



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

August 14, 2013

10 CFR 50.90
10 CFR 50.91

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

Browns Ferry Nuclear Plant, Unit 1
Renewed Facility Operating License No. DPR-33
NRC Docket No. 50-259

Subject: **License Amendment Request under Exigent Circumstances for the Administrative Change to Remove the Notes on Technical Specification Figures 3.4.9-1 and 3.4.9-2**

- References:
1. Letter from TVA to NRC, "Browns Ferry Nuclear Plant (BFN) Unit 1 - Technical Specifications (TS) Change TS 428 - Update of Pressure-Temperature (P-T) Curves," dated December 6, 2004 (ADAMS Accession No. ML043440227)
 2. Letter from NRC to TVA, "Browns Ferry Nuclear Plant, Unit 1 - Issuance of Amendments Regarding Update of Pressure-Temperature Curves (TAC No. MC5373) (TS 428)," dated July 26, 2006 (ADAMS Accession No. ML061090658)

In accordance with the provisions of Title 10 of the Code of Federal Regulations (10 CFR) 50.90, "Application for amendment of license, construction permit, or early site permit," the Tennessee Valley Authority (TVA) is submitting a request for an amendment to Renewed Facility Operating License DPR-33 for Browns Ferry Nuclear Plant (BFN), Unit 1.

The proposed administrative change deletes the Notes that cover the Reactor Coolant System (RCS) Pressure and Temperature (P/T) Limits curves on Technical Specification (TS) 3.4.9, "RCS Pressure and Temperatures (P/T) Limits," Figures 3.4.9-1 and 3.4.9-2 that are applicable from 12 Effective Full Power Years (EFPY) to 16 EFPY and allows the usage of the figures up to 16 EFPY. The current Notes state: "Do Not Use This Figure. This curve applies to operations > 12 EFPY. For current operation, use previous curve, which is valid up to 12 EFPY."

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Therefore, to utilize the correct and previously approved P/T limits curves once BFN Unit 1 operation has reached 12 EFPY, the Notes must be removed from TS Figures 3.4.9-1 and 3.4.9-2 that are applicable from 12 EFPY to 16 EFPY.

BFN Unit 1 operation is expected to reach 12 EFPY on September 20, 2013. Once 12 EFPY is achieved, BFN Unit 1 will not be allowed to continue operation in Mode 1 (i.e., critical operation) and a unit shutdown will be required unless the Notes are removed. Accordingly, TVA is requesting this proposed administrative change under exigent circumstances in accordance with 10 CFR 50.91(a)(6), and requests that the Nuclear Regulatory Commission (NRC) expedite their review of the requested change to support approval by September 19, 2013.

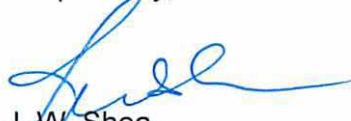
The enclosure to this letter provides the basis for the exigent request, and a description, technical evaluation, regulatory evaluation, and environmental consideration of the proposed administrative change. Attachment 1 to the enclosure provides the TS pages marked-up to show the proposed changes. Attachment 2 to the enclosure provides the existing TS pages retyped with the proposed changes incorporated.

Based on the enclosed evaluation, TVA has determined that there are no significant hazards considerations associated with the proposed changes and that the administrative 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 the enclosure to the Alabama State Department of Public Health.

There are no regulatory commitments associated with this submittal. Please direct any questions concerning this matter to Mr. Edward D. Schrull at (423) 751-3850.

I declare under penalty of perjury that the foregoing is true and correct.
Executed on the 14th day of August 2013.

Respectfully,



J. W. Shea
Vice President Nuclear Licensing

Enclosure: Evaluation of Proposed Changes
cc: See Page 3

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cc (Enclosure):

NRC Regional Administrator - Region II
NRC Senior Resident Inspector - Browns Ferry Nuclear Plant
State Health Officer, Alabama State Department of Public Health

ENCLOSURE

**TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT UNIT 1**

EVALUATION OF PROPOSED CHANGE

**Subject: License Amendment Request under Exigent Circumstances for the
Administrative Change to Remove the Notes on Technical Specification
Figures 3.4.9-1 and 3.4.9-2**

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ATTACHMENTS

1. Proposed BFN Unit 1 TS Changes (Markups)
2. Proposed BFN Unit 1 TS Changes (Final Typed)

1.0 SUMMARY DESCRIPTION

This evaluation supports a request to amend the Browns Ferry Nuclear Plant (BFN), Unit 1, Renewed Facility Operating License No. DPR-33. The proposed changes will modify the BFN, Unit 1 Technical Specification (TS) requirements related to the Reactor Coolant System (RCS) Pressure and Temperature (P/T) Limits curves in TS 3.4.9, "RCS Pressure and Temperature (P/T) Limits."

