

November 9, 2006

TVA-BFN-TS-458

10 CFR 50.90

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop: OWFN P1-35
Washington, D.C. 20555-0001

Gentlemen:

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

BROWNS FERRY NUCLEAR PLANT (BFN) - UNIT 1 - TECHNICAL SPECIFICATIONS (TS) CHANGE TS-458 - DELETION OF TS SURVEILLANCE REQUIREMENT (SR) 3.5.1.4 - LOW PRESSURE COOLANT INJECTION (LPCI) LOOP CROSSTIE VALVE POSITION VERIFICATION

Pursuant to 10 CFR 50.90, the Tennessee Valley Authority (TVA) is submitting a request for a TS change (TS-458) to license DPR-33 for BFN Unit 1. The proposed change deletes SR 3.5.1.4, which requires the monthly verification that the LPCI loop discharge crosstie valve is in the closed position with its motive power removed. This SR is no longer needed because the subject valve has been physically removed from the plant and the associated piping has been capped or closed with a blind flange. Enclosure 1 to this letter provides the justification for this request, Enclosure 2 provides the mark-up of the affected TS page, and Enclosure 3 depicts the changes to the affected TS bases pages.

TVA has determined there are no significant hazards considerations associated with the proposed change and the TS change qualifies for a categorical exclusion from environmental review pursuant to the provisions of 10 CFR 51.22(c)(9). Additionally, in accordance with 10 CFR 50.91(b)(1), TVA is sending a copy of this letter and enclosures to the Alabama State Department of Public Health.

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Approval of TS-458 is requested prior to BFN Unit 1 Cycle 7 operation, which is scheduled to begin in early 2007. Therefore, TVA is asking that this TS change be approved by January 17, 2007, and that the implementation of the revised TS be made within 30 days of NRC approval or prior to changing the Unit 1 reactor mode to startup, whichever is earlier.

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

I declare under penalty of perjury that the foregoing is true and correct. Executed on November 9, 2006.

Sincerely,

Original signed by:

William D. Crouch
Manager of Licensing
and Industry Affairs

Enclosures:

1. TVA Evaluation of the Proposed Change
2. Proposed TS Changes (mark-up)
3. Changes to TS Bases pages (mark-up)

cc: See page 3

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Enclosures:

cc(w/o Enclosures):

State Health Officer
Alabama State Department of Public Health
RSA Tower - Administration
Suite 1552
P.O. Box 303017
Montgomery, Alabama 36130-3017

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

Mr. Malcolm T. Widmann, Branch Chief
U.S. Nuclear Regulatory Commission
Region II
Sam Nunn Atlanta Federal Center
61 Forsyth Street, SW, Suite
Atlanta, Georgia 30303-8931

NRC Unit 1 Restart Senior Resident Inspector
Browns Ferry Nuclear Plant
10833 Shaw Road
Athens, Alabama 35611-6970

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

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

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DTL:PSH:BAB

Enclosures

cc(w/o Enclosures):

B. M. Aukland, POB 2C-BFN
M. Bajestani, NAB 1A-BFN
A. S. Bhatnagar, LP 6A-C
R. H. Bryan, BR 4X-C
R. A. DeLong, SAB 1A-BFN
R. G. Jones, NAB 1A-BFN
B. J. O'Grady, PAB 1E-BFN
K. W. Singer, LP 6A-C
P. D. Swafford, LP 6A-C
E. J. Vigluicci, ET 11A-K
NSRB Support, LP 5M-C
EDMS WT CA-K (w/Enclosures)

s:lic/submit/TechSpec/TS-458 U1 RHR loop crosstie

Enclosure 1

Browns Ferry Nuclear Plant (BFN) Unit 1

Technical Specifications (TS) Change TS-458 Deletion of TS Surveillance Requirement (SR) 3.5.1.4 on Low Pressure Coolant Injection (LPCI) Loop Crosstie Valve Position Verification

TVA Evaluation of the Proposed Change

1.0 DESCRIPTION

Pursuant to 10 CFR 50.90, the Tennessee Valley Authority (TVA) is submitting this request for a TS change to license DPR-33 for BFN Unit 1. The proposed change deletes SR 3.5.1.4, which requires the monthly verification that the LPCI loop discharge crosstie valve is in the closed position with its motive power removed. This SR is no longer needed since, as part of the Unit 1 modifications performed in support of Unit 1 startup, the subject valve has been physically removed from the plant and the associated piping has been capped or closed with a blind flange.

