VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

May 10, 2016

10CFR50.90

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

Serial No.: 16-181
SPS/LIC-CGL: R0
Docket Nos.: 50-280/281
License Nos.: DPR-32/37

VIRGINIA ELECTRIC AND POWER COMPANY
SURRY POWER STATION UNITS 1 AND 2
PROPOSED LICENSE AMENDMENT REQUEST
EXPANSION OF PRIMARY GRADE WATER
LOCKOUT REQUIREMENTS IN TS 3.2.E

Pursuant to 10 CFR 50.90, Virginia Electric and Power Company (Dominion) is submitting a license amendment request to extend the Surry TS 3.2.E requirements for primary grade water (PG) lockout from being applicable in Refueling Shutdown and Cold Shutdown to being applicable in Refueling Shutdown, Cold Shutdown, Intermediate Shutdown and Hot Shutdown (except during the approach to critical and within one hour following reactor shutdown from Reactor Critical or Power Operation). The associated TS 3.2 Basis revision is provided to the NRC for information.

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

We have evaluated the proposed amendment and have determined that it does not involve a significant hazards consideration as defined in 10 CFR 50.92. 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 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(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.

Dominion requests approval of the proposed change by May 31, 2017 with a 60-day implementation period.

A001
NRR

Should you have any questions or require additional information, please contact Mr. Gary D. Miller at (804) 273-2771.

Respectfully,

Mark D. Sartain
Vice President – Nuclear Engineering

Commitments contained in this letter: None

Attachments:

1. Discussion of Change
2. Marked-up Technical Specifications and Basis Pages
3. Proposed Technical Specifications and Basis Pages

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 10th day of May, 2016.

My Commission Expires: January 31, 2020

WANDA D. CRAFT
Notary Public
Commonwealth of Virginia
Reg. # 7520495
My Commission Expires January 31, 2020

Wanda D. Craft
Notary Public

cc: U.S. Nuclear Regulatory Commission - Region II
Marquis One Tower
245 Peachtree Center Avenue, NE Suite 1200
Atlanta, GA 30303-1257

State Health Commissioner
Virginia Department of Health
James Madison Building – 7th floor
109 Governor Street
Suite 730
Richmond, VA 23219

Ms. K. R. Cotton Gross
NRC Project Manager – Surry
U.S. Nuclear Regulatory Commission
One White Flint North
Mail Stop 08 G-9A
11555 Rockville Pike
Rockville, MD 20852-2738

Dr. V. Sreenivas
NRC Project Manager – North Anna
U.S. Nuclear Regulatory Commission
One White Flint North
Mail Stop 08 G-9A
11555 Rockville Pike
Rockville, MD 20852-2738

NRC Senior Resident Inspector
Surry Power Station

Attachment 1

DISCUSSION OF CHANGE

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

DISCUSSION OF CHANGE

1.0 INTRODUCTION

Virginia Electric and Power Company (Dominion) proposes a change to the Surry Power Station (Surry) Units 1 and 2 Technical Specifications (TS) pursuant to 10 CFR 50.90. The proposed change extends the Surry TS 3.2.E requirements for primary grade water (PG) lockout from being applicable in Refueling Shutdown and Cold Shutdown modes to being applicable in Refueling Shutdown, Cold Shutdown, Intermediate Shutdown and Hot Shutdown (except during the approach to critical and within 1 hour following reactor shutdown from Reactor Critical or Power Operation). The associated TS 3.2 Basis revision is provided to the NRC for information.

The proposed TS change has been reviewed, and it has been determined that no significant hazards consideration exists as defined in 10 CFR 50.92. In addition, it has been determined that the change qualifies for categorical exclusion from an environmental assessment as set forth in 10 CFR 51.22(c)(9). Therefore, no environmental impact statement or environmental assessment is needed in connection with the approval of the proposed TS change.

2.0 BACKGROUND

Surry Unit 2 experienced a boron dilution event in May 2011. This event did not challenge the TS shutdown margin requirement; however, it revealed a weakness in protection against boron dilution events. Evaluation of data from the event revealed that the change in the Source Range Nuclear Instrumentation (SRNI) readings coincident with a significant reactivity change due to the boron dilution was less than previously expected. The apparent cause evaluation that studied this deficiency determined the dynamic response of the SRNI had not been appropriately considered during the transition to low leakage core loading patterns and removal of secondary neutron sources. The lack of a documented design basis was identified as the apparent cause of inadequate SRNI response during the Surry boron dilution event. Enhanced boron sampling and PG lockout in all shutdown modes have been instituted by an operability determination until SRNI dynamic response is improved.

