



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

July 25, 2016

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

SUBJECT: BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2, AND 3 – REQUEST FOR ADDITIONAL INFORMATION RELATED TO LICENSE AMENDMENT REQUEST TO ADD NEW TECHNICAL SPECIFICATION 3.3.8.3 (CAC NOS. MF6738, MF6739, AND MF6740)

Dear Mr. Shea:

By letter dated September 16, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15260B125), Tennessee Valley Authority, (TVA, the licensee) submitted a license amendment request (LAR) for Renewed Facility Operating License Nos. DPR-33, DPR-52, and DPR-68, for the Browns Ferry Nuclear Plant (BFN) Units 1, 2 and 3, respectively. The proposed changes revise BFN, Units 1 and 2, Technical Specifications (TSs) by adding a new specification governing the safety functions for the emergency core cooling system preferred pump logic, common accident signal (CAS) logic, and the unit priority re-trip logic (UPRTL). The changes proposed for BFN, Unit 3 (i.e., relocating the requirements for CAS logic and UPRTL) are made for consistency with the changes to BFN, Units 1 and 2, TSs.

In addition, by letter dated March 21, 2016 (ADAMS Accession No. ML16074A126), the U.S. Nuclear Regulatory Commission (NRC) issued a request for additional information (RAI). The licensee, by letters dated April 15, April 29, May 11, May 25, and June 16, 2016 (ADAMS Accession Nos. ML16106A323, ML16123A071, ML16133A566, ML16146A725, and ML16169A179, respectively), responded to the RAIs.

The NRC staff reviewed the information provided in the LAR and the RAI responses submitted by the licensee, and determined that additional information is needed. On July 1 and July 5, 2016, the NRC staff forwarded to TVA, by e-mail, followup questions from the Instrumentation and Controls Branch and Electrical Engineering Branch, Division of Engineering, Office of Nuclear Reactor Regulation. On July 18, 2016, NRC and TVA staff held a conference call for the licensee to clarify any staff questions and discuss the timeframe in which TVA may provide the requested information. The enclosure to this letter contains the finalized RAIs. During the conference call, NRC and TVA staff agreed that TVA would respond to the staff RAIs by August 24, 2016.

J. Shea

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If you have any questions, please contact me at 301-415-1447 or Farideh.Saba@nrc.gov.

Sincerely,

A handwritten signature in black ink that reads "Farideh E. Saba". The signature is written in a cursive style with a large initial 'F' and 'S'.

Farideh E. Saba, Senior Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

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

Enclosure:
Request for Additional Information

cc w/enclosure: Distribution via Listserv

REQUEST FOR ADDITIONAL INFORMATION

LICENSE AMENDMENT REQUEST TO ADD NEW TECHNICAL SPECIFICATION 3.3.8.3

TENNESSEE VALLEY AUTHORITY

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

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

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The NRC staff from the Electrical Engineering Branch (EEEB) and Instrumentation and Controls Branch (EICB), Division of Electrical Engineering, Office of Nuclear Reactor Regulation, has reviewed the information provided in the LAR dated September 16, 2015, and TVA's responses to the staff's RAIs. NRC staff determined that the following additional information is needed to complete its review.

EEEB RAI 5¹

In response to EEEB RAI 3, TVA stated, in its letter dated May 11, 2016 (ADAMS Accession No. ML16133A566):

Extended Operation (> 24 hours)

If it becomes necessary to establish Suppression Pool Cooling on Units 1 and 2 simultaneously, operators may need to parallel the Unit 1/2 Diesel Generators with their respective Unit 3 Diesel Generators in accordance with the BFN Loss of Off-Site Power/Station Blackout procedure. This will allow a Unit 1 and a Unit 2 RHR pump to be operated off the same 4kV Shutdown Board and support extended operation without overloading the Diesel Generators.

¹ The NRC letter dated March 21, 2016, contains EEEB RAIs 1 through 4.

Enclosure

However, in Section 8.5 of the BFN Updated Final Safety Analysis Report (UFSAR), the following is stated:

Operation of the Diesel Generators During the Long-Term Decay Heat Removal Period (Greater Than 10 Minutes)

In the long term following an accident, the four diesel generators assigned to Units 1 and 2 and the four diesel generators assigned to Unit 3 may be paralleled as shown in Figure 8.5-24 (4.16-kV shutdown board A to 4.16-kV shutdown board 3EA, etc.). Synchronizing equipment is provided in the Units 1 and 2 control room, and paralleling will be accomplished from this location.

Explain which plant conditions may require parallel operation of the Unit 3 diesel generators with the Units 1 and 2 diesel generators before 24 hours, but after 10 minutes, of an accident.

