VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

August 27, 2014

10 CFR 50.90

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

Serial No.: 14-424
NAPS/RAP: R0
Docket Nos.: 50-338/339
License Nos.: NPF-4/7

VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION UNITS 1 AND 2
PROPOSED LICENSE AMENDMENT REQUEST
CLARIFICATION OF REACTOR COOLANT SYSTEM
HEATUP AND COOLDOWN TECHNICAL SPECIFICATION FIGURES

Pursuant to 10CFR50.90, Virginia Electric and Power Company (Dominion) is submitting a license amendment request to revise the North Anna Power Station Units 1 and 2 Technical Specifications (TS). TS Figures 3.4.3-1 and 3.4.3-2, North Anna Units 1 and 2 Reactor Coolant System Heatup Limitations and North Anna Units 1 and 2 Reactor Coolant System Cooldown Limitations, respectively, are being revised for clarification and to be fully representative of the allowable operating conditions during Reactor Coolant System (RCS) startup and cooldown evolutions. Specifically, the revisions to TS Figures 3.4.3-1 and 3.4.3-2 are the extension of the temperature axes to reflect temperatures up to RCS full power operation, the extension of the pressure axes to less than 0 psig to bound RCS conditions to support vacuum-assist fill of the RCS loops, and the addition of information regarding the reactor boltup temperature. Associated TS 3.4.3 Basis changes are provided for information.

Attachment 1 provides a discussion of the proposed change. The marked-up and proposed pages for the TS are included in Attachments 2 and 3, respectively. The TS Bases changes are provided for NRC information only in Attachment 4.

We have evaluated the proposed amendment and have determined that it does not involve a significant hazards consideration as defined in 10CFR50.92. The basis for this determination is included in Attachment 1. We have also determined that operation with the proposed change will not result in any significant increase in the amount of effluents that may be released offsite or any significant increase in individual or cumulative occupational radiation exposure. Therefore, the proposed amendment is eligible for categorical exclusion from an environmental assessment as set forth in 10CFR51.22(c)(9). Pursuant to 10CFR51.22(b), no environmental impact statement or environmental assessment is needed in connection with the approval of the proposed change. The proposed TS change has been reviewed and approved by the Facility Safety Review Committee.

A001
NRR

Dominion requests approval of the proposed change by September 30, 2015 with a 60-day implementation period.

Should you have any questions or require additional information, please contact Mr. Thomas Shaub at (804) 273-2763.

Respectfully,

Mark D. Sartain
Vice President – Nuclear Engineering

Commitments contained in this letter: None

Attachments:

1. Discussion of Change
2. Marked-up Technical Specifications Pages
3. Proposed Technical Specifications Pages
4. Marked-up Bases Pages

Vicki L. Hull
NOTARY PUBLIC
Commonwealth of Virginia
Reg. # 140542
My Commission Expires May 31, 2018

COMMONWEALTH OF VIRGINIA)
)
COUNTY OF HENRICO)

The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by Mr. Mark D. Sartain, who is Vice President – Nuclear Engineering, of Virginia Electric and Power Company. He has affirmed before me that he is duly authorized to execute and file the foregoing document in behalf of that company, and that the statements in the document are true to the best of his knowledge and belief.

Acknowledged before me this 27TH day of August, 2014.

My Commission Expires: 5-31-18.

Vicki L. Hull
Notary Public

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Attachment 1

DISCUSSION OF CHANGE

Virginia Electric and Power Company
(Dominion)
North Anna Power Station Units 1 and 2

DISCUSSION OF CHANGE

1.0 INTRODUCTION

In accordance with the provisions of 10CFR50.90, Virginia Electric and Power Company (Dominion) is submitting a license amendment request (LAR) to revise the North Anna Power Station Units 1 and 2 Technical Specifications (TS). TS Figures 3.4.3-1 and 3.4.3-2, North Anna Units 1 and 2 Reactor Coolant System Heatup Limitations and North Anna Units 1 and 2 Reactor Coolant System Cooldown Limitations, respectively, are being revised for clarification and to be fully representative of the allowable operating conditions during Reactor Coolant System (RCS) startup and cooldown evolutions. Specifically, the revisions to TS Figures 3.4.3-1 and 3.4.3-2 are the extension of the temperature axes to reflect temperatures up to RCS full power operation, the extension of the pressure axes to less than 0 psig to bound RCS conditions to support vacuum-assist fill of the RCS loops, and the addition of information regarding the reactor boltup temperature. Associated TS 3.4.3 Bases changes are provided for information.

2.0 BACKGROUND

By letter dated February 19, 2014, the Pressurized Water Reactors Owners Group (PWROG) notified industry representatives of an operating experience (OE) issue regarding non-compliance with TS reactor pressure vessel (RPV) pressure/temperature (P/T) limits during vacuum refill of the RCS in Mode 5 (Reference 7.1). Specifically, the OE issue noted that some licensees may have TS heatup and cooldown P/T limits figures that have pressure axes that terminate at 0 psig, even though they may operate with a vacuum in the RCS (i.e., below 0 psig) during certain startup and cooldown evolutions (e.g., vacuum-assist refill). The PWROG recommended that plants with this issue should submit an LAR to revise the TS RCS heatup and cooldown P/T limits figures to extend the pressure scale to less than 0 psig.