Specifically, the proposed administrative change deletes the Notes that cover the RCS P/T Limits curves on TS Figures 3.4.9-1 and 3.4.9-2 that are applicable from 12 Effective Full Power Years (EFPY) to 16 EFPY and allows the usage of the figures up to 16 EFPY. The current Notes state: "Do Not Use This Figure. This curve applies to operations > 12 EFPY. For current operation, use previous curve, which is valid up to 12 EFPY." Therefore, to utilize the correct and previously approved P/T limits curves once BFN Unit 1 operation has reached 12 EFPY, the Notes must be removed from TS Figures 3.4.9-1 and 3.4.9-2 that are applicable from 12 EFPY to 16 EFPY. In addition, the proposed change corrects the page header for the figures. The current page header identifies the Specification title as "Reactor Steam Dome Pressure," which is the title for TS 3.4.10. The correct title for the page headers is "RCS P/T Limits."

2.0 DETAILED DESCRIPTION

2.1 Proposed Changes

The two P/T curves (i.e., TS Figures 3.4.9-1 and 3.4.9-2) that are applicable for operations from > 12 EFPY and \leq 16 EFPY contain a Note covering the middle third of the curves that states:

"DO NOT USE THIS FIGURE

This curve applies to operations > 12 EFPY.

For current operation, use previous curve which is valid up to 12 EFPY."

The proposed administrative change deletes the Note covering the P/T curves on the two TS figures. Furthermore, by deleting the two Notes, the two curves would be shown in their entirety, in lieu of being partially obscured.

In addition, the top right page header on both TS figures contains the title "Reactor Steam Dome Pressure." The proposed change modifies this page header to correctly identify the associated TS as "RCS P/T Limits."

2.2 Need/Basis for Proposed Exigent Changes

There are two sets of P/T curves in the BFN Unit 1 TS 3.4.9: one set for operations up to 12 EFPY and another set for operations > 12 EFPY and \leq 16 EFPY. However, the second set of P/T curves (for operations > 12 EFPY and \leq 16 EFPY) includes Notes that state that these curves cannot be used, and to use the first set of P/T curves for operations up to 12 EFPY. Therefore, the second set of P/T curves that are applicable when operations are > 12 EFPY cannot be used until the Notes are removed. BFN Unit 1 operation is expected to reach 12 EFPY on September 20, 2013. Therefore, to utilize the correct and previously approved P/T Limits curves once BFN Unit 1 operation has reached 12 EFPY, this Note must be removed

from the > 12 EFPY and ≤ 16 EFPY TS Figures 3.4.9-1 and 3.4.9-2. Once 12 EFPY is achieved, BFN Unit 1 will not be allowed to continue operation in Mode 1 (i.e., critical operation) and a unit shutdown will be required unless the Notes are removed.

TVA had been tracking BFN Unit 1 neutron fluence (in EFPY), and recognized that the second set of curves would be required to be in force in mid-September 2013. In early August 2013, TVA staff was preparing to implement the 12 EFPY to 16 EFPY curves and initially believed that the Note could be removed from the 12 EFPY to 16 EFPY curves as an administrative change. However, upon reviewing the Nuclear Regulatory Commission (NRC) Safety Evaluation associated with the TS change that placed those figures in the TS (Reference 1), TVA realized that the Note was contained on the NRC-approved TS figures and was not merely an operator aid.

Further review of the NRC Safety Evaluation Section 2.2.2 indicated that TVA had requested and the NRC had approved a two-step process for implementation of the P/T limit curves based on EFPY. At the time of approval, BFN Unit 1 reactor operation was less than 12 EFPY. Thus, the first step led to the immediate implementation of the P/T curves that were applicable up to 12 EFPY; the second step would implement the P/T curves applicable up to 16 EFPY after BFN reached 12 EFPY. In the Safety Evaluation, the NRC imposed specific requirements on the implementation of the second step, which were to provide assurance to the NRC that "the P-T limit curves and associated TS changes related to the second step remain valid."