EEEE RAI 6

TVA, in Attachment 1, "Revised Proposed BFN, Unit 1 TS 3.3.8.3," of Enclosure 3, "Revised Proposed Technical Specifications and Associated Bases," to its submittal dated June 16, 2016, stated that, "The logic systems for each FUNCTION in Table 3.3.8.3-1 shall be OPERABLE." The word "FUNCTION" is capitalized. However, FUNCTION is not defined in the BFN TSs. Define the word FUNCTION in TSs or change it to lower case. Also, briefly describe each function in the TS Bases as to how these functions are derived.

EEEE RAI 7

TVA, in Attachment 1 of Enclosure 3 to its submittal dated June 16, 2016, proposed to perform Surveillance Requirements (SR) 3.3.8.3.1 at BFN with a frequency of 24 months.

Clarify how a logic function failure will be detected if any pump logic function fails in a period between performing SR 3.3.8.3. Provide a summary of the frequency and results of the pump logic function surveillance/testing performed for the past 6 years, and discuss any failure (if any occurred) during any of these tests.

EICB RAI 4²

In response to EICB RAI 3, in its letter dated June 16, 2016, TVA revised the original proposed Condition A in TS 3.3.8.3, which would have allowed both divisions of ECCS Preferred Pump Logic (PPL) to be inoperable for up to 7 days. The revised proposed Condition A would allow only one division of ECCS PPL to be inoperable for up to 7 days.

² The NRC letter dated March 21, 2016, contains EICB RAIs 1 through 3.

Specifically, the revised proposed Condition A requires actions for:

One required ECCS Preferred Pump Logic - RHR division inoperable.

OR

One required ECCS Preferred Pump Logic - Core Spray division inoperable.

OR

Required ECCS Preferred Pump Logic - RHR Division I and required ECCS Preferred Pump Logic - Core Spray Division I inoperable

OR

Required ECCS Preferred Pump Logic - RHR Division II and required ECCS Preferred Pump Logic - Core Spray Division II inoperable.

The TS Bases for TS 3.3.8.3 use a similar justification for the 7 days to complete repairs on an Inoperable ECCS PPL Division as used in the CAS, which is, "The plant electrical system response is degraded, and the potential for inappropriate electrical system alignment is increased with attendant potential challenge to plant safety systems. In this condition, however, the remaining division(s) of ECCS Preferred Pump Logic is capable of performing its intended function." (underline added for emphasis).

In response to APLA RAI 6b (TVA letter dated May 11, 2016, Enclosure 1, page 22 of 47), in the table under "Effect of ECCS PPL Inoperable with an Accident and Spurious Accident Signal," TVA showed that with BFN, Unit 1, Division I Core Spray PPL Component Inoperable, the required ECCS in UFSAR Table 6.5-3 (minimum equipment required) would not be met. Several similar entries in the table were noted. The statement in the table appears to contradict the statements in the bases. Justify or explain this discrepancy.

EICB RAI 5

In response to EICB RAI 3, in its letter dated June 16, 2016, TVA revised the original proposed Condition F to state:

Two or more required ECCS Preferred Pump Logic divisions inoperable for reasons other than Condition A.

OR

Two divisions of CAS Logic inoperable.

OR

Two divisions of Unit Priority Re-Trip Logic inoperable.

Condition F, and the bases for Condition F, implies that if there are two divisions of ECCS PPL logic inoperable, then immediately enter Limiting Condition for Operation 3.0.3.

However, the reason for and meaning of the added phrase in Condition F, "for reasons other than Condition A," is not clear. It may be TVA's way of reminding that a division of ECCS PPL has two "subdivisions" or two "channels."

The LAR stated (page E-11, Section 4.3, "Technical Analysis") that, "There are two divisions of ECCS Preferred Pump Logic, each consisting of two channels: a LPCI channel and a Core Spray channel." Clarify how this phrase is interpreted.

EICB RAI 6

In response to EICB RAI 3 (TVA letter dated June 16, 2016, Enclosure 3, page 18 of 25), TVA used the term "division" in SR 3.3.8.3.1, Note 1, but in the TS Bases discussing SR 3.3.8.3.1, the term used is "channel."

TVA (page E-11, Section 4.3, "Technical Analysis," of LAR dated September 16, 2015) stated that, "There are two divisions of ECCS Preferred Pump Logic, each consisting of two channels: a LPCI channel and a Core Spray channel." Clarify whether this inconsistency in use of terms is generic or an overlooked inconsistency.

J. Shea

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If you have any questions, please contact me at 301-415-1447 or Farideh.Saba@nrc.gov.

Sincerely,

/RA/

Farideh E. Saba, Senior Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

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

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Request for Additional Information

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