



Tennessee Valley Authority, Post Office Box 2000, Decatur, Alabama 35609

SEP 30 1994

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20545

Gentlemen:

In the Matter of)	Docket Nos.	50-259
Tennessee Valley Authority)		50-260
			50-296

**BROWNS FERRY NUCLEAR PLANT (BFN) - RESPONSE TO REQUEST FOR
ADDITIONAL INFORMATION REGARDING AMENDMENTS 9 AND 10 OF THE
UPDATED FINAL SAFETY ANALYSIS REPORT (UFSAR), (TAC NOS.
M84110, M84111, M84112, M87275, M87276, AND M87277)**

This letter provides TVA's response to the staff's request for additional information, which was transmitted by letter from J. F. Williams to O. D. Kingsley, dated May 20, 1994. In this letter, NRC identified several issues regarding the staff's review of Amendments 9 and 10 to the BFN Units 1, 2, and 3 UFSAR. Amendments 9 and 10 were submitted as annual updates to the UFSAR by letters dated July 22, 1992 and July 22, 1993.

The enclosure to this letter provides a summary of the staff's requests and the corresponding TVA responses. There are no commitments contained in this letter.

If you have any questions regarding this reply, please contact me at (205) 729-2636.

Sincerely,

Pedro Salas
Manager of Site Licensing

Enclosure
cc: See page 2

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Enclosure

cc (Enclosure):

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ENCLOSURE

TENNESSEE VALLEY AUTHORITY BROWNS FERRY NUCLEAR PLANT (BFN) UNITS 1, 2, AND 3

UPDATED FINAL SAFETY ANALYSIS REPORT (UFSAR) AMENDMENTS 9 AND 10

REQUEST FOR ADDITIONAL INFORMATION

I. INTRODUCTION

TVA submitted Amendments 9 and 10 to the BFN UFSAR to NRC on July 22, 1992 and July 23, 1993 respectively as annual updates pursuant to the requirements of 10 CFR 50.71(e). During its review of these amendments, the NRC staff identified topics requiring additional information. One item concerned the reclassification of the Reactor Core Isolation Cooling (RCIC) system from "safety-related" to "quality-related." The staff also requested that TVA include in the UFSAR the results of BFN's analyses regarding Anticipated Transient Without Scram (ATWS) and Station Blackout (SBO) rule changes, 10 CFR 50.62 and 10 CFR 50.63 respectively. Additionally, the staff requested that TVA consider whether the BFN UFSAR should include other analyses, such as items addressed in the TVA Nuclear Performance Plan.

II. RESPONSE TO NRC REQUESTS

A. NRC Request

TVA has classified certain functions of the RCIC system as "quality-related" vs. "safety-related." With regard to this reclassification the staff requests that TVA address the following issues:

1. Describe the meaning and significance of the "quality-related" classification.
2. Will the RCIC system be subject to quality assurance standards consistent with 10 CFR 50, Appendix B?
3. How will high reliability of the RCIC system be assured?

4. Certify that no credit is taken for RCIC system performance in accident analyses, including station blackout (SBO) and anticipated transient without scram (ATWS).
5. Discuss how the change in RCIC system classification affects inservice inspection and testing requirements for this system.
6. Will the RCIC system remain part of emergency operating procedures?

TVA Response

The RCIC system provides makeup water to the reactor vessel during normal shutdown, abnormal operational transients, and isolation from the main heat sink to supplement or replace the normal makeup water sources. The system operates automatically in time to maintain sufficient coolant in the reactor vessel so that the Core Standby Cooling Systems are not required. RCIC flow provides makeup capacity sufficient to prevent vessel water level from dropping to the top of the reactor core during abnormal operating transients.

The High Pressure Coolant Injection (HPCI) System with the Automatic Depressurization System (ADS) and the Low Pressure Emergency Core Cooling Systems (ECCS) serving as backup provides emergency core cooling to mitigate Design Basis Accidents (DBA) and Abnormal Operational Transients (AOT). The ADS in conjunction with the low pressure ECCS meets the redundancy, diversity and capacity requirements to provide the single failure backup to HPCI.

This change to the BFN UFSAR was provided to clearly specify that RCIC is not the single failure backup to HPCI. RCIC is the preferred system for certain reactor isolation events but is not essential for mitigating DBAs and AOTs. RCIC does provide some "safety-related" functions as described in the response to question 2. TVA's response to questions 1 through 6 above are provided below:

NRC Request

Describe the meaning and significance of the "quality related" classification.

TVA Response

The TVA Nuclear Quality Assurance Plan (NQAP), TVA-NQA-PLN89-A R4, defines "quality-related" as:

"...a term which encompasses quality assurance program requirements that describe activities which affect structures, systems, and components. These requirements provide reasonable assurance that the facility can be operated without undue risk to the health and safety of the public. In addition to safety related structures, systems, components, and activities, the term "quality related" encompasseses the broad class of plant features covered (not necessarily explicitly) in the General Design Criteria of 10 CFR 50, Appendix A, that contribute in an important way to the safe operation and protection of the public in all phases and aspects of facility operation (i.e., normal operation and transient control as well as accident mitigation)."

The significance of the "quality-related" classification is that it provides a consistent means to establish and control the quality of features not subject to 10 CFR 50, Appendix B, but are considered important to the safe operation of the plant and protection of the public.

NRC Request

Will the RCIC system be subject to quality assurance standards consistent with 10 CFR 50, Appendix B?

TVA Response

As the staff noted, only part of the RCIC system was classified as "quality-related." The ECCS analog trip units power supply, primary containment isolation, reactor coolant pressure boundary, reactor vessel isolation, and the secondary containment portions of RCIC will continue to be classified as "safety-related" and are subject to the quality assurance requirements of 10 CFR 50, Appendix B. The components of the RCIC system injection mode are classified as "quality-related." See the discussion of the BFN Safe Shutdown Analysis (SSA) in the response to question 4.