In response to the apparent cause evaluation, an effort was undertaken to improve the dynamic response of the SRNI to changes in core reactivity when the reactor is subcritical. The effort included re-introduction of secondary sources into Surry Units 1 and 2, development of analysis tools to better predict SRNI response as a function of core loading pattern and secondary neutron source placement, and reassessment of the boron dilution safety analysis in Surry Updated Final Safety Analysis Report (UFSAR) Section 14.2.5, "Chemical and Volume Control System Malfunction."

The design and licensing basis boron dilution safety analysis for Refueling and Cold Shutdown conditions credits PG lockout for precluding high dilution flow rate boron dilution events, while such events at Intermediate and Hot Shutdown currently credit administrative boron concentration requirements to ensure sufficient time for corrective operator action prior to complete loss of shutdown margin. It was concluded during the reassessment of the boron dilution safety analysis that the analysis for Intermediate Shutdown and Hot Shutdown should also require PG lockout to preclude high dilution flow rates. (Exceptions to the PG lockout requirement in Hot Shutdown are proposed during reactor startup and for one hour after entering Hot Shutdown from Power Operation or Reactor Critical. These exceptions are discussed further in the Technical Evaluation below.)

For reference, the operating modes are defined in Surry TS 1.0.C as follows:

1. REFUELING SHUTDOWN

   When the reactor is subcritical by at least 5% $\Delta k/k$ and T_{avg} is $\leq$ 140°F and fuel is scheduled to be moved to or from the reactor core.

2. COLD SHUTDOWN

   When the reactor is subcritical by at least 1% $\Delta k/k$ and T_{avg} is $\leq$ 200°F.

3. INTERMEDIATE SHUTDOWN

   When the reactor is subcritical by at least 1.77% $\Delta k/k$ and 200°F $< T_{avg} <$ 547°F.

4. HOT SHUTDOWN

   When the reactor is subcritical by at least 1.77% $\Delta k/k$ and T_{avg} is $\geq$ 547°F.

5. REACTOR CRITICAL

   When the neutron chain reaction is self-sustaining and $k_{eff} = 1.0$.

6. POWER OPERATION

   When the reactor is critical and the neutron flux power range instrumentation indicates greater than 2% of rated power.

7. REFUELING OPERATION

   Any operation involving movement of core components when the vessel head is unbolted or removed.

3.0 PROPOSED TECHNICAL SPECIFICATIONS CHANGES

The following changes to the Surry Units 1 and 2 TS 3.2, "Chemical and Volume Control System," are proposed:

- Revise TS 3.2.E, 3.2.E.1, and 3.2.E.2 to change the modes of applicability from "Refueling Shutdown and Cold Shutdown" to "Refueling Shutdown, Cold Shutdown, Intermediate Shutdown, and Hot Shutdown."

- Add TS 3.2.F to allow modification of the PG lockout requirement in Hot Shutdown mode during the approach to critical and to allow one hour to perform the lockout upon entering Hot Shutdown from Power Operation or Reactor Critical.

4.0 TECHNICAL EVALUATION

As discussed in the Introduction section, the response to the Surry boron dilution event of May 2011 included a reassessment of the boron dilution safety analysis that is described in Surry UFSAR Section 14.2.5. The reassessment concluded that PG lockout should be implemented in Intermediate Shutdown and Hot Shutdown modes to prevent high flow rate boron dilutions that could result in rapid reactivity insertions. Therefore, a revision to the boron dilution analysis for Intermediate Shutdown and Hot Shutdown (UFSAR Section 14.2.5.2.2) has been prepared that credits the proposed change to TS 3.2.E and addition of TS 3.2.F. Extension of the current Refueling and Cold Shutdown PG lockout requirement to Intermediate and Hot Shutdown conservatively eliminates reliance upon administrative boron concentration limits and SRNI dynamic response characteristics to ensure adequate time for corrective operator action for high dilution flow rate events.

