



1101 Market Street, Chattanooga, Tennessee 37402

CNL-21-090

November 19, 2021

10 CFR 50.90

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

Browns Ferry Nuclear Plant Units 1, 2, and 3
Renewed Facility Operating License Nos. DPR-33, DPR-52, and DPR-68
NRC Dockets 50-259, 50-260, and 50-296

Subject: **Browns Ferry Nuclear Plant, Units 1, 2, and 3 - Application to Adopt TSTF-568-A, "Revise Applicability of BWR TS 3.6.2.5 and TS 3.6.3.2," Revision 2 (BFN TS-539)**

In accordance with the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) 10 CFR 50.90, Tennessee Valley Authority (TVA) is submitting for Nuclear Regulatory Commission (NRC) approval, a request for an amendment to Renewed Facility Operating License Nos. DPR-33, DPR-52, and DPR-68 for the Browns Ferry Nuclear Plant (BFN), Units 1, 2, and 3.

TVA requests adoption of Technical Specification Task Force (TSTF) Traveler TSTF-568-A, "Revise Applicability of BWR TS 3.6.2.5 and TS 3.6.3.2," Revision 2. TSTF-568-A revises the Applicability and Actions of BFN Unit 1, 2, and 3, Technical Specification (TS) 3.6.2.6, "Drywell-to-Suppression Chamber Differential Pressure," and TS 3.6.3.2, "Primary Containment Oxygen Concentration," and presents the requirements in a manner more consistent with the Standard Technical Specifications (STS) format and content.

The Enclosure to this letter provides a description and assessment of the proposed change. Attachment 1 provides the existing BFN Unit 1, 2, and 3 TS pages marked up to show the proposed changes. Attachment 2 provides revised (re-typed) BFN Unit 1, 2, and 3 TS pages. Attachment 3 provides the existing BFN Unit 1 TS Bases pages marked to show revised text associated with the proposed TS changes and is provided for information only (for purposes of this license amendment request (LAR), the BFN Units 1, 2, and 3 TS Bases are nearly identical).

TVA requests review of this amendment request under the Consolidated Line Item Improvement Process. Approval of the proposed amendment is requested within six-months from the date of this letter. Once approved, the amendment shall be implemented within 30 days.

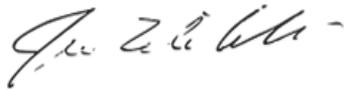
TVA has determined that there are no significant hazards consideration associated with the proposed change and that the license amendment qualifies for a categorical exclusion from environmental review pursuant to the provisions of 10 CFR 51.22(c)(9). Additionally, in accordance with 10 CFR 50.91(b)(1),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

There are no new regulatory commitments made in this letter.

Please address any questions regarding this submittal to Kimberly Hulvey, Senior Manager, Fleet Licensing, at 423-751-3275.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 19th day of November 2021.

Respectfully,



James T. Polickoski
Director, Nuclear Regulatory Affairs

Enclosure: Description and Assessment of the Proposed Change

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

Enclosure

Description and Assessment of the Proposed Change

Enclosure

Description and Assessment of the Proposed Change

Subject: **Browns Ferry Nuclear Plant, Units 1, 2, and 3 - Application to Adopt TSTF-568-A, "Revise Applicability of BWR TS 3.6.2.5 and TS 3.6.3.2," Revision 2 (BFN TS-539)**

CONTENTS

1.0 DESCRIPTION 2

2.0 ASSESSMENT 2

 2.1 Applicability of Safety Evaluation..... 2

 2.2 Optional Changes and Variations..... 2

3.0 REGULATORY ANALYSIS 2

 3.1 No Significant Hazards Consideration Analysis 2

 3.2 Conclusion..... 4

4.0 ENVIRONMENTAL EVALUATION 4

Attachments

- 1 Proposed TS Pages (Markups) for BFN Unit 1, 2, and 3
- 2 Proposed TS Pages (Final Typed) for BFN Unit 1, 2, and 3
- 3 Proposed TS Bases Changes (For information only) for BFN Unit 1

Description and Assessment of the Proposed Change

1.0 DESCRIPTION

Tennessee Valley Authority (TVA) requests adoption of Technical Specification Task Force (TSTF) Traveler TSTF-568-A, "Revise Applicability of BWR TS 3.6.2.5 and TS 3.6.3.2." TSTF-568-A revises the Applicability and Actions of Browns Ferry Nuclear Plant (BFN) Unit 1, 2, and 3 Technical Specification (TS) 3.6.2.6, "Drywell-to-Suppression Chamber Differential Pressure," and TS 3.6.3.2, "Primary Containment Oxygen Concentration," and presents the requirements in a manner more consistent with the Standard Technical Specifications (STS) format and content.