BFN implements the requirements of the "quality-related" program with Site Standard Practice (SSP)-3.2, "Augmented QA Program". The requirements of the augmented QA program are, in general, not as stringent as the 10 CFR 50, Appendix B requirements

applied to "safety-related" features. The augmented QA program imposes QA requirements for features such as post accident monitoring, abnormal operational transient equipment, technical specification instruments, and ATWS equipment that is not safety-related. The quality-related program helps to assure that these components are maintained to a high level of reliability.

NRC Request

How will high reliability of the RCIC system be assured?

TVA Response

Technical Specifications (TS) 3.5F/4.5F define the operability and surveillance requirements for the RCIC system. The TS surveillance requirements including automatic start, pump operability, motor-operated valve operability, flow rate, and proper system alignment are equivalent to the requirements of the "safety-related" HPCI system. These requirements did not change with the system quality level reclassification.

The RCIC system is required to be operable whenever there is irradiated fuel in the vessel and the vessel pressure is above 150 pounds per square inch gage (psig), except in cold shutdown. Operability of the RCIC system must be determined within 12 hours of reactor pressure reaching 150 psig, or prior to startup when using auxiliary steam.

NRC Request

Certify that no credit is taken for RCIC system performance in accident analyses, including station blackout (SBO) and anticipated transient without scram (ATWS).

TVA Response

The RCIC system is not essential, nor is credit taken, for the RCIC injection function to mitigate a DBA or AOT. RCIC is the preferred system for makeup water to the vessel during isolation events (i.e., RCIC maintains the reactor vessel water level but is not relied upon as a "safety-related" system to do so). HPCI and ADS, in conjunction with the Low Pressure Core Injection (LPCI) mode of the Residual Heat Removal (RHR) system and Core Spray (CS), are the safety related systems that provide the single failure capability for DBAs or AOTs.

The BFN SSA documents the safety system actions for which credit has been taken in the UFSAR, Core Reload Submittal Analyses, and other licensing communications concerning transients, accidents, and special events. The SSA identifies the systems which limit and/or mitigate the events within the design basis and documents the safety related paths to achieve stable hot shutdown. The SSA also lists the "quality-related" functions of systems for which credit as a "safety-related" action is not required. The SSA identifies the RCIC injection function as "quality-related." The "safety-related" injection for these events is provided by the HPCI, ADS, LPCI, and/or CS systems.

The RCIC injection function for an SBO event provides a diverse injection path to the "safety-related" HPCI system, and as such provides "defense in depth." During a SBO event HPCI or RCIC is used to provide reactor makeup water, and the main steam relief valves or HPCI are used to reduce pressure until RHR Shutdown Cooling can be placed into service. Equipment relied upon for SBO is evaluated to meet the requirements of 10 CFR 50.63 and the guidelines of Regulatory Guide (RG) 1.155. RG 1.155 provides the quality assurance guidance for non-safety systems and equipment.

The RCIC injection function is not relied upon for an ATWS event. However, regulatory requirements for ATWS, which are described in 10 CFR 50.62, do not require ATWS equipment to be "safety-related." Systems and equipment required by 10 CFR 50.62 do not have to meet all of the stringent requirements normally applied to "safety-related" equipment. This position is consistent with Generic Letter 85-06, Quality Assurance Guidance For ATWS Equipment That Is Not Safety-Related.

NRC Request

Discuss how the change in RCIC system classification affects inservice inspection and testing requirements for this system.

TVA Response

The inservice inspection and testing requirements for the RCIC system are not changed.

NRC Request

Will the RCIC system remain part of emergency operating procedures?

TVA Response

The RCIC system is the preferred system for isolation events. RCIC will remain part of the Emergency Operating Instructions.

B. NRC Request

The BFN UFSAR does not presently include any discussion which describes how BFN conforms to the requirements of the regulations relevant to ATWS or SBO (10 CFR 50.62 and 10 CFR 50.63 respectively). Consistent with the requirements of 10 CFR 50.71(e), TVA should revise the BFN UFSAR to address the SBO and ATWS analyses.

Additionally, TVA should consider whether the UFSAR should include other analyses, such as items addressed in TVA's Nuclear Performance Plan which was provided in response to the staff's letter of September 17, 1985.

TVA Response

TVA has not interpreted the update requirements contained in 10 CFR 50.71(e) to require new commitments and design bases developed in response to rules, generic letters, bulletins, enforcement actions, and those proposed in licensee event reports to be included in the UFSAR.

The UFSAR update rule states that the UFSAR is to be revised to include "the effects of" all new analyses and modifications made to the plant as described in the UFSAR. TVA has interpreted "the effects of" to mean that the update need only include those changes that would create an error in the existing UFSAR. When new information is added, it is based on BFN's judgement of significance as discussed in SECY-92-314 dated September 10, 1992 and the memorandum to Commissioner Curtis dated December 4, 1992 on the same subject. TVA believes this interpretation is consistent with NRC and industry interpretations of the requirements.

However, at times TVA finds it useful to update the UFSAR to include information submitted to NRC. Consequently, TVA has prepared a UFSAR revision package in accordance with 10 CFR 50.59 that addresses SBO. This change is filed in the BFN "Living UFSAR" (i.e., pending revisions) and is available for use and/or consideration by plant personnel in the preparation of procedure revisions, safety evaluations, work plans and other plant documents. Additionally, BFN is preparing a similar UFSAR revision package for ATWS. TVA considers these revisions to be enhancements to the UFSAR and intends to incorporate both revisions into Amendment 12 of the BFN UFSAR. Amendment 12 is scheduled to be issued by July 22, 1995.