Dominion reviewed the North Anna TS requirements and plant operating practices regarding RCS startup and cooldown evolutions relative to the RCS P/T limits figures. It was determined that, while North Anna is operating in compliance with the TS (i.e., within the acceptable region of the P/T curves), the x (abscissa) and y (ordinate) axes (RCS temperature and pressure scales, respectively) of TS Figures 3.4.3-1 and 3.4.3-2 do not currently reflect temperatures up to RCS full power operation or pressures less than 0 psig to bound RCS conditions to support vacuum-assist fill of the RCS loops.

During a March 10, 2014 conference call with the NRC to discuss this issue, it was concluded that Surry and North Anna are operating in compliance with the TS, but it was also noted that clarification of the TS P/T limits figures is needed to be fully representative of the allowable operating conditions. Specifically, the NRC stated the following:

a. The TS figures should reflect operation at negative pressure to bound vacuum fill of the RCS loops,

b. The limiting reactor vessel head boltup temperature should be reflected on the TS figures, and

c. The LAR should be processed in a reasonable time frame.

Consequently, this LAR has been prepared to address the applicable industry OE and the NRC comments received during the March 10, 2014 conference call. The proposed revisions are summarized in the following section.

3.0 PROPOSED CHANGE

The proposed revisions to TS Figures 3.4.3-1 and 3.4.3-2, the North Anna Units 1 and 2 Reactor Coolant System Heatup and the North Anna Units 1 and 2 Reactor Coolant System Cooldown Limitations, respectively, and to the TS 3.4.3 Bases are summarized as follows and are discussed in Section 4.1 - Technical Evaluation.

- TS Figures 3.4.3-1 and 3.4.3-2 are revised for clarification as follows:
  - The temperature axes are extended from 350°F to 650°F, which corresponds to the reactor vessel design temperature and bounds temperatures up to RCS full power operation.
  - The pressure axes are extended from 0 psig to -14.70 psig to bound RCS conditions to support vacuum-assist fill of the RCS loops, which is a loop fill option addressed in the North Anna RCS fill operating procedures.
  - The phrase, "Limiting Boltup Temperature North Anna Initial RT_{NDT} Closure Flange Region: -22°F," is added, since the figures do not currently address boltup temperature.

- The Applicability Section of TS 3.4.3 Bases is revised to include:
  - A statement is added indicating that vacuum-assist fill of the RCS loops in Cold Shutdown or Refueling Shutdown is an acceptable condition since the resulting pressure/temperature combination is located in the Acceptable Operation region of TS Figures 3.4.3-1 and 3.4.3-2.
  - A discussion of the reactor boltup temperature is added. The discussion 1) identifies the boltup temperature limit for the closure flange region, which is being added to Figures 3.4.3-1 and 3.4.3-2 as -22°F; 2) indicates that an administrative minimum boltup temperature greater than -22°F is imposed to ensure the RCS temperatures are sufficiently high to prevent damage to the reactor vessel closure head/vessel flange during the removal or installation of reactor vessel head bolts; and, 3) states that the limiting boltup temperature and the administrative boltup temperature limit are in effect only when the reactor vessel head bolts are under tension.

  These Bases changes are provided to the NRC for information.

Marked-up Figures 3.4.3-1 and 3.4.3-2 and TS Bases pages and typed proposed typed pages are provided in Attachments 2, 3, and 4, respectively.

4.0 TECHNICAL AND REGULATORY EVALUATIONS

4.1 Technical Evaluation

Figures 3.4.3-1 and 3.4.3-2 provide the RCS P/T limits for various modes of reactor operation. The limit curves establish the Acceptable and Unacceptable Operation conditions for varying pressure and temperature combinations. The P/T limit curves on Figures 3.4.3-1 and 3.4.3-2 are not being modified. Each of the clarifying changes to Figures 3.4.3-1 and 3.4.3-2, as well as the associated Bases changes, was evaluated and is discussed in the following paragraphs.

Extension of the Temperature and Pressure Axes on TS Figures 3.4.3-1 and 3.4.3-2 – The region of Acceptable Operation for RCS heatup and cooldown is illustrated schematically in Figures 3.4.3-1 and 3.4.3-2, respectively.

The extension of the temperature axes from 350°F to 650°F on Figures 3.4.3-1 and 3.4.3-2 is appropriate since the region of Acceptable Operation includes a maximum temperature corresponding to the reactor vessel design temperature of 650°F, which bounds temperatures up to RCS full power operation.

With the extension of the pressure axes from 0 psig to -14.70 psig, the region of Acceptable Operation includes a pressure range from -14.70 psig up to the maximum pressure set by the existing limit curves. The extension of the pressure axes to -14.70 psig on Figures 3.4.3-1 and 3.4.3-2 is appropriate to bound RCS conditions to support vacuum-assist fill of the RCS loops. The extension of the pressure axes is also appropriate since vacuum-assist fill of the RCS loops is an RCS loop fill option addressed in the North Anna RCS fill operating procedures. Vacuum-assist fill of the RCS loops in Modes 5 and 6 is an acceptable condition since the resulting pressure and temperature combination is located in the Acceptable Operation region of Figures 3.4.3-1 and 3.4.3-2. An engineering evaluation was performed by Dominion that demonstrates the RCS loop piping and steam generator tubing will maintain their structural integrity with considerable margin when subjected to vacuum conditions during vacuum-assist loop fill.