2.0 PROPOSED CHANGE

The proposed Unit 1 TS change deletes SR 3.5.1.4, which is no longer needed given the modified Unit 1 LPCI piping configuration. The marked-up TS page showing the proposed revision is provided in Enclosure 2. The marked-up text of the affected TS bases pages is also provided in Enclosure 3.

3.0 BACKGROUND

The original BFN LPCI design included the capability for the redundant LPCI loop discharge piping to be cross-tied. The purpose was for both LPCI loops to be able to provide reactor make-up flow into either of the two reactor recirculation loops under various loss-of-coolant-accident (LOCA) pipe break scenarios. However, analyses performed subsequent to plant construction and licensing determined that the crosstie capability, under certain accident and single-failure scenarios, could result in the loss of injection from both LPCI loops. Additionally, analyses determined that the crosstie capability was not required for the mitigation of any design basis events. See section 6.5 of the BFN Updated Final Safety Analysis Report (UFSAR) for additional details on these analyses. Table 6.5-3 shows that the total loss of a single LPCI loop (via failure of the injection valve) is considered as a single failure in the accident analyses. Since crosstie capability is not required for the mitigation of design basis events, and that certain crosstie

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BFN Unit 1 - TS 458
TVA Evaluation of the Proposed Change

failure modes could prevent mitigation of these or other events, the plant design was modified to eliminate the crosstie capability.

Since a motor-operated isolation valve was installed in the discharge crosstie flow path on each Browns Ferry unit, prevention of flow between the two LPCI loops did not require the physical removal of the crosstie piping. Flow prevention could be guaranteed by maintaining the loop crosstie isolation valve in the closed position. A requirement was added to the BFN TS (see References 1 and 2) to periodically verify that the LPCI loop crosstie isolation valve was in the closed position with its motive power removed.

Use of the existing valve to isolate the LPCI loop crosstie flow path, with periodic verification of the valve's position as mandated by the TS, was a simple way to ensure the plant's physical configuration matched the relevant safety analyses. However, the continued existence of the valve and the crosstie line contributes to some maintenance and ALARA issues experienced on Units 2 and 3. For example, packing leakage from the crosstie valve results in plant contamination issues, requiring some valve maintenance effort to correct, and the presence of water dead legs created in the crosstie piping can cause ALARA and possible corrosion problems. Therefore, as part of the plant modifications performed on BFN Unit 1 during its restart effort, the LPCI discharge crosstie line was cut and capped or closed with a blind flange, and the isolation valve was removed. The removal of the line eliminates the possibility of flow between the two LPCI loops, and it obviates any need for the periodic valve position verification required by SR 3.5.1.4.

Approval of TS-458 is requested prior to BFN Unit 1 Cycle 7 operation, which is scheduled to begin in early 2007. Therefore, TVA is asking that this TS change be approved by January 17, 2007, and that the implementation of the revised TS be made within 30 days of NRC approval or prior to changing the Unit 1 reactor mode to startup, whichever is earlier.

4.0 TECHNICAL ANALYSIS

As discussed above, the existence of the LPCI loop crosstie line was determined to be a liability in the plant design, and TS SR 3.5.1.4 was put in place for the express purpose of periodically ensuring no flow path existed between the two LPCI discharge loops.

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TVA Evaluation of the Proposed Change

It is apparent that the removal of the crosstie line itself, thereby making flow between the LPCI loops a physical impossibility, is an improvement over the current administrative means for ensuring no flow path exists. Given the already completed removal of the crosstie piping on BFN Unit 1, deletion of TS SR 3.5.1.4 will have no safety analysis implications.