2.0 ASSESSMENT

2.1 Applicability of Safety Evaluation

TVA has reviewed the safety evaluation for TSTF-568 provided to the Technical Specifications Task Force in a letter dated December 17, 2019. This review included a review of the Nuclear Regulatory Commission (NRC) staff's evaluation, as well as the information provided in TSTF-568-A. As described herein, TVA has concluded that the justifications presented in TSTF-568-A and the safety evaluation prepared by the NRC staff are applicable to BFN Units 1, 2, and 3 and justify this amendment for the incorporation of the changes to the BFN Unit 1, 2, and 3 TS.

2.2 Optional Changes and Variations

The BFN TS utilize different numbering than the STS on which TSTF-568-A was based. Specifically, STS 3.6.2.5 correlates with BFN TS 3.6.2.6. This difference is administrative in nature and does not affect the applicability of TSTF-568-A to the BFN TS.

3.0 REGULATORY ANALYSIS

3.1 No Significant Hazards Consideration Analysis

TVA requests adoption of TSTF-568-A, "Revise Applicability of BWR TS 3.6.2.5 and TS 3.6.3.2." TSTF-568-A revises the Applicability and Actions of BFN TS 3.6.2.6, "Drywell-to-Suppression Chamber Differential Pressure," and TS 3.6.3.2, "Primary Containment Oxygen Concentration," and presents the requirements in a manner more consistent with the STS format and content.

TVA has evaluated if a significant hazards consideration is involved with the proposed amendment(s) by focusing on the three standards set forth in Title 10 of the *Code of Federal Regulations* (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 an accident previously evaluated?*

Response: No

The proposed change revises the Applicability and Actions of TS 3.6.2.6, "Drywell-to-Suppression Chamber Differential Pressure," and TS 3.6.3.2, "Primary Containment Oxygen Concentration," and presents the requirements in a manner more consistent

Enclosure

Description and Assessment of the Proposed Change

with the STS format and content. Drywell-to-suppression chamber differential pressure and primary containment oxygen concentration are not initiators to any accident previously evaluated. As a result, the probability of any accident previously evaluated is not affected by the proposed change.

Drywell-to-suppression chamber differential pressure and primary containment oxygen concentration are assumptions in the mitigation of some accidents previously evaluated. The Applicability of TS 3.6.3.2 is changed from Mode 1 when thermal power is greater than 15% to Modes 1 and 2. This expands the Applicability of the TS and will not have an effect on the consequences of an accident. The existing Applicability exceptions are removed and replaced with a longer Completion Time of 72 hours. The consequences of an event that could affect the drywell-to-suppression chamber differential pressure and primary containment oxygen concentration are no different during the proposed Completion Time than the consequences of the same event during the existing Completion Times. A note referencing Limiting Condition for Operation (LCO) 3.0.4.c is added to the Actions to permit entering the Applicability with the LCO not met. The note replaces the existing Applicability exceptions. This change is administrative and has no effect on the consequences of an accident.

Therefore, the proposed change 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 previously evaluated?*

Response: No

The proposed change revises the Applicability and Actions of TS 3.6.2.6, "Drywell-to-Suppression Chamber Differential Pressure," and TS 3.6.3.2, "Primary Containment Oxygen Concentration," and presents the requirements in a manner more consistent with the STS format and content. The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed). No credible new failure mechanisms, malfunctions, or accident initiators that would have been considered a design basis accident in the Updated Final Safety Analysis Report are created because the NRC has determined that hydrogen generation is not risk significant for design basis accidents.

