

Attachment 2

Technical Specifications Changes

## REACTIVITY CONTROL SYSTEMS

### 3/4.1.3 MOVABLE CONTROL ASSEMBLIES

#### GROUP HEIGHT

#### LIMITING CONDITION FOR OPERATION

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3.1.3.1 All shutdown and control rods shall be OPERABLE and positioned within  $\pm 12$  steps\* of their group step counter demand position.

APPLICABILITY: MODES 1\*\* and 2\*\*.

#### ACTION:

- a. With one or more rods untrippable, determine within one hour that the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is satisfied and be in HOT STANDBY within 6 hours.
- b. With more than one rod misaligned from the group step counter demand position by more than the above alignment requirements, determine within one hour that the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is satisfied and be in HOT STANDBY within 6 hours.
- c. With a maximum of one rod misaligned from the group step counter demand position by more than the above alignment requirements, POWER OPERATION may continue provided that within one hour, either:
  1. The rod is restored to OPERABLE status within the above alignment requirements, or
  2. The rod is declared inoperable and the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is satisfied. POWER OPERATION may then continue provided that:
    - a) A reevaluation of each accident analysis of Table 3.1-1 is performed within 5 days. This reevaluation shall confirm that the previous analyzed results of these accidents remain valid for the duration of operation under these conditions, and

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\* For power levels below 50% of RATED THERMAL POWER, the position of each rod as determined by its individual rod position indicator may be more than  $\pm 12$  steps from its group step counter demand position for a maximum of one hour in every 24. During this hour, the indicated position of each rod may be no more than  $\pm 24$  steps from its demand position. The  $\pm 24$  step/hour limit is not applicable when control rod position is known to be greater than 12 steps from the rod group step counter demand position indication.

\* \* See Special Test Exceptions 3.10.2 and 3.10.3.

## REACTIVITY CONTROL SYSTEMS

### SHUTDOWN ROD INSERTION LIMIT

#### LIMITING CONDITION FOR OPERATION

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3.1.3.5 All shutdown rods shall be limited in physical insertion as specified in the CORE OPERATING LIMITS REPORT.

APPLICABILITY: MODES 1\* and 2\*#.

ACTION:

- a. With a maximum of one shutdown rod inserted beyond the insertion limit specified in the CORE OPERATING LIMITS REPORT, except for surveillance testing pursuant to Specification 4.1.3.1.2, within one hour either:
  1. Restore the rod to within the insertion limit specified in the CORE OPERATING LIMITS REPORT, or
  2. Declare the rod to be misaligned and apply Specification 3.1.3.1
- b. With a maximum of one shutdown bank inserted beyond the insertion limit specified in the CORE OPERATING LIMITS REPORT during surveillance testing pursuant to Specification 4.1.3.1.2 and immovable due to malfunctions in the rod control system, POWER OPERATION may continue provided that:
  1. the shutdown bank is inserted no more than 18 steps below the insertion limit as measured by the group step counter demand position indicators,
  2. the affected bank is trippable,
  3. each shutdown and control rod is aligned to within  $\pm 12$  steps of its respective group step counter demand position,
  4. the insertion limits of Specification 3.1.3.6 are met for each control bank,
  5. the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is determined to be met at least once per 12 hours, and
  6. the shutdown bank is restored to within the insertion limit specified in the CORE OPERATING LIMITS REPORT within 72 hours.

Otherwise, be in HOT STANDBY within the next 6 hours.

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\* See Special Test Exceptions 3.10.2 and 3.10.3.

# With  $K_{eff} \geq 1.0$

#### SURVEILLANCE REQUIREMENTS

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4.1.3.5 Each shutdown rod shall be determined to be within the insertion limit specified in the CORE OPERATING LIMITS REPORT

- a. Within 15 minutes prior to initial control rod bank withdrawal during an approach to reactor criticality, and
- b. At least once per 12 hours thereafter.

## REACTIVITY CONTROL SYSTEMS

### CONTROL ROD INSERTION LIMITS

#### LIMITING CONDITION FOR OPERATION

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3.1.3.6 The control banks shall be limited in physical insertion as specified in the CORE OPERATING LIMITS REPORT.

APPLICABILITY: MODES 1\* and 2\*#.

ACTION:

- a. With the control banks inserted beyond the insertion limits, except for surveillance testing pursuant to Specification 4.1.3.1.2, either:
  1. Restore the control banks to within the insertion limits within two hours, or
  2. Reduce THERMAL POWER within two hours to less than or equal to that fraction of RATED THERMAL POWER which is allowed by the rod group step counter demand position using the insertion limits specified in the CORE OPERATING LIMITS REPORT, or
  3. Be in HOT STANDBY within 6 hours.
- b. With a maximum of one control bank inserted beyond the insertion limit specified in the CORE OPERATING LIMITS REPORT during surveillance testing pursuant to Specification 4.1.3.1.2 and immovable due to malfunctions in the rod control system, POWER OPERATION## may continue provided that:
  1. the control bank is inserted no more than 18 steps below the insertion limit as measured by the group step counter demand position indicators,
  2. the affected bank is trippable,
  3. each shutdown and control rod is aligned to within  $\pm 12$  steps of its respective group step counter demand position,
  4. the insertion limits of Specification 3.1.3.5 are met for each shutdown bank,

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\* See Special Test Exceptions 3.10.2 and 3.10.3.

