vent path to alleviate accumulation of condensate due to an extended 'feed and boil' of the FSP.

In conclusion, the BFN FPC system is in conformance with the current Design and Licensing Bases. The suspected non-conformance identified in Reference 3 is considered resolved with no additional action or follow-up reporting necessary. TVA considers the regulatory commitment made in Reference 2 closed.

There are no new regulatory commitments contained in this letter. Should you have any questions concerning this submittal, please contact Edward D. Schrull at (423) 751-3850.

Respectfully,

J. W. Shea

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