

June 24, 2004

U.S. Nuclear Regulatory Commission
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Gentlemen:

In the Matter of) Docket No. 50-259
Tennessee Valley Authority)

**BROWNS FERRY NUCLEAR PLANT (BFN) UNIT 1 - SUPPLEMENTAL INFORMATION
FOR CONFORMANCE WITH NUREG-0737, ITEM II.E.4.2, AND 10 CFR 50,
APPENDIX J**

This letter provides supplemental information regarding BFN Unit 1 conformance with NUREG-0737, Item II.E.4.2 - Containment Isolation Dependability, and 10 CFR 50, Appendix J - Primary Reactor Containment Leakage Testing.

In May 1992, NRC requested information regarding Unit 1 compliance with NUREG-0737, Item II.E.4.2 and 10 CFR 50, Appendix J (Reference 1). TVA responded in September 1992 by providing the anticipated containment isolation configuration at the time of the Unit 1 restart and committing to notify the NRC of any changes (Reference 2). This letter satisfies that commitment. NRC compared the Unit 1 containment isolation scheme to the Unit 2 design and concluded, in the January 1995 Safety Evaluation (Reference 3), that the differences in the Unit 1 containment isolation design were acceptable. TVA provided supplemental information by References 4 and 5 to reflect the Units 2 and 3 configuration.

The enclosure provides a summary of the differences between the containment isolation configuration for BFN Unit 1 not previously cited in the Unit 1 Safety Evaluation and the Unit 2 configuration previously reviewed by the NRC. For each system with differences, a summary of the Unit 2 configuration is provided and the differences between the Unit 2 and Unit 1 configurations are identified and discussed. Changes to the Unit 1 containment isolation configuration, subsequent to the NRC review, are being performed under the provisions of 10 CFR 50.59. Therefore, TVA has concluded that a supplemental Safety Evaluation is not required.

U.S. Nuclear Regulatory Commission
Page 2
June 24, 2004

There are no new regulatory commitments associated with this submittal. If you have any questions about this submittal, please contact me at (256) 729-2636.

Sincerely,

Original signed by:

T. E. Abney
Manager of Licensing
and Industry Affairs

References:

1. NRC letter, J. F. Williams to M. O. Medford, "Request for Additional Information to Review Browns Ferry Nuclear Plant Units 1 and 3 Compliance with NUREG-0737, Item II.E.4.2 and 10 CFR 50, Appendix J (TAC Nos. M74606, M74615, and M74616)," May 5, 1992.
2. TVA letter, O. J. Zeringue to NRC, "Browns Ferry Nuclear Plant (BFN) - Response to NRC Request for Additional Information Regarding Units 1 and 3 Conformance with NUREG-0737, Item II.E.4.2 and 10 CFR 50, Appendix J (TAC Nos. M74606, M74615, and M74616)," September 1, 1992.
3. NRC letter, J. F. Williams to O. D. Kingsley, "Browns Ferry Nuclear Plant Units 1 and 3 NUREG-0737, Item II.E.4.2, Containment Isolation Dependability (TAC Nos. M74606, M74615, and M74616)," January 6, 1995.
4. TVA letter, P. Salas to NRC, "Browns Ferry Nuclear Plant (BFN) - Units 2 and 3 - Supplemental Information for Conformance with NUREG-0737, Item II.E.4.2 and 10 CFR 50, Appendix J (TAC Nos. M74615, and M74616)," August 3, 1995.
5. TVA letter, P. Salas to NRC, "Browns Ferry Nuclear Plant (BFN) - Units 2 and 3 - Supplemental Information for Conformance with NUREG-0737, Item II.E.4.2 and 10 CFR 50, Appendix J (TAC Nos. M74615, and M74616)," October 4, 1995.

cc: See Page 3

U.S. Nuclear Regulatory Commission
Page 3
June 24, 2004

Enclosure

cc (Enclosure):

(Via NRC Electronic Distribution)

U.S. Nuclear Regulatory Commission
Region II
Sam Nunn Atlanta Federal Center
61 Forsyth Street, SW, Suite 23T85
Atlanta, Georgia 30303-3415

Mr. Stephen J. Cahill, Branch Chief
U.S. Nuclear Regulatory Commission
Region II
Sam Nunn Atlanta Federal Center
61 Forsyth Street, SW, Suite 23T85
Atlanta, Georgia 30303-8931

NRC Senior Resident Inspector
Browns Ferry Nuclear Plant
10833 Shaw Road
Athens, AL 35611-6970