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

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

Response: No

The proposed change revises the Applicability and Actions of TS 3.6.2.6, "Drywell-to-Suppression Chamber Differential Pressure," and TS 3.6.3.2, "Primary Containment Oxygen Concentration," and presents the requirements in a manner more consistent with the STS format and content. No safety limits are affected. No LCO or surveillance limits are affected. The "Drywell-to-Suppression Chamber Differential Pressure" and "Primary Containment Oxygen Concentration" technical specification requirements assure sufficient safety margins are maintained, and that the design, operation,

Enclosure

Description and Assessment of the Proposed Change

surveillance methods, and acceptance criteria specified in applicable codes and standards (or alternatives approved for use by the NRC) will continue to be met as described in the plants' licensing bases. The proposed change does not adversely affect existing plant safety margins or the reliability of the equipment assumed to operate in the safety analysis. As such, there are no changes being made to safety analysis assumptions, safety limits, or limiting safety system settings that would adversely affect plant safety.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the discussion above, TVA concludes that the proposed 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.

3.2 Conclusion

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 NRC regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

4.0 ENVIRONMENTAL EVALUATION

The proposed license 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 20, or 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 effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed change 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 change.

Attachment 1

**Proposed TS Pages (Markups) for BFN Unit 1, 2, and 3
(6 total pages)**

3.6 CONTAINMENT SYSTEMS

3.6.2.6 Drywell-to-Suppression Chamber Differential Pressure

LCO 3.6.2.6 The drywell pressure shall be maintained ≥ 1.1 psid above the pressure of the suppression chamber.

-----NOTE-----
This differential may be decreased to < 1.1 psid for a maximum of 4 hours during required operability testing of the HPCI system, the RCIC system or the suppression chamber-to-drywell vacuum breakers.

with THERMAL POWER $> 15\%$ RTP.

APPLICABILITY: MODE 1 ~~during the time period:~~

- a. ~~From 24 hours after THERMAL POWER is $> 15\%$ RTP following startup, to~~
- b. ~~24 hours prior to reducing THERMAL POWER to $< 15\%$ RTP prior to the next scheduled reactor shutdown.~~

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Drywell-to-suppression chamber differential pressure not within limit.	A.1 Restore differential pressure to within limit.	8 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to $\leq 15\%$ RTP.	12 hours

72

-----NOTE-----
LCO 3.0.4.c is applicable.

3.6 CONTAINMENT SYSTEMS

3.6.3.2 Primary Containment Oxygen Concentration

LCO 3.6.3.2 The primary containment oxygen concentration shall be < 4.0 volume percent.

APPLICABILITY: ~~MODE 1 during the time period:~~ S and 2.

- ~~a. From 24 hours after THERMAL POWER is > 15% RTP following startup, to~~
- ~~b. 24 hours prior to reducing THERMAL POWER to < 15% RTP prior to the next scheduled reactor shutdown.~~

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Primary containment oxygen concentration not within limit.	A.1 Restore oxygen concentration to within limit.	24 hours 72
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to ≤ 15% RTP.	8 hours 12

-----NOTE-----
LCO 3.0.4.c is applicable.

Be in MODE 3.

3.6 CONTAINMENT SYSTEMS

3.6.2.6 Drywell-to-Suppression Chamber Differential Pressure

LCO 3.6.2.6 The drywell pressure shall be maintained ≥ 1.1 psid above the pressure of the suppression chamber.

-----NOTE-----
This differential may be decreased to < 1.1 psid for a maximum of 4 hours during required operability testing of the HPCI system, the RCIC system or the suppression chamber-to-drywell vacuum breakers.

APPLICABILITY: ~~MODE 1 during the time period:~~ with THERMAL POWER $> 15\%$ RTP.

~~a. From 24 hours after THERMAL POWER is $> 15\%$ RTP following startup, to~~

~~b. 24 hours prior to reducing THERMAL POWER to $< 15\%$ RTP prior to the next scheduled reactor shutdown.~~

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Drywell-to-suppression chamber differential pressure not within limit.	A.1 Restore differential pressure to within limit.	8 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to $\leq 15\%$ RTP.	12 hours

-----NOTE-----
LCO 3.0.4.c is applicable.

3.6 CONTAINMENT SYSTEMS

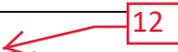
3.6.3.2 Primary Containment Oxygen Concentration

LCO 3.6.3.2 The primary containment oxygen concentration shall be < 4.0 volume percent.