TVA initially believed that removing the Note was allowed based on the statements in the NRC Safety Evaluation approving the two sets of curves, provided the above specific requirements from the Safety Evaluation were satisfied. TVA intended to provide the required assurance in a letter to NRC and utilize the second set of curves after BFN reached 12 EFPY. However, TVA determined that the Note could not be administratively removed from the figures nor could the second set of curves be used as is. While each set of figures clearly states when it is applicable (i.e., up to 12 EFPY or up to 16 EFPY), to prevent utilizing the incorrect set of figures, the set of figures applicable for > 12 EFPY and ≤ 16 EFPY were annotated with a Note that stated they were not to be used, and that the correct figures were the ones for operation up to 12 EFPY. TVA determined that a license amendment was necessary to remove the Note from the figures. TVA further concluded that in the absence of an amendment to remove the Notes, a shutdown of BFN Unit 1 as early as September 20, 2013, cannot be avoided.

3.0 TECHNICAL EVALUATION

TS 3.4.9 contains two sets of P/T limit curves labeled Figures 3.4.9-1 and 3.4.9-2. The first set of P/T curves is applicable for operations up to 12 EFPY and the second set for operations > 12 EFPY and ≤ 16 EFPY. Figure 3.4.9-1 of each set provides the P/T limit curves for mechanical heatup, cooldown following shutdown, and reactor critical operations. Figure 3.4.9-2 of each set provides the P/T limit curves for reactor inservice leak and hydrostatic testing. The two sets of curves were originally provided to the NRC in a TVA License Amendment Request (LAR), "Browns Ferry Nuclear Plant (BFN) Unit 1 - Technical Specifications (TS) Change TS 428 - Update of Pressure-Temperature (P-T) Curves," dated December 6, 2004 (Reference 2). The LAR was approved by the NRC as documented in the Safety Evaluation for BFN Unit 1, Amendment 256, dated July 25, 2006 (Reference 1).

As discussed in the NRC Safety Evaluation, Section 2.2.2, TVA requested and the NRC approved a two-step process for implementation of the P-T limit curves. At the time of approval, BFN Unit 1 reactor operation was less than 12 EFPY. Thus, the first step immediately

implemented the P/T curves that were applicable up to 12 EFPY; the second step would implement the P/T curves applicable up to 16 EFPY after BFN reached 12 EFPY. The NRC imposed specific requirements on the second step, which were for TVA to provide assurance to the NRC that "the P-T limit curves and associated TS changes related to the second step remain valid." TVA intended to provide that assurance in a letter to the NRC and utilize the second set of curves after BFN reached 12 EFPY. However, TVA Licensing determined that the second set of curves could not be used as is for the following reason.

While each set of figures clearly states when it is applicable (i.e., up to 12 EFPY or up to 16 EFPY), to prevent utilizing the incorrect set of figures, the set of figures applicable for > 12 EFPY and \leq 16 EFPY were annotated with Notes that stated they were not to be used, and that the correct figures were the ones for operation up to 12 EFPY. To resolve this issue, i.e., to remove the Notes from both figures, TVA determined that a license amendment was necessary. In fact, removal of the Notes from the second set of the P/T curves while providing assurance that the P/T limit curves and associated TS changes related to the second step remain valid completes the second step of the above mentioned two-step process.

TVA confirms that:

1. The assumptions used to generate the second set of P/T curves have not changed.
2. There have been no changes to the fluence methodology used to generate the P/T curves.
3. The second set of P/T curves that are applicable to the period > 12 EFPY and \leq 16 EFPY with the Notes removed that are provided in Attachment 2 to this enclosure (i.e., TS Figures 3.4.9-1 and 3.4.9-2) are identical to the curves provided in the Reference 2 LAR submittal.

Therefore, the second set of P/T curves that are applicable to the period > 12 EFPY and \leq 16 EFPY submitted by TVA in Reference 2 and approved by the NRC in Reference 1 remain valid.

As stated in the NRC Safety Evaluation (Reference 1), "The NRC staff concludes that the proposed P-T limits curves for each of the pressure tests, core not critical and core critical conditions; the separate P-T limit curves for the upper vessel, beltline, and bottom head satisfy the requirements in Appendix G of 10 CFR Part 50. Based on the information provided in the licensee's submittal, the proposed P-T limit curves may be incorporated into the TVA Technical Specifications."