Kahtan N. Jabbour, Senior Project Manager
U.S. Nuclear Regulatory Commission
(MS 08G9)
One White Flint, North
11555 Rockville Pike
Rockville, Maryland 20852-2739

U.S. Nuclear Regulatory Commission
Page 4
June 24, 2004

SMK:BAB

Enclosure

cc (Enclosure):

A. S. Bhatnagar, LP 6A-C
M. J. Burzynski, BR 4X-C
D. F. Helms, BR 4T-C
J. E. Maddox, LP 6A-C
R. F. Marks, PAB 1C-BFN
R. G. Jones, NAB 1A-BFN
J. R. Rupert, NAB 1A-BFN
K. W. Singer, LP 6A-C
M. D. Skaggs, POB 2C-BFN
J. Valente, NAB 1E-BFN
E. J. Vigluicci, ET 11A-K
NSRB Support, LP 5M-C
EDMS

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ENCLOSURE
TENNESSEE VALLEY AUTHORITY
BROWN FERRY NUCLEAR (BFN) UNIT 1

**SUPPLEMENTAL INFORMATION FOR CONFORMANCE WITH NUREG-0737,
ITEM II.E.4.2, AND 10 CFR 50, APPENDIX J**

BACKGROUND

In May 1992, NRC requested information regarding Unit 1 compliance with NUREG-0737, Item II.E.4.2 - Containment Isolation Dependability, and 10 CFR 50, Appendix J - Primary Reactor Containment Leakage Testing (Reference 1). TVA responded in September 1992 by providing the anticipated containment isolation configuration at the time of the Unit 1 restart and committing to notify the NRC of any changes (Reference 2). This enclosure satisfies that commitment. NRC compared the Unit 1 containment isolation scheme to the Unit 2 design and concluded, in the January 1995 Safety Evaluation (Reference 3), that the differences in the Unit 1 containment isolation design were acceptable. TVA provided supplemental information by References 4 and 5 to reflect the Units 2 and 3 configuration.

Provided below is a summary of the differences between the containment isolation configuration for BFN Unit 1 not previously cited in the Unit 1 Safety Evaluation (Reference 3) and the Unit 2 configuration previously reviewed by the NRC. For each system with differences, a summary of the Unit 2 configuration is provided and the differences between the Unit 2 and Unit 1 configurations are identified and discussed.

**COMPARISON BETWEEN UNITS 1 AND 2 CONTAINMENT ISOLATION
CONFIGURATION AND TESTING**

MAIN STEAM LINE/DRAIN

For Unit 2, Main Steam Drain, Penetration 8, is classified as non-essential systems. The Unit 2 Main Steam Drain isolation valves are motor operated valves and fail "as is". The power supplies for these normally closed valves are separate and diverse. The isolation valves for the Main Steam Drains receive a Group 1 isolation signal and are tested in accordance with Appendix J guidelines. Since the time References 4 and 5 were submitted, TVA has replaced the solid wedge gate valves with parallel slide valves under the provisions of 10 CFR 50.59.

For Unit 1, the same locations, failure modes, isolation schemes, and power supplies will be used. However, TVA will install double disk gate valves on the Main Steam Line Drain for Unit 1 under the provisions of 10 CFR 50.59. The Unit 1 Main Steam Line Drain inboard isolation valve will be leak rate tested by applying the test pressure between the disks.

DEMINERALIZED WATER

Originally for Unit 2, Demineralized Water, Penetration 20, was classified as a non-essential system and both containment isolation valves were tested in accordance with Appendix J. Since References 4 and 5 were submitted, TVA has modified Penetration 20 for Unit 2 under the provisions of 10 CFR 50.59 to remove the piping and isolation valves and install a cap. Thus, a Local Leak Rate Test (LLRT) is no longer required.

TVA plans to make the Unit 1 configuration the same as the current Unit 2 configuration. The same valve types, locations, failure modes, isolation schemes, power supplies and Appendix J testing methods will be used. Thus, LLRT will no longer be required.

AUXILIARY BOILER SYSTEM

For Unit 2, as described in Reference 5, Penetration 210A was modified to remove the Auxiliary Boiler tie to the Reactor Core Isolation Cooling (RCIC) system. The Auxiliary Boiler line was cut and capped outside containment where it tied into the RCIC minimum flow bypass line. The remaining welded cap portion of the line is also located outside primary containment and is leak tested as part of the RCIC piping boundary. Thus, LLRT of the Auxiliary Boiler system is not required and the welded cap in the containment boundary is leak tested as part of the RCIC system piping and valves.