With the high flow rate dilution paths secured in all shutdown operating modes, the maximum dilution flow rate considered in the UFSAR analysis is limited to lower flow rate dilutions via flow paths that may bypass the locked flow path. The design and licensing basis for these lower flow rate dilution events at Surry Units 1 and 2 for Refueling, Cold, Intermediate, and Hot Shutdown conditions (such as that experienced at Surry Unit 2 in May 2011) continues to credit diverse indications of a boron dilution in progress, including control room indicators of increasing SRNI count rate, high flux at shutdown alarm, PG flow rate, PG tank level, Reactor Coolant System (RCS) letdown divert valve position, and volume control tank (VCT) level. Surry UFSAR Sections 14.2.5.2.1 and 14.2.5.2.2 currently state, "Low dilution flow rates have a high probability of being identified and corrected before a significant loss of shutdown margin occurs." However, as the May 2011 boron dilution at Surry Unit 2 illustrated, this assumption can be challenged when SRNI dynamic response is degraded (e.g., through the combined effects of low neutron leakage reload core designs and the removal of secondary neutron sources). For this reason, secondary neutron sources have been re-introduced

into Surry Units 1 and 2 reload core designs to restore SRNI dynamic response characteristics.

Exceptions to the PG lockout requirement are provided in Hot Shutdown (proposed TS 3.2.F). These exceptions accommodate reactor startup activities during which intentional reactivity changes are made under procedural control and augmented scrutiny. They also allow reasonable time for operator action following shutdown from Power Operation or Reactor Critical so that PG lockout is implemented promptly, but without placing an undue burden on operating staff.

5.0 REGULATORY EVALUATION

5.1 Applicable Regulatory Requirements/Criteria

By letter dated April 11, 1991, the NRC approved TS Amendments 153 / 150 for Surry Units 1 and 2, respectively, that instituted a PG lockout requirement in Refueling Shutdown and Cold Shutdown operating modes. (The PG lockout requirement was in TS 3.2.F at the time of these amendments. Currently this requirement is included in TS 3.2.E.) This requirement was intended to preclude a boron dilution in Refueling Shutdown and Cold Shutdown. The licensing basis for boron dilution events at Refueling Shutdown and Cold Shutdown (UFSAR Section 14.2.5.2.1) takes credit for diverse indications of a boron dilution in progress to provide protection against low flow rate dilution events. This is not affected by the proposed change.

The proposed change allows consolidation of the licensing basis for boron dilution in Intermediate Shutdown and Hot Shutdown with that of Refueling Shutdown and Cold Shutdown. The proposed change will extend the PG lockout requirement into Intermediate Shutdown and Hot Shutdown. This will preclude high flow rate boron dilutions that could result in rapid reactivity insertions in all shutdown operating modes and conservatively eliminates reliance upon administrative boron concentration limits and SRNI dynamic response characteristics in Intermediate and Hot Shutdown to ensure adequate time for corrective operator action in response to high dilution flow events.

Diverse indications (currently credited in Refueling and Cold Shutdown conditions) will be credited for protection against low flow rate dilutions in all shutdown modes. These diverse indications include SRNI that provides an indication of the reactivity condition of the core by audible count rate and high flux at shutdown alarm. Potential mismatch between charging and letdown and unexpected usage of PG are indicated in the Main Control Room by PG flow rate, PG tank level, RCS letdown divert valve position, and VCT level.

The licensing basis for Boron Dilution in Reactor Critical and Power Operation modes in Surry UFSAR 14.2.5.2.3 is not affected by the proposed change.

As discussed above, the proposed PG lockout requirement in Hot Shutdown is modified during approach to critical and one hour after entering Hot Shutdown from Power Operation or Reactor Critical. During reactor startup intentional reactivity changes are made under procedural control and augmented scrutiny. In these circumstances, core reactivity is carefully monitored and any unexpected deviation would be immediately observed and addressed.

Following shutdown from Power Operation or Reactor Critical, one hour is allowed for operators to lockout the valves in the primary PG flow path. This is consistent with the provisions of NUREG-1431, Section 3.3.9, 'Boron Dilution Protection System (BDPS),' (Reference 1). In the reference plant, BDPS is the primary means of protection against boron dilution events in shutdown operating modes. In Standard Technical Specifications if both trains of BDPS are inoperable, one hour is allowed to either restore a train of BDPS to service or 'close unborated water source isolation valves.' Should make-up activities be in progress when the transition to Hot Shutdown occurs, PG lockout will be required within 15 minutes of completing these activities or one hour whichever is latest. This will ensure that PG lockout is implemented promptly, but without placing an undue burden on operating staff or interfering with make-up activities that may already be in progress.