The North Anna vacuum-assist loop fill practice, controlled by the North Anna RCS fill operating procedures, does not expose the reactor vessels to vacuum conditions. However, Westinghouse performed a review of the regulatory requirements for the reactor vessel P/T limits and the NRC-approved P/T limits development methodology when considering vacuum fill of the RCS (References 7.2 and 7.3). The Westinghouse review concluded that operation with a vacuum is covered under the existing methodology authorized by the NRC and described in 10CFR50, Appendix G, the ASME Code, and WCAP-14040-A, Revision 4, "Methodology Used to Develop Cold

Overpressure Mitigating System Setpoints and RCS Heatup and Cooldown Curves" (Reference 7.4). The Westinghouse review further concluded that vacuum fill of the RCS in Mode 5 does not violate the 10CFR50, Appendix G pressure and temperature requirements for the reactor vessel. The structural integrity of the North Anna reactor vessels under vacuum is based on information in WCAP-15112, Rev 1, North Anna Units 1 and 2 WOG Reactor Vessel 60-Year Evaluation Minigroup Heatup And Cooldown Limit Curves For Normal Operation (Reference 7.5). An engineering evaluation performed by Dominion, which included consideration of the Westinghouse review, concludes that vacuum fill does not adversely impact the structural integrity of the reactor vessels.

Boltup Temperature – As noted in the proposed revision to Figures 3.4.3-1 and 3.4.3-2, the limiting boltup temperature for the vessel closure flange region is -22°F. The Bases is being revised to state that the reactor boltup temperature is defined in 10CFR50, Appendix G as "The highest reference temperature of the material in the closure flange region that is highly stressed by the bolt preload." The reactor may be bolted up at a temperature greater than the initial RT_{NDT} of the material stressed by the boltup (e.g., the vessel flange region). An administrative minimum boltup temperature of greater than -22°F is imposed in station procedures to ensure the RCS temperatures are sufficiently high to prevent damage to the closure head/vessel flange during the removal or installation of reactor vessel head bolts. The limiting boltup temperature and the administrative boltup temperature limit are in effect only when the reactor vessel head bolts are under tension.

4.2 Regulatory Evaluation

By letter dated July 1, 2004, Virginia Electric and Power Company requested NRC approval of revised RCS heatup and cooldown P/T limits that were valid to the North Anna Units 1 and 2 end-of-license dates (Reference 7.6). The NRC approved the revised P/T curves in TS Amendments 242/223, dated July 8, 2005 (Reference 7.7).

4.2.1 Applicable Regulatory Requirements

TS Figures 3.4.3-1 and 3.4.3-2 are being revised for clarification and to be fully representative of the allowable operating conditions during RCS startup and cooldown evolutions. With the implementation of the proposed changes, the North Anna Units 1 and 2 TS will continue to assure that the necessary quality of this system and its components is maintained and the limiting conditions of operation of this system will continue to be met. Therefore, the requirements of 10CFR50.36 continue to be met with the changes proposed in this LAR.

4.2.2 No Significant Hazards Consideration

Virginia Electric and Power Company (Dominion) proposes a change to the North Anna Power Station Units 1 and 2 Technical Specifications (TS). Specifically, TS Figures 3.4.3-1 and 3.4.3-2, North Anna Units 1 and 2 Reactor Coolant System Heatup Limitations and North Anna Units 1 and 2 Reactor Coolant System Cooldown Limitations, respectively, are being revised for clarification and to be fully representative of the allowable operating conditions during Reactor Coolant System (RCS) startup and cooldown evolutions. The pressure/temperature (P/T) curves on TS Figures 3.4.3-1 and 3.4.3-2 are not being modified. TS Figures 3.4.3-1 and 3.4.3-2 are revised for clarification as follows:

- The temperature axes are extended from 350°F to 650°F, which corresponds to the reactor vessel design temperature and bounds temperatures up to RCS full power operation (nominally 580°F).
- The pressure axes are extended from 0 psig to -14.70 psig to bound RCS conditions to support vacuum-assist fill of the RCS loops, which is a loop fill option addressed in the North Anna RCS fill operating procedures.
- The phrase, "Limiting Boltup Temperature North Anna Unit 1/2 Initial RT_{NDT} Closure Flange Region: -22°F," is added, since the figures do not currently address boltup temperature.

The NRC has provided standards for determining whether a significant hazards consideration exists as stated in 10CFR50.92(c) for a proposed amendment to an operating license for a facility. A determination that a proposed license amendment involves no significant hazards consideration may be made if operation of the facility in accordance with a proposed amendment would not: 1) involve a significant increase in the probability or consequences of an accident previously evaluated, or 2) create the possibility of a new or different kind of accident from any accident previously evaluated, or 3) involve a significant reduction in a margin of safety. Dominion has evaluated if a significant hazards consideration (SHC) is involved with the proposed change. A discussion of these standards as they relate to this change request is provided below.

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

   Response: No.

   The proposed clarification of TS Figures 3.4.3-1 and 3.4.3-2 does not involve a physical change to the plant and does not change the manner in which plant systems or components are operated or controlled. The proposed change does not alter or prevent the ability of structures, system, and components (SSCs) to perform their intended function to mitigate the consequences of an initiating event within the assumed acceptance limits. The P/T curves on TS Figures 3.4.3-1 and 3.4.3-2 are not being modified and remain valid.

Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

   Response: No.

   The proposed clarification of TS Figures 3.4.3-1 and 3.4.3-2 does not involve any physical alteration of plant equipment; consequently, no new or different types of equipment will be installed. The proposed change does not adversely affect accident initiators or precursors nor alter the design assumptions, conditions, or configuration of the facility. The P/T curves on TS Figures 3.4.3-1 and 3.4.3-2 are not being modified, and the basic operation of installed plant systems and components is unchanged.

   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 change involve a significant reduction in a margin of safety?

   Response: No.

   The existing RCS P/T curves on TS Figures 3.4.3-1 and 3.4.3-2 are not being modified. The proposed clarification of TS Figures 3.4.3-1 and 3.4.3-2 does not alter any plant equipment, does not change the manner in which the plant is operated or controlled, and has no impact on any safety analysis assumptions. The proposed change does not alter the manner in which safety limits, limiting safety system settings, or limiting conditions for operation are determined. The proposed change does not result in plant operation in a configuration outside the analyses or design basis and does not adversely affect systems that respond to safely shut down the plant and to maintain the plant in a safe shutdown condition.

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

Based on the above, Dominion concludes that the proposed change does not represent a significant hazards consideration under the standards set forth in 10CFR50.92(c).

4.2.3 Precedents

On March 5, 2014, the NRC issued an amendment to Indian Point Nuclear Generating Unit No. 2 to revise P/T limit curves, which included a note to allow operation of the RCS in a vacuum condition (Reference: ADAMS Accession No. ML14045A248). Also, by letter dated April 9, 2014, Indiana Michigan Power Company submitted an LAR to revise the Donald C. Cook Nuclear Plant TS RCS pressure and temperature limits to

address their applicability during vacuum fill operations of the RCS (Reference: Letter AEP-NRC-2014-24, dated April 9, 2014). North Anna Power Station Units 1 and 2 have similar RCS P/T requirements as they are Westinghouse-designed pressurized water reactors. Additionally, the methodology used to develop the North Anna, D. C. Cook, and Indian Point P/T curves is based on the NRC approved WCAP-14040-NP-A.

5.0 ENVIRONMENTAL CONSIDERATION

This license amendment request meets the eligibility criteria for categorical exclusion set forth in 10CFR51.22(c)(9) as follows:

(i) The amendment involves no significant hazards consideration.

As described above, the proposed license amendment request clarifying TS Figures 3.4.3-1 and 3.4.3-2 does not involve a significant hazards consideration.

(ii) There is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite.

The proposed license amendment request clarifies TS Figures 3.4.3-1 and 3.4.3-2 and does not affect the types or amounts of effluents that may be released offsite. Therefore, there is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite.

(iii) There is no significant increase in individual or cumulative occupational radiation exposure.

The proposed license amendment request clarifies TS Figures 3.4.3-1 and 3.4.3-2 and does not affect individual or cumulative occupational radiation exposure. Therefore, there is no significant increase in individual or cumulative occupational radiation exposure.

Based on the above assessment, Dominion concludes that the proposed change meets the criteria specified in 10CFR51.22 for a categorical exclusion from the requirements of 10CFR51.22 relative to requiring a specific environmental assessment or impact statement by the Commission.

6.0 CONCLUSION

The proposed license amendment request revises TS Figures 3.4.3-1 and 3.4.3-2, North Anna Units 1 and 2 Reactor Coolant System Heatup Limitations and North Anna Units 1 and 2 Reactor Coolant System Cooldown Limitations, respectively, for clarification and to be fully representative of the allowable operating conditions. The proposed clarification expands the pressure and temperature axes of the graphs for completeness and adds a note reflecting the limiting boltup temperature. The TS Bases revisions add discussions of vacuum-assist fill of the RCS loops and reactor boltup

temperature; in addition, the Bases is revised to provide clarification of the limiting value of the RT_{NDT}. The pressure/temperature curves on Figures 3.4.3-1 and 3.4.3-2 are not being modified. The proposed clarification of Figures 3.4.3-1 and 3.4.3-2 does not alter any plant equipment and does not change the manner in which the plant is operated or controlled. The structural integrity of the North Anna reactor vessels, the RCS loop piping, and the steam generator tubing is not adversely affected by vacuum-assist fill of the RCS loops.

7.0 REFERENCES

7.1 PWR Owners Group letter OG-14-66, dated February 19, 2014 Subject: "Non Compliance with the Pressure-Temperature Limits Technical Specification during Vacuum Refill of the RCS in Mode 5", (PA-SC-1115)

7.2 PWR Owners Group letter OG-14-84, dated March 3, 2014 Subject: "Applicability of the Pressure-Temperature Limit Curve Figures during Vacuum Refill of the RCS in Mode 5", (PA-SC-1115)

7.3 Westinghouse letter MCOE-LTR-14-17, Rev. 0, dated March 3, 2014 Subject: "Applicability of the Pressure-Temperature Limit Curve Figures During Vacuum Refill of the RCS in Mode 5 for Westinghouse and CE NSSS Plants" (Westinghouse Proprietary Class 2) [included in PWR Owners Group Letter OG-14-84 as Enclosure 1]