TVA plans to make the Unit 1 configuration the same as the current Unit 2 configuration. The same valve types, locations, failure modes, isolation schemes, power supplies and Appendix J testing methods will be used.

CONTROL AIR SYSTEM

For Unit 2, as described in References 4 and 5, Penetration X-48 is classified as a non-essential system. This system has two air operated plug valves in series, located outside of containment. These isolation valves utilize air to open and an integral air accumulator to assure valve closure on loss of air or loss of electrical power. The valves receive a Group 6 isolation signal and are Type A and Type C tested.

For Unit 1, the drywell air intake header at Penetration 48 will be terminated and a double "O" ringed flanged connection on the inboard pipe sleeve of drywell will be installed under the provisions of 10 CFR 50.59 to support the Integrated Leak Rate Test (ILRT). Both connections will be installed with blind flanges. An LLRT will be required for the outboard flange.

SERVICE AIR SYSTEM

For Unit 2, Service Air, Penetration 21, was classified as a non-essential system and both containment isolation valves were tested in accordance with Appendix J. Since References 4 and 5 were submitted, TVA has modified Penetration 21 under the provisions of 10 CFR 50.59 to remove the piping and isolation valves and installed a cap. Thus, LLRT is no longer required.

TVA plans to make the Unit 1 configuration the same as the current Unit 2 configuration. The same valve types, locations, failure modes, isolation schemes, power supplies and Appendix J testing methods will be used. Thus, LLRT will no longer be required.

RESIDUAL HEAT REMOVAL SYSTEM

For Unit 2, Residual Heat Removal (RHR) shutdown cooling discharge, Penetrations 13A and 13B, are classified as essential systems. Penetrations 13A and 13B, have an inboard testable check valve and an outboard motor operated gate valve as an isolation barriers. The gate valve isolates upon receipt of a Group 2 isolation signal. These valves are Appendix J tested.

The inboard testable check valves for Unit 1 RHR shutdown cooling supply Penetrations 13A and 13B will be replaced under the provisions of 10 CFR 50.59 to eliminate the air actuator and testable feature. The other valves will be the same as Unit 2. The same locations, failure modes, isolation schemes, power supplies and Appendix J testing methods will be used.

CORE SPRAY SYSTEM

For Unit 2, Core Spray Injection, Penetrations 16A and 16B, are classified as essential system. Since References 4 and 5 were submitted, TVA has modified Penetrations 16A and 16B under the provisions of 10 CFR 50.59 to eliminate the testable feature on the check valve. Penetrations 16A and 16B now have inboard check valves and outboard remote manual gate valves as isolation barriers. These valves are Appendix J tested.

TVA plans to make the Unit 1 configuration the same as the current Unit 2 configuration. The same valve types, locations, failure modes, isolation schemes, power supplies and Appendix J testing methods will be used.

DRYWELL DRAINS

For Unit 2, Drywell Drain, Penetrations 18 and 19, was classified as a non-essential system and the isolation valves were air operated gate valves as the isolation barrier. Since the time References 4 and 5 were submitted, TVA has replaced the air operated gate valves with air operated ball valves with solenoid controllers under the provisions of 10 CFR 50.59. These valves close upon receipt of a Group 2 isolation signal and are Appendix J tested.

TVA plans to make the Unit 1 configuration the same as the current Unit 2 configuration. The same valves, locations, failure modes, isolation schemes, power supplies and Appendix J testing methods will be used.

CONTAINMENT INERTING

For Unit 2, Hydrogen sample line, Penetrations 52C, 229D and 229K, were classified as a non-essential system and the isolation valves were solenoid operated gate valves as the isolation barrier. Since the time References 4 and 5 were submitted, TVA has replaced the solenoid operated gate valves with solenoid operated globe valves under the provisions of 10 CFR 50.59. These valves close upon receipt of a Group 6 isolation signal and are Appendix J tested.

TVA plans to make the Unit 1 configuration the same as the current Unit 2 configuration. The same valves, locations, failure modes, isolation schemes, power supplies and Appendix J testing methods will be used. However, Unit 1 uses Penetration 52D instead of 52C.

For Unit 2, Hydrogen Purge sample line, Penetration 27F, was classified as a non-essential system and the isolation valves were solenoid operated gate valves as the isolation barrier. Since the time References 4 and 5 were submitted, TVA has replaced the solenoid operated gate valves with solenoid operated globe valves under the provisions of 10 CFR 50.59. These valves close upon receipt of a Group 6 isolation signal and are Appendix J tested.

TVA plans to make the Unit 1 configuration the same as the current Unit 2. The same valves, locations, failure modes, isolation schemes, power supplies and Appendix J testing methods will be used.