American Nuclear Society (ANS) Condition II acceptance criteria for the boron dilution event will continue to be met with the change proposed in this license amendment request.

5.2 Determination of No Significant Hazards Consideration

Virginia Electric and Power Company (Dominion) proposes a change to the Surry Power Station (Surry) Units 1 and 2 Technical Specifications (TS) pursuant to 10 CFR 50.90. The proposed change extends the Surry TS 3.2.E requirements for primary grade water (PG) lockout from being applicable in Refueling Shutdown and Cold Shutdown modes to being applicable in Refueling Shutdown, Cold Shutdown, Intermediate Shutdown and Hot Shutdown (except during the approach to critical and within 1 hour following reactor shutdown from Reactor Critical or Power Operation).

In accordance with the criteria set forth in 10 CFR 50.92, Dominion has evaluated the proposed Technical Specification change and determined that it does not represent a significant hazards consideration. The following discussion is provided in support of this conclusion:

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

   Response: No.

   The proposed change conservatively imposes additional operational controls on the highest capacity flow path of PG to the Reactor Coolant System (RCS). These controls are currently credited in the boron dilution analysis in Refueling Shutdown

and Cold Shutdown modes. The proposed change extends these controls into Intermediate and Hot Shutdown modes. As such, the change will provide defense against rapid reactivity insertions due to boron dilution events and reduce the probability of boron dilution events. The proposed change will have no impact on normal operating plant releases and will not increase the predicted radiological consequences of accidents postulated in the UFSAR. The proposed change makes no physical modifications and does not change plant design.

Therefore, neither the probability of occurrence nor the consequences of any accident previously evaluated is significantly increased.

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

   Response: No.

   The proposed change is an extension of existing operational controls on PG flow to the RCS to include additional operating modes. The change precludes high flow rate boron dilutions in Intermediate and Hot Shutdown modes similar to the current TS requirement in Refueling and Cold Shutdown modes. It does not affect the operation of the emergency boration function of the Chemical and Volume Control System (CVCS).

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

3. Does this change involve a significant reduction in a margin of safety?

   Response: No.

   The proposed change provides defense against rapid reactivity insertions to potential boron dilution events in shutdown operating modes and reduces the probability of boron dilution events. As such, it increases the margin of safety for the boron dilution event.

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

Based on the discussion above, Dominion 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.

5.3 Environmental Consideration

The proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9) as follows:

(i) The proposed change involves no significant hazards consideration.

As described in Section 5.2 above, the proposed change involves no significant hazards consideration.

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

The proposed change does not involve the installation of any new equipment or the modification of any equipment that may affect the types or amounts of effluents that may be released offsite. The proposed change has a beneficial impact on the safety margin of the boron dilution event. This event does not involve any effluent release. There are no significant changes 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 occupation radiation exposure.

The proposed change imposes additional operating restrictions on plant equipment (i.e., the valves in the largest flow capacity PG supply to the CVCS). These restrictions will require that the valves be secured except during planned makeup activities. These valves are located in the Radiological Controlled Area. In accordance with the current TS requirements and operability determination follow-on actions, Operations personnel already perform these activities. Therefore, no increase in individual or cumulative occupational radiation exposure is expected.

Based on the above, Dominion concludes that, 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 CONCLUSION

The proposed license amendment request revises TS 3.2.E to extend the PG lockout requirement into Intermediate Shutdown and Hot Shutdown and adds TS 3.2.F to allow relaxation of the PG lockout requirement during approach to critical and one hour after entering Hot Shutdown from Power Operation and Reactor Critical. There will be no impact on normal releases or radiological consequences of accidents due to the proposed change. The proposed change does not involve a physical modification to the

plant or a plant design change. The emergency boration function of CVCS is not affected.

It has been determined that no significant hazards consideration exists as defined in 10 CFR 50.92. In addition, it has been determined that the change qualifies for categorical exclusion from an environmental assessment as set forth in 10 CFR 51.22(c)(9). Therefore, no environmental impact statement or environmental assessment is needed in connection with the approval of the proposed TS change.