5.0 REGULATORY SAFETY ANALYSIS

Pursuant to 10 CFR 50.90, the Tennessee Valley Authority (TVA) is submitting a request for a Technical Specifications (TS) change (TS-458) to license DPR-33 for Browns Ferry (BFN) Unit 1. The proposed change deletes Surveillance Requirement (SR) 3.5.1.4 which verifies that the LPCI loop discharge crosstie valve is closed and its motive power removed. This SR is no longer needed since, as part of the Unit 1 modifications performed in support of Unit 1 startup, the subject valve has been physically removed from the plant and the associated piping has been capped or closed with a blind flange.

5.1 No Significant Hazards Consideration

TVA has evaluated whether or not a significant hazards consideration is involved with the proposed TS changes by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of Amendment", as discussed below:

1. Does the proposed Technical Specification change involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

This TS change is administrative in nature, since it deletes the surveillance requirement (SR 3.5.1.4) to periodically verify the position of a valve which has now been physically removed from Unit 1. Originally, BFN's LPCI design included the capability for the redundant LPCI loop discharge piping to be cross-tied; however, subsequent analysis determined that the crosstie capability, under certain accident and single-failure scenarios, could result in the loss of injection from both LPCI loops. This analysis also determined that the crosstie capability was not required for the mitigation of any design basis events. Accordingly, since certain crosstie failure modes could prevent mitigation of these or other events, TVA modified the plant design to eliminate the crosstie capability. This was accomplished by closing and deenergizing the motor-operated

Enclosure 1
BFN Unit 1 - TS 458
TVA Evaluation of the Proposed Change

isolation valve that existed in the crosstie flow path and adding an SR to require periodic verification that the valve was closed and deenergized.

The modified Unit 1 configuration [i.e., LPCI loop discharge crosstie valve removed and the associated remaining piping capped or closed with a blind flange] eliminates the possibility of an undesired flow path. Additionally, the Seismic Class I qualification and the ASME Section XI classification of the remaining piping in the new plant configuration are equivalent to the replaced line configuration. Accordingly, the TS change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed Technical Specification change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

The physical modification eliminating the LPCI loop discharge crosstie capability does not require revision of the safety analyses. In addition, since the LPCI loop crosstie valve has been physically removed from the system and the associated lines capped or closed via blind flange, the possibility for inadvertent flow between the LPCI loops has been eliminated. Removing the valve and capping/flanging the remaining piping is an improvement over the old configuration. The LPCI function will be accomplished in the same way as before the modification, and no new failure modes have been introduced.

3. Does the proposed Technical Specification change involve a significant reduction in a margin of safety?

Response: No

This TS changes does not involve a reduction in the margin of safety since removal of the LPCI loop cross tie valve eliminates the possibility of flow between the two LPCI loops, and it obviates the need for valve position verification contained in the SR. In addition, since removing the valve and capping/flanging the residual piping meets the intent of the SR, the safety analysis remains unchanged.

Enclosure 1
BFN Unit 1 - TS 458
TVA Evaluation of the Proposed Change

For these reasons, the proposed amendment does not involve a significant reduction in a margin of safety.

Based on the above, TVA concludes that the proposed TS change presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

5.2 Applicable Regulatory Requirements/Criteria

The proposed change to delete SR 3.5.1.4, which verifies that the LPCI loop crosstie valve is closed and its motive power removed, does not alter compliance with the requirements of 10 CFR 50, Appendix A, General Design Criterion 34 - Residual Heat Removal, or Criterion 35 - Emergency Core Cooling. This SR is no longer needed, because as part of the Unit 1 modifications performed in support of Unit 1 startup, the subject valve has been physically removed from the plant and the associated piping has been capped or closed via blind flange. Accordingly, this TS change is, in effect, an administrative change, since it deletes a SR no longer needed since the affected equipment has been removed from the LPCI system.