The proposed administrative change does not modify the curves previously approved by the NRC as documented in Reference 1. The changes simply remove the Notes from TS Figures 3.4.9-1 and 3.4.9-2, allowing the curves to be utilized for operation > 12 EFPY and \leq 16 EFPY by BFN Unit 1. The NRC has previously noticed the Reference 2 amendment and its associated no significant hazards considerations in the Federal Register (70 FR 2899). Therefore, because the NRC has previously approved the two curves for use in the Technical Specifications, the changes are administrative in nature and TVA considers the removal of the Notes acceptable.

It is noteworthy that the specific figures applicable from 12 EFPY to 16 EFPY (without the obscuring Notes) are contained as Figures 5-14 and 5-20 in Enclosure 5 of Reference 2, which

is the non-proprietary version of NEDC-33112, "Pressure-Temperature Curves for TVA Browns Ferry Unit 1." This document, labeled NEDO-33112, is contained in the NRC ADAMS Public Document system under Accession No. ML043440231.

During the generation of this LAR, TVA noted that the page headers for the two figures contained an incorrect title, which was actually the title for the TS following TS 3.4.9, i.e., TS 3.4.10. The correct page header for TS Figures 3.4.9-1 and 3.4.9-2 has been provided on these two figures.

4.0 REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements and Criteria

The 10 CFR 50, Appendix G, contains the requirements for the P/T limit curves, and requires that P/T curves for the reactor pressure vessel be at least as conservative as those obtained by applying the methodology of Appendix G to Section XI of the American Society of Mechanical Engineers (ASME) Code. As stated above, the P/T limit curves contained on TS Figures 3.4.9-1 and 3.4.9-2 for operation between 12 EFPY and 16 EFPY have been previously approved by the NRC as documented in Reference 1, and the changes requested by this LAR do not result in any technical changes to the previously approved figures.

4.2 Precedent

The NRC has previously approved a LAR that included two sets of P/T limit curves for BFN Units 2 and 3 (Amendments 288 and 247), one set for operation up to 23 EFPY (Unit 2) and up to 20 EFPY (Unit 3), and a second set for operations up to 30 EFPY (Unit 2) and up to 28 EFPY (Unit 3) (Reference 3). The approved curves did not include note restrictions on the set of curves that were not yet applicable (i.e., the second set of curves was applicable at a time in the future, similar to the BFN Unit 1 second set of curves). TVA proposed to the NRC in the February 24, 2004 LAR letter (Reference 4) that both sets of curves be placed in the TS upon approval of the amendments. In the NRC Safety Evaluation for BFN Units 2 and 3, Amendments 288 and 247, dated March 10, 2004 (Reference 3), the NRC stated that because the applicability of each set of curves was clearly identified, the approach proposed by TVA was acceptable.

4.3 No Significant Hazards Consideration Determination

The proposed administrative change will modify Browns Ferry Nuclear Plant (BFN), Unit 1 Technical Specification (TS) requirements related to TS 3.4.9, "RCS Pressure and Temperature (P/T) Limits." Specifically, the proposed administrative change deletes the Notes that cover the Reactor Coolant System (RCS) P/T Limits curves on TS Figures 3.4.9-1 and 3.4.9-2 that are applicable from 12 Effective Full Power Years (EFPY) to 16 EFPY. The current Notes state: "Do Not Use This Figure. This curve applies to operations > 12 EFPY. For current operation, use previous curve, which is valid up to 12 EFPY." In addition, the proposed change corrects the page header for the figures. The current header identifies the Specification title as "Reactor Steam Dome Pressure," which is the title for TS 3.4.10. The correct title for the page headers is "RCS P/T Limits."

TVA has concluded that the changes to BFN Unit 1 TS 3.4.9 do not involve a significant hazards consideration. TVA's conclusion is based on its evaluation in accordance with 10 CFR 50.91(a)(1) of the three standards set forth in 10 CFR 50.92, "Issuance of Amendment," as discussed below:

1. **Does the proposed amendment involve a significant increase in the probability or consequences of any accident previously evaluated?**

Response: No.