APPLICABILITY: ~~MODE 1 during the time period:~~


- ~~a. From 24 hours after THERMAL POWER is > 15% RTP following startup, to~~
- ~~b. 24 hours prior to reducing THERMAL POWER to < 15% RTP prior to the next scheduled reactor shutdown.~~

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Primary containment oxygen concentration not within limit.	A.1 Restore oxygen concentration to within limit.	24 hours 
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to ≤ 15% RTP.	8 hours 

NOTE

 LCO 3.0.4.c is applicable.

Be in MODE 3.

3.6 CONTAINMENT SYSTEMS

3.6.2.6 Drywell-to-Suppression Chamber Differential Pressure

LCO 3.6.2.6 The drywell pressure shall be maintained ≥ 1.1 psid above the pressure of the suppression chamber.

-----NOTE-----
This differential may be decreased to < 1.1 psid for a maximum of 4 hours during required operability testing of the HPCI system, the RCIC system or the suppression chamber-to-drywell vacuum breakers.

with THERMAL POWER $> 15\%$ RTP.

APPLICABILITY: ~~MODE 1 during the time period:~~

- ~~a. From 24 hours after THERMAL POWER is $> 15\%$ RTP following startup, to~~
- ~~b. 24 hours prior to reducing THERMAL POWER to $< 15\%$ RTP prior to the next scheduled reactor shutdown.~~

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Drywell-to-suppression chamber differential pressure not within limit.	A.1 Restore differential pressure to within limit.	8 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to $\leq 15\%$ RTP.	12 hours

72

-----NOTE-----
LCO 3.0.4.c is applicable.

3.6 CONTAINMENT SYSTEMS

3.6.3.2 Primary Containment Oxygen Concentration

LCO 3.6.3.2 The primary containment oxygen concentration shall be < 4.0 volume percent.

APPLICABILITY: ~~MODE 1~~ during the time period:

- a. ~~From 24 hours after THERMAL POWER is > 15% RTP following startup, to~~
- b. ~~24 hours prior to reducing THERMAL POWER to < 15% RTP prior to the next scheduled reactor shutdown.~~

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Primary containment oxygen concentration not within limit.	A.1 Restore oxygen concentration to within limit.	24 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to ≤ 15% RTP.	8 hours

-----NOTE-----
LCO 3.0.4.c is applicable.

Be in MODE 3.

Attachment 2

**Proposed TS Pages (Final Typed) for BFN Unit 1, 2, and 3
(6 total pages)**

3.6 CONTAINMENT SYSTEMS

3.6.2.6 Drywell-to-Suppression Chamber Differential Pressure

LCO 3.6.2.6 The drywell pressure shall be maintained ≥ 1.1 psid above the pressure of the suppression chamber.

-----NOTE-----

This differential may be decreased to < 1.1 psid for a maximum of 4 hours during required operability testing of the HPCI system, the RCIC system or the suppression chamber-to-drywell vacuum breakers.

APPLICABILITY: MODE 1 with THERMAL POWER $> 15\%$ RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
	-----NOTE----- LCO 3.0.4.c is applicable. -----	
A. Drywell-to-suppression chamber differential pressure not within limit.	A.1 Restore differential pressure to within limit.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to $\leq 15\%$ RTP.	12 hours

3.6 CONTAINMENT SYSTEMS

3.6.3.2 Primary Containment Oxygen Concentration

LCO 3.6.3.2 The primary containment oxygen concentration shall be < 4.0 volume percent.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
	<p>-----NOTE-----</p> <p>LCO 3.0.4.c is applicable.</p> <p>-----</p>	
A. Primary containment oxygen concentration not within limit.	A.1 Restore oxygen concentration to within limit.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	12 hours

3.6 CONTAINMENT SYSTEMS

3.6.2.6 Drywell-to-Suppression Chamber Differential Pressure

LCO 3.6.2.6 The drywell pressure shall be maintained ≥ 1.1 psid above the pressure of the suppression chamber.

-----NOTE-----

This differential may be decreased to < 1.1 psid for a maximum of 4 hours during required operability testing of the HPCI system, the RCIC system or the suppression chamber-to-drywell vacuum breakers.