7.4 WCAP-14040-NP-A, Revision 4, "Methodology Used to Develop Cold Overpressure Mitigating System Setpoints and RCS Heatup and Cooldown Limit Curves," (May 2004)

7.5 WCAP-15112, Rev 1, "North Anna Units 1 and 2 WOG Reactor Vessel 60-Year Evaluation Minigroup Heatup and Cooldown Limit Curves For Normal Operation"

7.6 Letter No. 04-380, from Virginia Electric and Power Company to the USNRC, dated July 1, 2004, "Virginia Electric and Power Company (Dominion), North Anna Power Station Units 1 and 2, "Proposed Technical Specification Change Request Reactor Coolant System Pressure/Temperature Limits LTOP Setpoints and LTOPS Enable Temperature"

7.7 Letter from the USNRC to Virginia Electric and Power Company dated July 8, 2005, "North Anna Power Station, Units 1 and 2 - Issuance of Amendments on Reactor Coolant System Pressure and Temperature Limits (TAC Nos. MC3705 and MC3706)"

Attachment 2

MARKED-UP TECHNICAL SPECIFICATIONS PAGES

Virginia Electric and Power Company
(Dominion)
North Anna Power Station Units 1 and 2

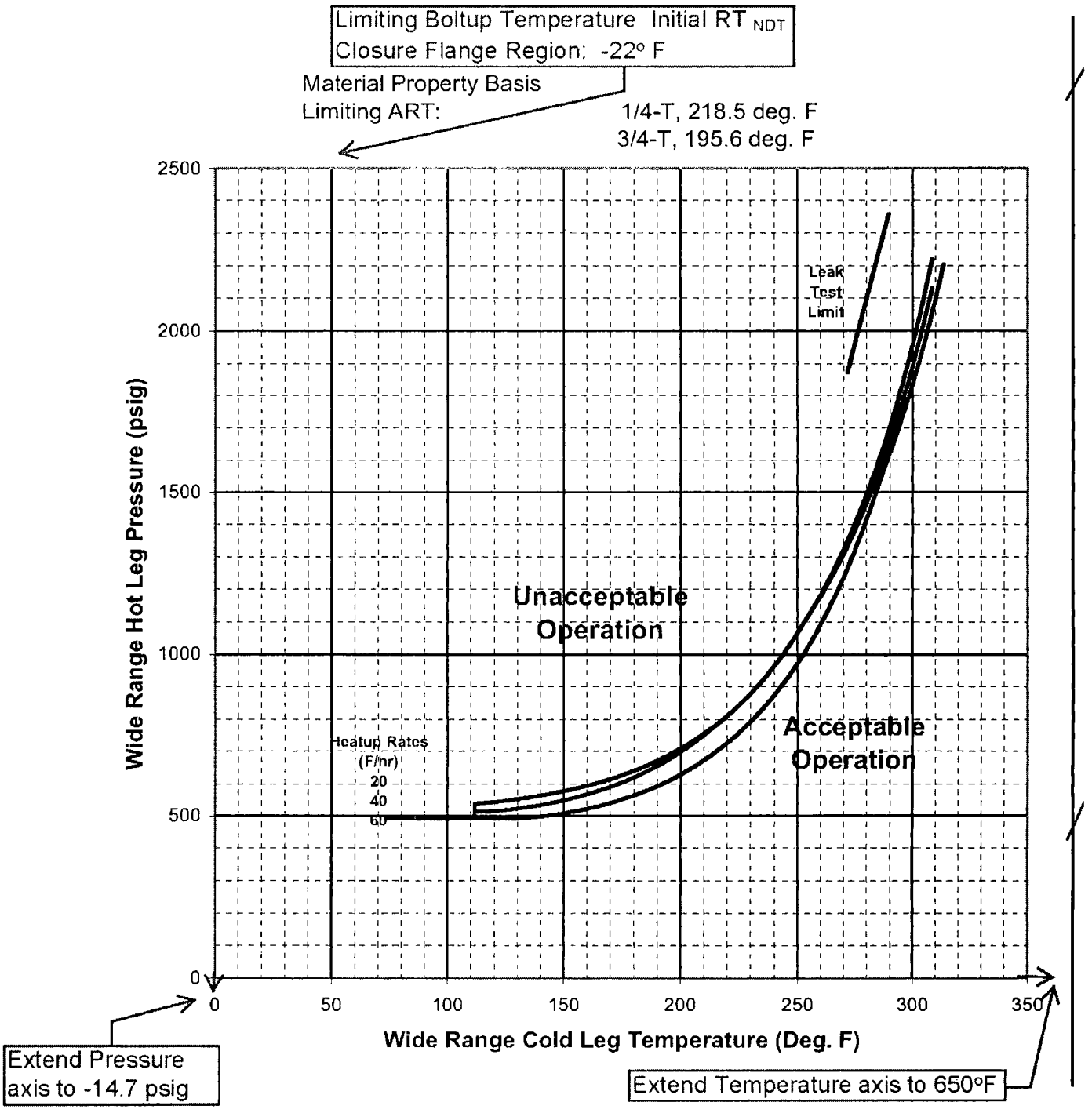

Figure 3.4.3-1 (page 1 of 1)
North Anna Units 1 and 2 Reactor Coolant System Heatup Limitations
(Heatup Rates up to 60°F/hr),
Applicable for the first 50.3 EFPY for Unit 1, and 52.3 EFPY for Unit 2
(Including Margins for Instrumentation Errors)