The proposed administrative change will allow a set of TS figures, contained in a previous NRC-approved license amendment, to be used because the reactor fluence will soon reach the point at which the figures are applicable. The proposed administrative change does not revise any previously approved P/T limitations on plant operation. The change is an administrative change removing Notes that were placed on the approved figures to preclude using the figures until the fluence reached the applicable values. Because the NRC has previously approved the figures, the proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?**

Response: No

The proposed administrative change will allow a set of TS figures, contained in a previous NRC-approved license amendment, to be used because the reactor fluence will soon reach the point at which the figures are applicable. The proposed administrative change does not revise any previously approved P/T limitations on plant operation. The change is an administrative change removing Notes that were placed on the approved figures to preclude using the figures until the fluence reached the applicable value.

Therefore, the proposed amendment will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. **Does the proposed amendment involve a significant reduction in a margin of safety?**

Response: No.

The proposed administrative change will allow a set of TS figures, contained in a previous NRC-approved license amendment, to be used because the reactor fluence will soon reach the point at which the figures are applicable. The proposed administrative change does not revise any previously approved P/T limitations on plant operation. The change is an administrative change removing Notes that were placed on the approved figures to preclude using the figures until the fluence reached the applicable value. In addition, the margin of safety change as a result of using these new figures was previously evaluated when the figures were originally approved. As such, deleting the Notes has no effect on a margin of safety.

Therefore, the proposed changes do not involve a significant reduction in a margin of safety.

4.4 Conclusions

In conclusion, based on 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 amendment will not be inimical to the common defense and security or the health and safety of the public.

5.0 ENVIRONMENTAL CONSIDERATIONS

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR Part 20, and would change an inspection or surveillance requirement. However, the proposed change does 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 amendment meets 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 amendment.

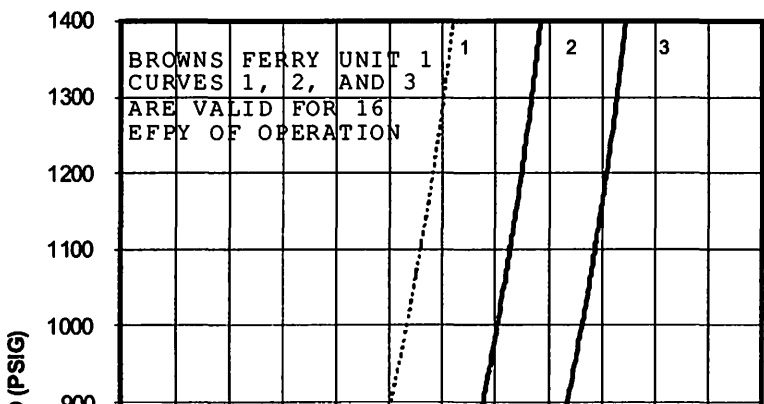
6.0 REFERENCES

1. Letter from NRC to TVA, "Browns Ferry Nuclear Plant, Unit 1 - Issuance of Amendments Regarding Update of Pressure-Temperature Curves (TAC No. MC5373) (TS 428)," dated July 26, 2006 (ADAMS Accession No. ML061090658).
2. Letter from TVA to NRC, "Browns Ferry Nuclear Plant (BFN) Unit 1 - Technical Specifications (TS) Change TS 428 - Update of Pressure-Temperature (P-T) Curves," dated December 6, 2004 (ADAMS Accession Nos. ML043440227 and ML043440231).
3. Letter from NRC to TVA, "Browns Ferry Nuclear Plant, Units 2 and 3 - Issuance of Amendments Regarding Pressure-Temperature Limit Curves (TAC Nos. MC0807 and MC0808)," dated March 10, 2004 (ADAMS Accession Nos. ML040480013, ML040750188, and ML040750194).
4. Letter from TVA to NRC, "Browns Ferry Nuclear Plant (BFN) - TVA Revision to Implementation Plant Described in Units 2 and 3 - Technical Specifications (TS) Change No. 441 Revision 1 - Pressure-Temperature(P-T) Curve Update (MC0807 and MC0808)," dated February 24, 2004 (ADAMS Accession No. ML040550496).