APPLICABILITY: MODE 1 with THERMAL POWER $> 15\%$ RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
	-----NOTE----- LCO 3.0.4.c is applicable. -----	
A. Drywell-to-suppression chamber differential pressure not within limit.	A.1 Restore differential pressure to within limit.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to $\leq 15\%$ RTP.	12 hours

3.6 CONTAINMENT SYSTEMS

3.6.3.2 Primary Containment Oxygen Concentration

LCO 3.6.3.2 The primary containment oxygen concentration shall be < 4.0 volume percent.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
	<p>-----NOTE-----</p> <p>LCO 3.0.4.c is applicable.</p> <p>-----</p>	
A. Primary containment oxygen concentration not within limit.	A.1 Restore oxygen concentration to within limit.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	12 hours

3.6 CONTAINMENT SYSTEMS

3.6.2.6 Drywell-to-Suppression Chamber Differential Pressure

LCO 3.6.2.6 The drywell pressure shall be maintained ≥ 1.1 psid above the pressure of the suppression chamber.

-----NOTE-----

This differential may be decreased to < 1.1 psid for a maximum of 4 hours during required operability testing of the HPCI system, the RCIC system or the suppression chamber-to-drywell vacuum breakers.

APPLICABILITY: MODE 1 with THERMAL POWER $> 15\%$ RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
	-----NOTE----- LCO 3.0.4.c is applicable. -----	
A. Drywell-to-suppression chamber differential pressure not within limit.	A.1 Restore differential pressure to within limit.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to $\leq 15\%$ RTP.	12 hours

3.6 CONTAINMENT SYSTEMS

3.6.3.2 Primary Containment Oxygen Concentration

LCO 3.6.3.2 The primary containment oxygen concentration shall be < 4.0 volume percent.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
	<p>-----NOTE-----</p> <p>LCO 3.0.4.c is applicable.</p> <p>-----</p>	
A. Primary containment oxygen concentration not within limit.	A.1 Restore oxygen concentration to within limit.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	12 hours

Attachment 3

**Proposed TS Bases Changes (For information only) for BFN Unit 1
(4 total pages)**

BASES

APPLICABLE
SAFETY ANALYSES
(continued)

Initial drywell-to-suppression chamber differential pressure affects both the dynamic pool loads on the suppression chamber and the peak drywell pressure during downcomer pipe clearing during a Design Basis Accident LOCA. Drywell-to-suppression chamber differential pressure must be maintained within the specified limits so that the safety analysis remains valid.

Drywell-to-suppression chamber differential pressure satisfies Criterion 2 of the NRC Policy Statement (Ref. 2).

LCO

A drywell-to-suppression chamber differential pressure limit of 1.1 psid is required to ensure that the containment conditions assumed in the safety analyses are met. A drywell-to-suppression chamber differential pressure of < 1.1 psid corresponds to a downcomer water leg of > 1.04 ft. Failure to maintain the required differential pressure could result in excessive forces on the suppression chamber due to higher water clearing loads from downcomer vents and higher pressure buildup in the drywell. A Note permits the differential pressure to be decreased to < 1.1 psid for a maximum of 4 hours during testing of the HPCI system, the RCIC system, or the suppression chamber-to-drywell vacuum breakers.

with THERMAL
POWER > 15% RTP

APPLICABILITY

Drywell-to-suppression chamber differential pressure must be controlled when the primary containment is inert. The primary containment must be inert in MODE 1, since this is the condition with the highest probability for an event that could produce hydrogen. ~~It is also the condition with the highest probability of an event that could impose large loads on the primary containment.~~

(continued)

BASES

APPLICABILITY
(continued)

~~Inerting primary containment is an operational problem because it prevents primary containment access without an appropriate breathing apparatus. Therefore, the primary containment is inerted as late as possible in the unit startup and is de-inerted as soon as possible in the unit shutdown. As long as reactor power is < 15% RTP, the probability of an event that generates hydrogen or excessive loads on primary containment occurring within the first 24 hours following a startup or within the last 24 hours prior to a shutdown is low enough that these "windows," with the primary containment not inerted, are also justified. The 24 hour time period is a reasonable amount of time to allow plant personnel to perform inerting or de-inerting.~~

ACTIONS

A Note permits the use of the provisions of LCO 3.0.4.c. This allowance permits entry into the applicable MODE(S) while relying on the ACTIONS. This allowance is acceptable because inerting the primary containment prevents containment access without an appropriate breathing apparatus. Therefore, the primary containment is inerted as late as possible in the plant startup, after entering Mode 1 with THERMAL POWER > 15% RTP, and de-inerted as soon as possible in the plant shutdown. It is acceptable to intentionally enter Required Action A.1 prior to a shutdown in order to begin de-inerting the primary containment prior to exiting the Applicability.