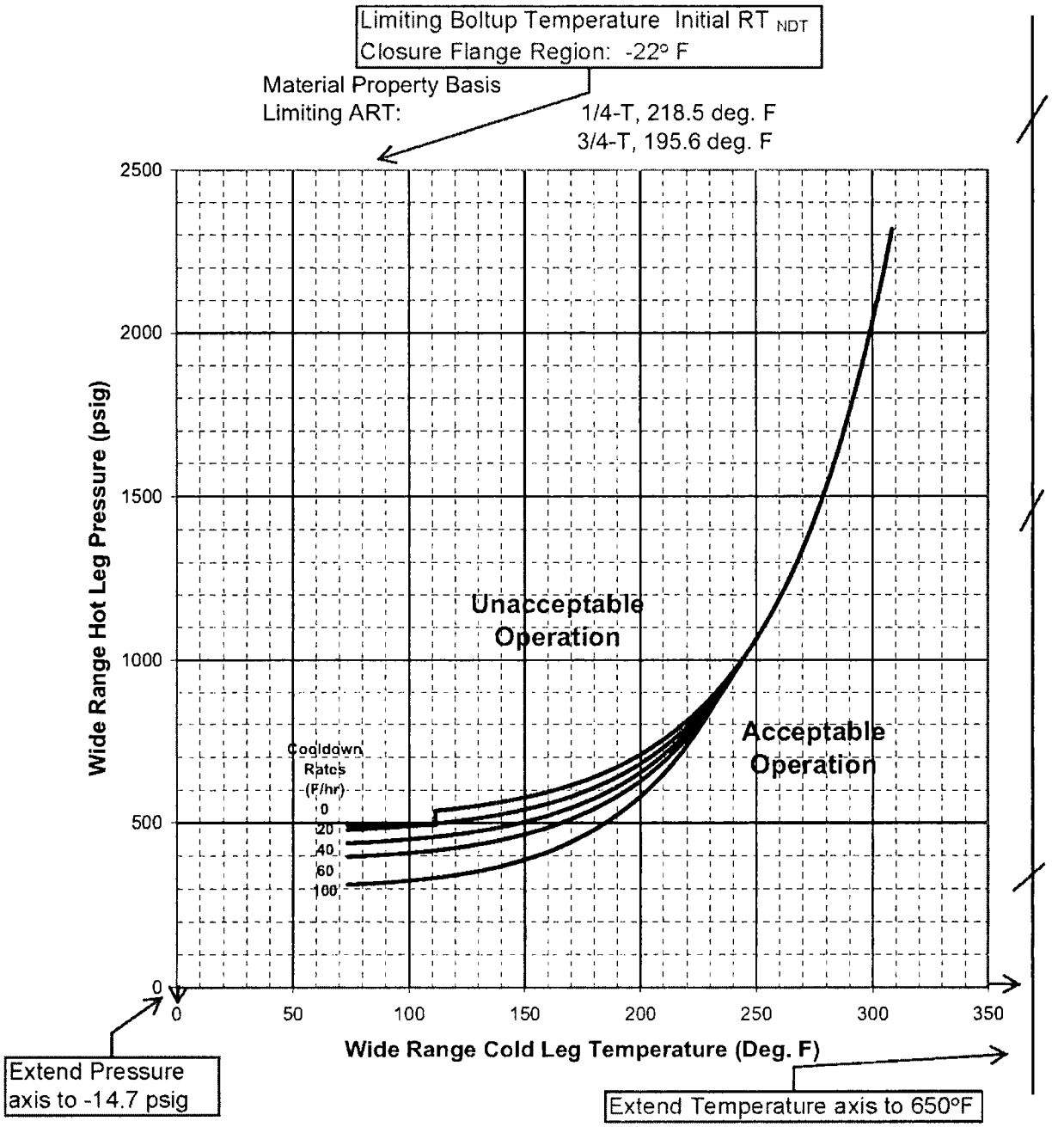

Figure 3.4.3-2 (page 1 of 1)
North Anna Units 1 and 2 Reactor Coolant System Cooldown Limitations
(Cooldown Rates up to 100°F/hr),
Applicable for the first 50.3 EFPY for Unit 1, and 52.3 EFPY for Unit 2
(Including Margins for Instrumentation Errors)

Attachment 3

PROPOSED TECHNICAL SPECIFICATIONS PAGES

Virginia Electric and Power Company
(Dominion)
North Anna Power Station Units 1 and 2