ATTACHMENT 1

Proposed BFN Unit 1 TS Changes (Markups)

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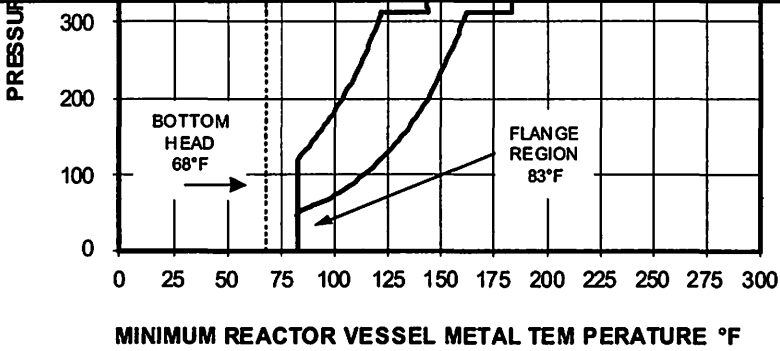
Curve No. 1
Minimum temperature for bottom head during mechanical heatup or cooldown following nuclear shutdown.

Curve No. 2
Minimum temperature for upper RPV and beltline during mechanical heatup or cooldown following nuclear shutdown.

DO NOT USE THIS FIGURE

This curve applies to operations >12 EFPY.

For current operation, use previous curve, which is valid up to 12 EFPY.



Reg. Guide 1.99 Rev. 2 to compensate for radiation embrittlement for 16 EFPY.

The acceptable area for operation is to the right of the applicable curves.

**Figure 3.4.9-1
Pressure/Temperature Limits for
Mechanical Heatup, Cooldown following Shutdown, and
Reactor Critical Operations**