A.1

If drywell-to-suppression chamber differential pressure is not within the limit, the conditions assumed in the safety analyses are not met and the differential pressure must be restored to within the limit within 8 hours. The 8 hour Completion Time provides sufficient time to restore differential pressure to within limit and takes into account the low probability of an event that would create excessive suppression chamber loads occurring during this time period.

72

B.1

If the differential pressure cannot be restored to within limits within the associated Completion Time, the plant must be placed in a MODE in which the LCO does not apply. This is done by reducing power to $\leq 15\%$ RTP within 12 hours. The 12 hour Completion Time is reasonable, based on operating experience, to reduce reactor power from full power conditions in an orderly manner and without challenging plant systems.

(continued)

BASES (continued)

APPLICABLE
SAFETY ANALYSES

The Reference 1 calculations assume that the primary containment is inerted when a Design Basis Accident loss of coolant accident occurs. Thus, the hydrogen assumed to be released to the primary containment as a result of metal water reaction in the reactor core will not produce combustible gas mixtures in the primary containment. Oxygen, which is subsequently generated by radiolytic decomposition of water, is diluted and removed by the CAD System more rapidly than it is produced.

Primary containment oxygen concentration satisfies Criterion 2 of the NRC Policy Statement (Ref. 2).

LCO

The primary containment oxygen concentration is maintained < 4.0 v/o to ensure that an event that produces any amount of hydrogen does not result in a combustible mixture inside primary containment.

APPLICABILITY

The primary containment oxygen concentration must be within the specified limit when primary containment is inerted, ~~except as allowed by the relaxations during startup and shutdown addressed below.~~ The primary containment must be inert in ~~MODE-1~~, since this is the condition with the highest probability of an event that could produce hydrogen.

and 2

~~Inerting the primary containment is an operational problem because it prevents containment access without an appropriate breathing apparatus. Therefore, the primary containment is inerted as late as possible in the plant startup and de-inerted as soon as possible in the plant shutdown. As long as reactor power is < 15% RTP, the potential for an event that generates~~

(continued)

BASES

APPLICABILITY
(continued)

~~significant hydrogen is low and the primary containment need not be inert. Furthermore, the probability of an event that generates hydrogen occurring within the first 24 hours of a startup, or within the last 24 hours before a shutdown, is low enough that these "windows," when the primary containment is not inerted, are also justified. The 24 hour time period is a reasonable amount of time to allow plant personnel to perform inerting or de-inerting.~~

ACTIONS

A.1

or 2

72

If oxygen concentration is ≥ 4.0 v/o ~~at any time~~ while operating in MODE 1, with the exception of the relaxations allowed during ~~startup and shutdown~~, oxygen concentration must be restored to < 4.0 v/o within ~~24~~ hours. The ~~24~~ hour Completion Time is allowed when oxygen concentration is ≥ 4.0 v/o because of the availability of other hydrogen mitigating systems (e.g., the CAD System) and the low probability and long duration of an event that would generate significant amounts of hydrogen occurring during this period.

A Note permits the use of the provisions of LCO 3.0.4.c. This allowance permits entry into the applicable MODE(S) while relying on the ACTIONS. This allowance is acceptable because inerting the primary containment prevents containment access without an appropriate breathing apparatus. Therefore, the primary containment is inerted as late as possible in the plant startup, after entering MODES 1 and 2, and de-inerted as soon as possible in the plant shutdown. It is acceptable to intentionally enter Required Action A.1 prior to a shutdown in order to begin de-inerting the primary containment prior to exiting the Applicability.

B.1

MODE 3

12

If oxygen concentration cannot be restored to within limits within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, power must be reduced to $\leq 15\%$ RTP within ~~8~~ hours. The ~~8~~ hour Completion Time is reasonable, based on operating experience, to reduce reactor power from full power conditions in an orderly manner and without challenging plant systems.

(continued)