TVA's proposed change is in conformance with 10 CFR 50.55a(h)(2) and the BFN licensing basis. The BFN licensing basis for ECCS protection systems is described in UFSAR Sections 6.4.4, Low Pressure Coolant Injection System, 6.5, Safety Evaluation, 7.4, Emergency Core Cooling Control and Instrumentation, and UFSAR Appendix A, "Conformance To AEC Proposed General Criteria," Section A.2.7, Group VII, Engineered Safety Features. Additionally, the revised configuration complies with Seismic Class I criteria and pressure boundary isolation for the system and between Unit 1 RHR loops I and II.

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the TS changes will not be inimical to the common defense and security or the health and safety of the public.

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BFN Unit 1 - TS 458
TVA Evaluation of the Proposed Change

6.0 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed TS changes would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed TS changes do not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed TS changes meet the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed TS changes.

7.0 REFERENCES

1. TVA letter to NRC, "Browns Ferry Nuclear Plant (BFN) - Units 1, 2, and 3 - TVA BFN Technical Specification No. 256 - Delete Redundant Testing for Emergency Core Cooling System (ECCS) and Reactor Core Isolation Cooling (RCIC) System (3.5/4.5)," January 13, 1989.
2. NRC letter to TVA, "Technical Specification Changes to Delete Redundant Testing for Emergency Core Cooling and Reactor Core Isolation Cooling Systems (TAC 71960, 71961, 71962) - Browns Ferry Nuclear Plant, Units 1, 2, and 3," August 2, 1989.

Enclosure 2

Browns Ferry Nuclear Plant (BFN) Unit 1

Technical Specifications (TS) Change TS-458
Deletion of TS Surveillance Requirement (SR) 3.5.1.4 on Low
Pressure Coolant Injection (LPCI) Loop Crosstie Valve
Position Verification

Proposed Technical Specification Changes (mark-up)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.1.1	Verify, for each ECCS injection/spray subsystem, the piping is filled with water from the pump discharge valve to the injection valve.	31 days
SR 3.5.1.2	<p>-----NOTE-----</p> <p>Low pressure coolant injection (LPCI) subsystems may be considered OPERABLE during alignment and operation for decay heat removal with reactor steam dome pressure less than the Residual Heat Removal (RHR) low pressure permissive pressure in MODE 3, if capable of being manually realigned and not otherwise inoperable.</p> <p>-----</p> <p>Verify each ECCS injection/spray subsystem manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p>	31 days
SR 3.5.1.3	Verify ADS air supply header pressure is ≥ 81 psig.	31 days
SR 3.5.1.4	Verify the LPCI cross tie valve is closed and power is removed from the valve operator.	31 days

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Enclosure 3

Browns Ferry Nuclear Plant (BFN) Unit 1

Technical Specifications (TS) Change TS-458
Deletion of TS Surveillance Requirement (SR) 3.5.1.4 on Low
Pressure Coolant Injection (LPCI) Loop Crosstie Valve
Position Verification

Proposed Technical Specification Bases Changes (mark-up)

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BASES

BACKGROUND
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~~The two LPCI subsystems can be interconnected via the LPCI cross tie valve; however, the cross tie valve is maintained closed with its power removed to prevent loss of both LPCI subsystems during a LOCA.~~ The LPCI subsystems are designed to provide core cooling at low RPV pressure. Upon receipt of an initiation signal, all four LPCI pumps are automatically started (A pump immediately when offsite power is available, and B, C, and D pumps approximately 7, 14, and 21 seconds afterwards; if offsite power is not available, all pumps immediately when AC power is available). RHR System valves in the LPCI flow path are automatically positioned to ensure the proper flow path for water from the suppression pool to inject into the recirculation loops. When the RPV pressure drops sufficiently, the LPCI flow to the RPV, via the corresponding recirculation loop, begins. The water then enters the reactor through the jet pumps. Full flow test lines are provided for the four LPCI pumps to route water from the suppression pool, to allow testing of the LPCI pumps without injecting water into the RPV. These test lines also provide suppression pool cooling capability, as described in LCO 3.6.2.3, "RHR Suppression Pool Cooling."