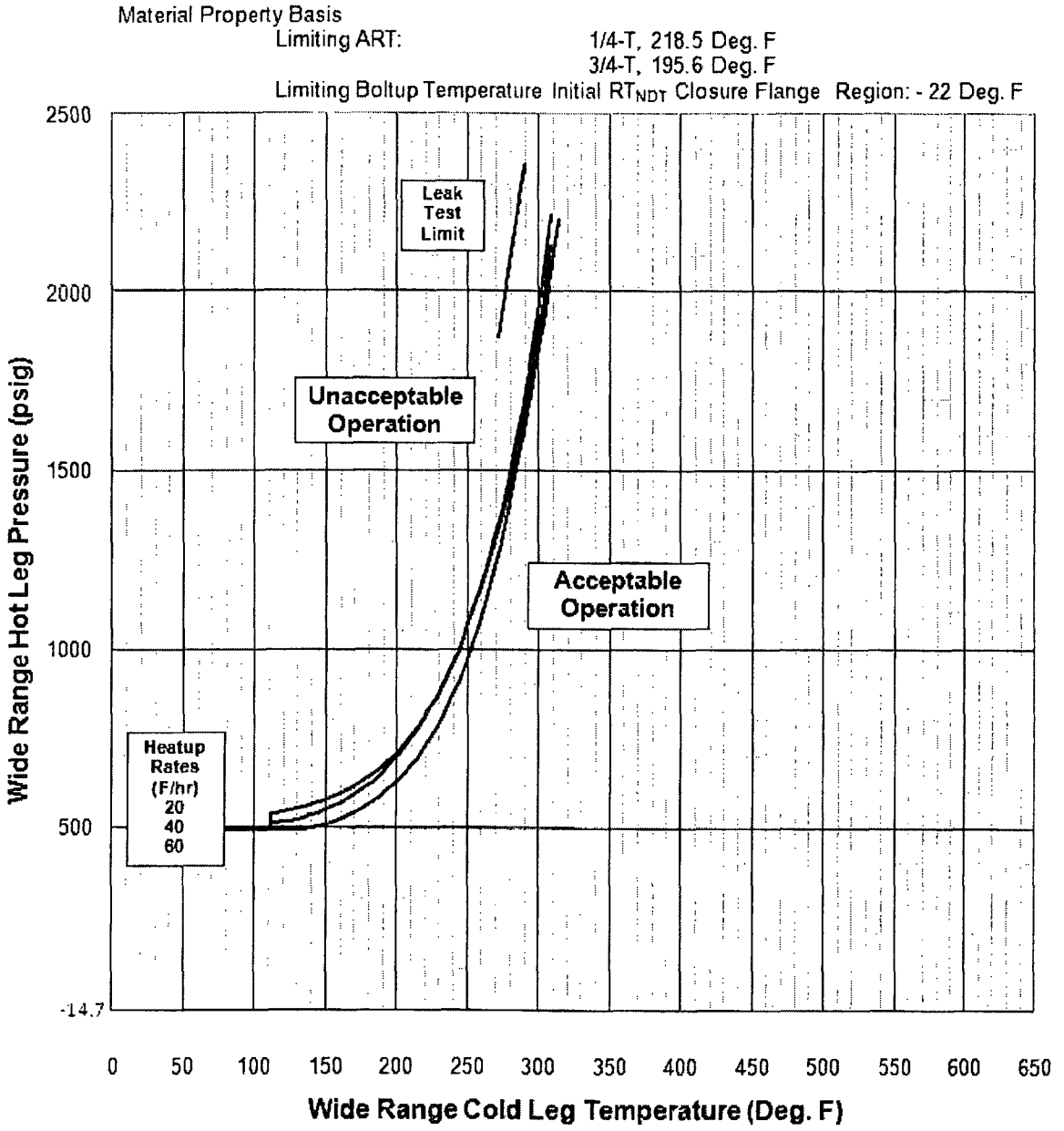

Figure 3.4.3-1 (page 1 of 1)
North Anna Units 1 and 2 Reactor Coolant System Heatup Limitations
(Heatup Rates up to 60°F/hr),
Applicable for the first 50.3 EFPY for Unit 1, and 52.3 EFPY for Unit 2
(Including Margins for Instrumentation Errors)