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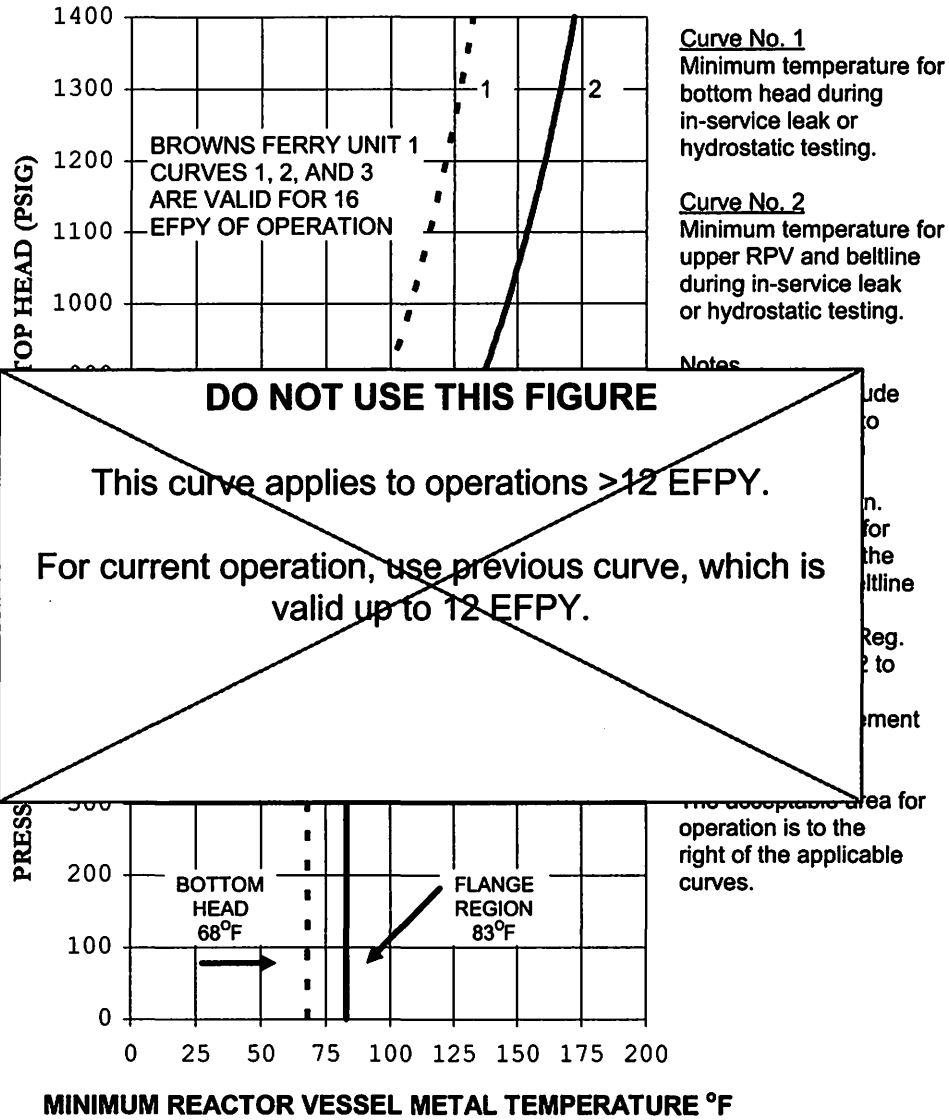
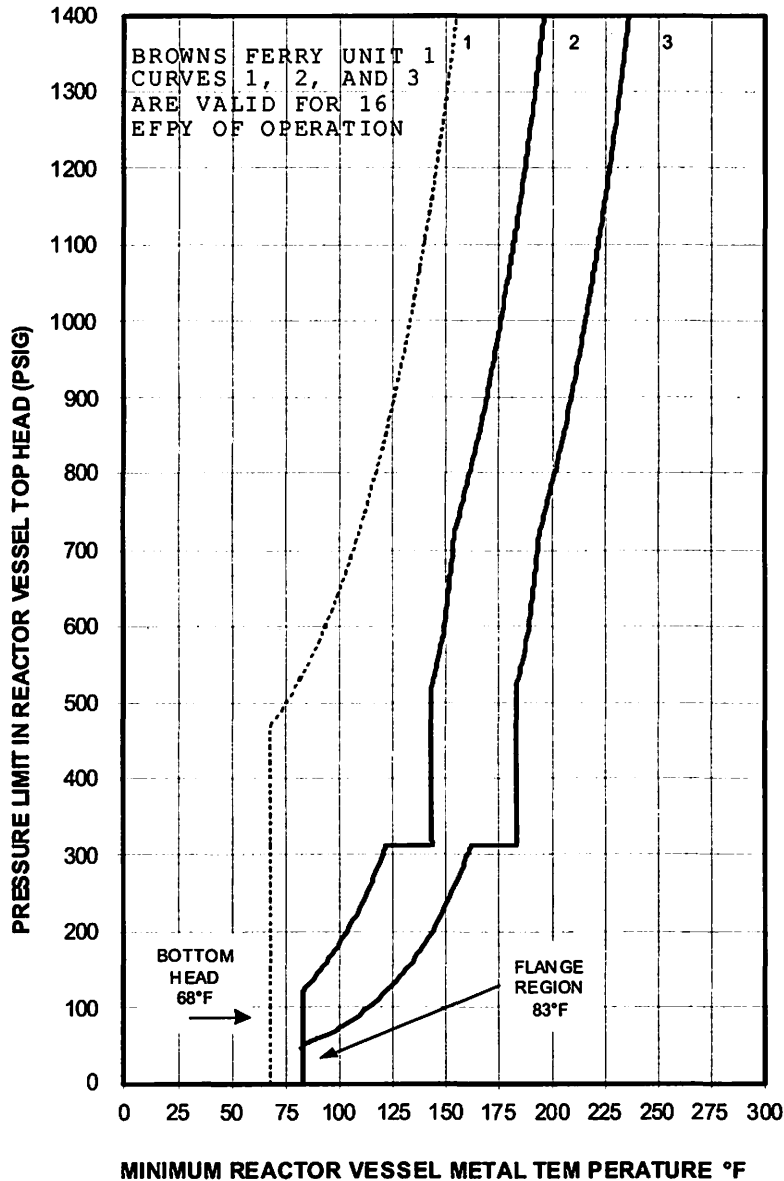


Figure 3.4.9-2
Pressure/Temperature Limits for
Reactor In-Service Leak and Hydrostatic Testing

ATTACHMENT 2

Proposed BFN Unit 1 TS Changes (Final Typed)



Curve No. 1
Minimum temperature for bottom head during mechanical heatup or cooldown following nuclear shutdown.

Curve No. 2
Minimum temperature for upper RPV and beltline during mechanical heatup or cooldown following nuclear shutdown.

Curve No. 3
Minimum temperature for core operation (criticality).

Notes
These curves include sufficient margin to provide protection against feedwater nozzle degradation. The curves allow for shifts in R_{NDT} of the Reactor vessel beltline materials, in accordance with Reg. Guide 1.99 Rev. 2 to compensate for radiation embrittlement for 16 EFPY.

The acceptable area for operation is to the right of the applicable curves.

**Figure 3.4.9-1
Pressure/Temperature Limits for
Mechanical Heatup, Cooldown following Shutdown, and
Reactor Critical Operations**