7.0 REFERENCES

1. NUREG-1431, Rev. 3.0, Standard Technical Specifications – Westinghouse Plants.

Attachment 2

MARKED-UP TECHNICAL SPECIFICATIONS AND BASIS PAGES

(Basis Changes are for NRC Information Only)

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

within specified limits in 8 hours or place the reactor in HOT SHUTDOWN within the next 6 hours.

3. With no charging pump from the opposite unit available, return at least one of the opposite unit's charging pumps to available status in accordance with Specification 3.2.B.2 within 7 days or place the reactor in HOT SHUTDOWN within the next 6 hours.

D. If the requirements of Specification 3.2.B are not satisfied as allowed by Specification 3.2.C, the reactor shall be placed in COLD SHUTDOWN within the following 30 hours.

Insert A →

E. During REFUELING SHUTDOWN and COLD SHUTDOWN the following valves in the affected unit shall be locked, sealed, or otherwise secured in the closed position except during planned dilution or makeup activities:

1. During Unit 1 REFUELING SHUTDOWN and COLD SHUTDOWN:

   a. Valve 1-CH-223, or

   b. Valves 1-CH-212, 1-CH-215, and 1-CH-218.

2. During Unit 2 REFUELING SHUTDOWN and COLD SHUTDOWN:

   a. Valve 2-CH-223, or

   b. Valves 2-CH-212, 2-CH-215, and 2-CH-218.

3. Following a planned dilution or makeup activities, the valves listed in Specifications 3.2.E.1 and 3.2.E.2 above, for the affected unit, shall be locked, sealed, or otherwise secured in the closed position within 15 minutes.

Insert A

E. During REFUELING SHUTDOWN, COLD SHUTDOWN, INTERMEDIATE SHUTDOWN, and HOT SHUTDOWN, the following valves in the affected unit shall be locked, sealed, or otherwise secured in the closed position except during planned dilution or makeup activities:
   1. Unit 1:
      a. Valve 1-CH-223, or
      b. Valves 1-CH-212, 1-CH-215, and 1-CH-218.
   2. Unit 2:
      a. Valve 2-CH-223, or
      b. Valves 2-CH-212, 2-CH-215, and 2-CH-218.
   3. Following planned dilution or makeup activities, the valves listed in Specifications 3.2.E.1 and 3.2.E.2 above, for the affected unit, shall be locked, sealed, or otherwise secured in the closed position within 15 minutes.

F. The requirements of Specification 3.2.E may be modified as follows:
   1. During the approach to critical in HOT SHUTDOWN, closure of the valves in Specification 3.2.E.1 and 3.2.E.2, for the affected unit, is not required.
   2. Upon entering HOT SHUTDOWN following reactor shutdown from POWER OPERATION or REACTOR CRITICAL, the valves listed in Specifications 3.2.E.1 and 3.2.E.2 above, for the affected unit, shall be locked, sealed, or otherwise secured in the closed position within 1 hour. If a planned dilution or makeup activity is in progress upon entry into HOT SHUTDOWN, the valves listed shall be locked, sealed, or otherwise secured in the closed position within 15 minutes following completion of the activity or within 1 hour of entry into HOT SHUTDOWN whichever is latest.

For one-unit operation, it is required to maintain available one charging pump with a source of borated water on the opposite unit, the associated piping and valving, and the associated instrumentation and controls in order to maintain the capability to cross-connect the two unit's charging pump discharge headers. In the event the operating unit's charging pumps become inoperable, this permits the opposite unit's charging pump to be used to bring the disabled unit to COLD SHUTDOWN conditions. Initially, the need for the charging pump cross-connect was identified during fire protection reviews.

The requirement that certain valves remain closed during REFUELING SHUTDOWN and COLD SHUTDOWN conditions, except for planned boron dilution or makeup activities, provides assurance that an inadvertent boron dilution will not occur. This specification is not applicable at INTERMEDIATE SHUTDOWN, HOT SHUTDOWN, REACTOR CRITICAL, or POWER OPERATION.