The HPCI System (Ref. 3) consists of a steam driven turbine pump unit, piping, and valves to provide steam to the turbine, as well as piping and valves to transfer water from the suction source to the core via the feedwater system line, where the coolant is distributed within the RPV through the feedwater sparger. Suction piping for the system is provided from the CST and the suppression pool. Pump suction for HPCI is normally aligned to the CST source to minimize injection of suppression pool water into the RPV. However, if the CST

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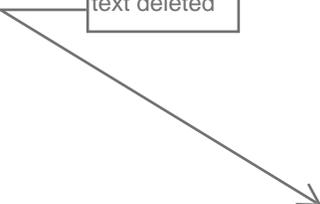
BASES

SURVEILLANCE
REQUIREMENTS
(continued)

SR 3.5.1.3

Verification every 31 days that ADS air supply header pressure is ≥ 81 psig ensures adequate air pressure for reliable ADS operation. The accumulator on each ADS valve provides pneumatic pressure for valve actuation. The design pneumatic supply pressure requirements for the accumulator are such that, following a failure of the pneumatic supply to the accumulator, at least two valve actuations can occur with the drywell at 62.5% of design pressure plus three additional actuations at 0 psig drywell pressure (Ref. 10). The ECCS safety analysis assumes only one actuation to achieve the depressurization required for operation of the low pressure ECCS. This minimum required pressure of ≥ 81 psig is provided by the Drywell Control Air System. The 31 day Frequency takes into consideration administrative controls over operation of the air system and alarms for low air pressure.

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SR 3.5.1.4

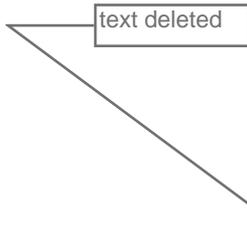
~~Verification every 31 days that the LPCI cross tie valve is closed and power to its operator is disconnected ensures that each LPCI subsystem remains independent and a failure of the flow path in one subsystem will not affect the flow path of the other LPCI subsystem. Acceptable methods of removing power to the operator include de-energizing breaker control power, racking out or removing the breaker, or disconnecting the motor leads. If the LPCI cross tie valve is open or power has not been removed from the valve operator, both LPCI subsystems must be considered inoperable. The 31 day Frequency has been found acceptable, considering that these valves are under strict administrative controls that will ensure the valves continue to remain closed with either control or motive power removed.~~

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BASES (continued)

LCO

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Two low pressure ECCS injection/spray subsystems are required to be OPERABLE. The low pressure ECCS injection/spray subsystems include CS subsystems and LPCI subsystems. Each CS subsystem consists of one motor driven pump, piping, and valves to transfer water from the suppression pool to the reactor pressure vessel (RPV). Each LPCI subsystem consists of one motor driven pump, piping, and valves to transfer water from the suppression pool to the RPV. In MODES 4 and 5, the LPCI crosstie valve is not required to be closed. The necessary portions of the Emergency Equipment Cooling Water System are also required to provide adequate cooling to each required ECCS subsystem.

An LPCI subsystem may be aligned for decay heat removal and considered OPERABLE for the ECCS function, if it can be manually realigned (remote or local) to the LPCI mode and is not otherwise inoperable. Because of low pressure and low temperature conditions in MODES 4 and 5, sufficient time will be available to manually align and initiate LPCI subsystem operation to provide core cooling prior to postulated fuel uncover.

APPLICABILITY

OPERABILITY of the low pressure ECCS injection/spray subsystems is required in MODES 4 and 5 to ensure adequate coolant inventory and sufficient heat removal capability for the irradiated fuel in the core in case of an inadvertent draindown of the vessel. Requirements for ECCS OPERABILITY during MODES 1, 2, and 3 are discussed in the Applicability section of the Bases for LCO 3.5.1. ECCS subsystems are not required to be OPERABLE during MODE 5 with the spent fuel storage pool gates removed and the water level maintained at ≥ 22 ft above the RPV flange. This provides sufficient coolant inventory to allow operator action to terminate the inventory loss prior to fuel uncover in case of an inadvertent draindown.

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