For Unit 2, Hydrogen-Oxygen sample return line, Penetrations 229B and 229G, were classified as a non-essential system and the isolation valves were solenoid operated gate valves as the isolation barrier. Since the time References 4 and 5 were submitted, TVA has replaced the solenoid operated gate valves with solenoid operated globe valves under the provisions of 10 CFR 50.59. These valves close upon receipt of a Group 6 isolation signal and are Appendix J tested.

TVA plans to make the Unit 1 configuration the same as the current Unit 2. The same valves, locations, failure modes, isolation schemes, power supplies and Appendix J testing methods will be used.

RADIATION MONITORING SYSTEM

For Unit 2, as described in Reference 4, Drywell Continuous Air Monitor, Penetrations 50A and 50D, is classified as a non-essential system. These penetrations each have a single inboard valve and a common outboard valve. These isolation valves are solenoid operated gate valves. The valves receive a Group 6 isolation signal and are Appendix J tested.

TVA plans to make the Unit 1 configuration the same as the current Unit 2. The same valves, locations, failure modes, isolation schemes, power supplies and Appendix J testing methods will be used.

POST-ACCIDENT SAMPLING SYSTEM

For Unit 2, The Post-Accident Sampling system (PASS) liquid and gas return to torus lines, Penetrations X-229J and X-229D and PASS Residual Heat Removal liquid line, Penetrations X-41, were classified as a non-essential system and the isolation valves were globe valves as the isolation barrier. The Post-Accident Sampling system (PASS) liquid and gas return to torus valves and PASS Residual Heat Removal liquid sample valves are located outside of containment. These valves receive a Group 6 isolation signal, do not have a specified maximum operating time, are normally closed, and stay closed upon receipt of the isolation signal.

For Unit 1, the PASS Drywell sample and torus sample/return valves and PASS Residual Heat Removal liquid sample valves are located outside of containment. New torus penetrations for the PASS Drywell sample line and torus sample/return lines, X-229N, will be installed with primary isolation valves. The primary isolation valves were gate valves, but will be replaced with globe valves. Penetrations X-229D and X-229J will be spared and capped and LLRT will no longer be required. PASS Residual Heat Removal liquid sample lines, penetration X-41, will have air operated globe valves as primary isolation valves. These modifications will be

performed under the provisions of 10 CFR 50.59. The valves will receive a Group 6 isolation signal, will not have a specified maximum operating time, will normally be closed, and will stay closed upon receipt of the isolation signal.

CONCLUSION

This enclosure provides a summary of the differences between the containment isolation configuration for BFN Unit 1 not previously cited in the Unit 1 Safety Evaluation and the Unit 2 configuration previously reviewed by the NRC. These changes to the Unit 1 containment isolation configuration, subsequent to the NRC review, are being performed under the provisions of 10 CFR 50.59. Therefore, TVA has concluded that a supplemental Safety Evaluation is not required.

REFERENCES

1. NRC letter, J. F. Williams to M. O. Medford, "Request for Additional Information to Review Browns Ferry Nuclear Plant Units 1 and 3 Compliance with NUREG-0737, Item II.E.4.2 and 10 CFR 50, Appendix J (TAC Nos. M74606, M74615, and M74616)," May 5, 1992.
2. TVA letter, O. J. Zeringue to NRC, "Browns Ferry Nuclear Plant (BFN) - Response to NRC Request for Additional Information Regarding Units 1 and 3 Conformance with NUREG-0737, Item II.E.4.2 and 10 CFR 50, Appendix J (TAC Nos. M74606, M74615, and M74616)," September 1, 1992.
3. NRC letter, J. F. Williams to O. D. Kingsley, "Browns Ferry Nuclear Plant Units 1 and 3 NUREG-0737, Item II.E.4.2, Containment Isolation Dependability (TAC Nos. M74606, M74615, and M74616)," January 6, 1995.
4. TVA letter, P. Salas to NRC, "Browns Ferry Nuclear Plant (BFN) - Units 2 and 3 - Supplemental Information for Conformance with NUREG-0737, Item II.E.4.2 and 10 CFR 50, Appendix J (TAC Nos. M74615, and M74616)," August 3, 1995.
5. TVA letter, P. Salas to NRC, "Browns Ferry Nuclear Plant (BFN) - Units 2 and 3 - Supplemental Information for Conformance with NUREG-0737, Item II.E.4.2 and 10 CFR 50, Appendix J (TAC Nos. M74615, and M74616)," October 4, 1995.