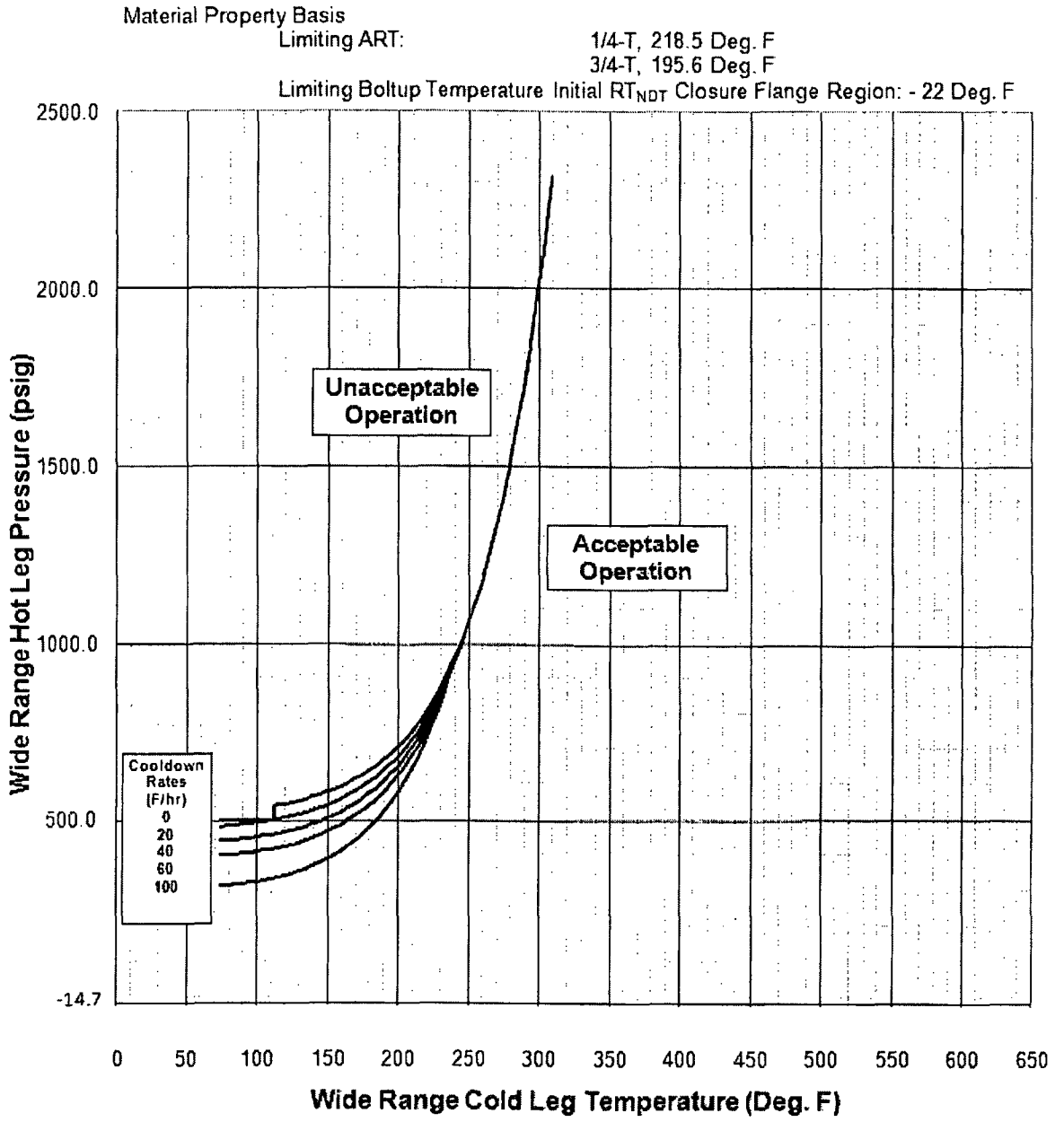

Figure 3.4.3-2 (page 1 of 1)
North Anna Units 1 and 2 Reactor Coolant System Cooldown Limitations
(Cooldown Rates up to 100°F/hr),
Applicable for the first 50.3 EFPY for Unit 1, and 52.3 EFPY for Unit 2
(Including Margins for Instrumentation Errors)

Attachment 4

PROPOSED TECHNICAL SPECIFICATIONS BASES PAGES
(for information only)

Virginia Electric and Power Company
(Dominion)
North Anna Power Station Units 1 and 2

BASES

Vacuum-assist fill of the Reactor Coolant System loops Modes 5 and 6 is an acceptable condition since the resulting pressure/temperature combination is located in the Acceptable Operation region of TS figures 3.4.3-1 and 3.4.3-2.

APPLICABILITY

The RCS P/T limits LCO provides a definition of acceptable operation for prevention of nonductile failure in accordance with 10 CFR 50, Appendix G (Ref. 1). Although the P/T limits were developed to provide guidance for operation during heatup or cooldown (MODES 3, 4, and 5) or ISLH testing, their Applicability is at all times in keeping with the concern for nonductile failure. The limits do not apply to the pressurizer.

Insert A

During MODES 1 and 2, other Technical Specifications provide limits for operation that can be more restrictive than or can supplement these P/T limits. LCO 3.4.1, "RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits"; LCO 3.4.2, "RCS Minimum Temperature for Criticality"; and Safety Limit 2.1, "Safety Limits," also provide operational restrictions for pressure and temperature and maximum pressure. Furthermore, MODES 1 and 2 are above the temperature range of concern for nonductile failure, and stress analyses have been performed for normal maneuvering profiles, such as power ascension or descent.

ACTIONS

A.1 and A.2

Operation outside the P/T limits during MODE 1, 2, 3, or 4 must be corrected so that the RCPB is returned to a condition that has been verified by stress analyses.

The 30 minute Completion Time reflects the urgency of restoring the parameters to within the analyzed range. Most violations will not be severe, and the activity can be accomplished in this time in a controlled manner.

Besides restoring operation within limits, an evaluation is required to determine if RCS operation can continue. The evaluation must verify the RCPB integrity remains acceptable and must be completed before continuing operation. Several methods may be used, including comparison with pre-analyzed transients in the stress analyses, new analyses, or inspection of the components.

ASME Code, Section XI, Appendix E (Ref. 6), may be used to support the evaluation. However, its use is restricted to evaluation of the vessel beltline.

(continued)

Insert A – Boltup temperature

The reactor boltup temperature is defined in 10 CFR 50, Appendix G as "The highest reference temperature of the material in the closure flange region that is highly stressed by the bolt preload." The reactor vessel may be bolted up at a temperature greater than the initial RT_{NDT} of the material stressed by the boltup (e.g., the vessel flange). As noted on Figures 3.4.3-1 and 3.4.3-2, the limiting boltup temperature is -22°F. An administrative minimum boltup temperature limit greater than -22°F is imposed in station procedures to ensure the Reactor Coolant System temperatures are sufficiently high to prevent damage to the reactor vessel closure head/vessel flange during the removal or installation of reactor vessel head bolts. The limiting boltup temperature and the administrative minimum boltup temperature limit are in effect when the reactor vessel head bolts are under tension.