References

(1) UFSAR Sections 9.1, Chemical and Volume Control System

(2) UFSAR Section 14.2.5, Chemical and Volume Control System Malfunction

The requirement that certain valves remain closed during REFUELING SHUTDOWN, COLD SHUTDOWN, INTERMEDIATE SHUTDOWN, and HOT SHUTDOWN conditions, except for planned boron dilution or makeup activities, provides assurance that a high flow rate inadvertent boron dilution will not occur. The lockout requirement is relaxed in HOT SHUTDOWN (TS 3.2.F) during the approach to critical and within 1 hour after reactor shutdown. This allows startup and shutdown activities to proceed without undue operator burden. This specification is not applicable in REACTOR CRITICAL or POWER OPERATION.

For purposes of Specification 3.2.F, 'approach to critical' is defined to be the operator controlled adjustment of RCS boron concentration or rod position with the intention of bringing the reactor critical.

Attachment 3

PROPOSED TECHNICAL SPECIFICATIONS AND BASIS PAGES

(Basis Changes are for NRC Information Only)

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

within specified limits in 8 hours or place the reactor in HOT SHUTDOWN within the next 6 hours.

3. With no charging pump from the opposite unit available, return at least one of the opposite unit's charging pumps to available status in accordance with Specification 3.2.B.2 within 7 days or place the reactor in HOT SHUTDOWN within the next 6 hours.

D. If the requirements of Specification 3.2.B are not satisfied as allowed by Specification 3.2.C, the reactor shall be placed in COLD SHUTDOWN within the following 30 hours.

E. During REFUELING SHUTDOWN, COLD SHUTDOWN, INTERMEDIATE SHUTDOWN, and HOT SHUTDOWN, the following valves in the affected unit shall be locked, sealed, or otherwise secured in the closed position except during planned dilution or makeup activities:

1. Unit 1:
   a. Valve 1-CH-223, or
   b. Valves 1-CH-212, 1-CH-215, and 1-CH-218.

2. Unit 2:
   a. Valve 2-CH-223, or
   b. Valves 2-CH-212, 2-CH-215, and 2-CH-218.

3. Following planned dilution or makeup activities, the valves listed in Specifications 3.2.E.1 and 3.2.E.2 above, for the affected unit, shall be locked, sealed, or otherwise secured in the closed position within 15 minutes.

F. The requirements of Specification 3.2.E may be modified as follows:

1. During the approach to critical in HOT SHUTDOWN, closure of the valves in Specification 3.2.E.1 and 3.2.E.2, for the affected unit, is not required.
2. Upon entering HOT SHUTDOWN following reactor shutdown from POWER OPERATION or REACTOR CRITICAL, the valves listed in Specifications 3.2.E.1 and 3.2.E.2 above, for the affected unit, shall be locked, sealed, or otherwise secured in the closed position within 1 hour. If a planned dilution or makeup activity is in progress upon entry into HOT SHUTDOWN, the valves listed shall be locked, sealed, or otherwise secured in the closed position within 15 minutes following completion of the activity or within 1 hour of entry into HOT SHUTDOWN whichever is latest.

For one-unit operation, it is required to maintain available one charging pump with a source of borated water on the opposite unit, the associated piping and valving, and the associated instrumentation and controls in order to maintain the capability to cross-connect the two unit's charging pump discharge headers. In the event the operating unit's charging pumps become inoperable, this permits the opposite unit's charging pump to be used to bring the disabled unit to COLD SHUTDOWN conditions. Initially, the need for the charging pump cross-connect was identified during fire protection reviews.

The requirement that certain valves remain closed during REFUELING SHUTDOWN, COLD SHUTDOWN, INTERMEDIATE SHUTDOWN, and HOT SHUTDOWN conditions, except for planned boron dilution or makeup activities, provides assurance that a high flow rate inadvertent boron dilution will not occur. The lockout requirement is relaxed in HOT SHUTDOWN (TS 3.2.F) during the approach to critical and within 1 hour after reactor shutdown. This allows startup and shutdown activities to proceed without undue operator burden. This specification is not applicable in REACTOR CRITICAL or POWER OPERATION.

For purposes of Specification 3.2.F, 'approach to critical' is defined to be the operator controlled adjustment of RCS boron concentration or rod position with the intention of bringing the reactor critical.

References

(1) UFSAR Section 9.1, Chemical and Volume Control System

(2) UFSAR Section 14.2.5, Chemical and Volume Control System Malfunction