# With  $K_{eff} \geq 1.0$ .

# # Provision for continued POWER OPERATION does not apply to Control Bank D inserted beyond the insertion limit.

#### LIMITING CONDITION FOR OPERATION (cont'd.)

5. the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is determined to be met at least once per 12 hours, and
6. the control bank is restored to within the insertion limit specified in the CORE OPERATING LIMITS REPORT within 72 hours.

Otherwise, be in HOT STANDBY within the next 6 hours.

#### SURVEILLANCE REQUIREMENTS

4.1.3.6 The position of each control bank shall be determined to be within the insertion limits at least once per 12 hours except during time intervals when the Rod Insertion Limit Monitor is inoperable, then verify either the individual rod positions (indicated positions) or the group step counter demand position of each rod group to be within the insertion limits at least once per 4 hours.

## REACTIVITY CONTROL SYSTEMS

### BASES (Continued)

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The ACTION statements which permit limited variations from the basic requirements are accompanied by additional restrictions which ensure that the original design criteria are met. Misalignment of a rod requires measurement of peaking factors or a restriction in THERMAL POWER: either of these restrictions provides assurance of fuel rod integrity during continued operation. In addition those accident analyses affected by a misaligned rod are reevaluated to confirm that the results remain valid during future operation.

Continuous monitoring of rod position with respect to insertion limits and rod deviation is provided by the rod insertion limit monitor and rod position deviation monitor, respectively. OPERABILITY of the rod position deviation monitor is verified by a functional test at least once per 7 days and by comparison of the indicated positions versus the respective demand position indicators at least once per 12 hours. If the rod position deviation monitor or the rod insertion limit monitor is inoperable, the frequency of manual comparison of indicated rod (or bank) position is increased to an interval of at least once per 4 hours.

In the event that a malfunction of the Rod Control System renders control rods immovable, provision is made for continued operation provided:

- the affected control rods remain trippable, and
- the individual control rod alignment limits are met.

In the event that a malfunction of the Rod Control System renders control rod banks immovable during surveillance testing, provision is made for 72 hours of continued operation provided:

- the affected control rod banks remain trippable,
- the individual control rod alignment limits are met,
- a maximum of one control or shutdown bank is inserted no more than 18 steps below the insertion limit, and
- the SHUTDOWN MARGIN requirements are verified every 12 hours during the period the insertion limit is not met.

Control Bank D is excluded from the 72 hour provision since insertion of D Bank below the insertion limit is not required for control rod assembly surveillance testing.

Checks are performed for each reload core to ensure that bank insertions of up to 18 steps will not result in power distributions which violate the DNB criterion for ANS Condition I accidents (moderate frequency transients analyzed in Section 15.2 of the UFSAR) or in a violation of the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 during the repair period.

The 72 hour period for a control rod assembly bank to be inserted below its insertion limit restricts the likelihood of a more severe (i.e., ANS Condition III or IV) accident or transient condition occurring concurrently with the insertion limit violation.

The maximum rod drop time restriction is consistent with the assumed rod drop time used in the accident analyses. Measurement with  $T_{avg} \geq 500^{\circ}\text{F}$  and with all reactor coolant pumps operating ensures that the measured drop times will be representative of insertion times experienced during a reactor trip at operating conditions.



## REACTIVITY CONTROL SYSTEMS

### 3/4.1.3 MOVABLE CONTROL ASSEMBLIES

#### GROUP HEIGHT

#### LIMITING CONDITION FOR OPERATION

---

3.1.3.1 All shutdown and control rods shall be OPERABLE and positioned within  $\pm 12$  steps\* of their group step counter demand position.

APPLICABILITY: MODES 1\*\* and 2\*\*.

#### ACTION:

- a. With one or more rods untrippable, determine within one hour that the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is satisfied and be in HOT STANDBY within 6 hours.
- b. With more than one rod misaligned from the group step counter demand position by more than the above alignment requirements, determine within one hour that the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is satisfied and be in HOT STANDBY within 6 hours.
- c. With a maximum of one rod misaligned from the group step counter demand position by more than the above alignment requirements, POWER OPERATION may continue provided that within one hour, either:
  1. The rod is restored to OPERABLE status within the above alignment requirements, or
  2. The rod is declared inoperable and the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is satisfied. POWER OPERATION may then continue provided that:
    - a) A reevaluation of each accident analysis of Table 3.1-1 is performed within 5 days. This reevaluation shall confirm that the previous analyzed results of these accidents remain valid for the duration of operation under these conditions, and

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\* For power levels below 50% of RATED THERMAL POWER, the position of each rod as determined by its individual rod position indicator may be more than  $\pm 12$  steps from its group step counter demand position for a maximum of one hour in every 24. During this hour, the indicated position of each rod may be no more than  $\pm 24$  steps from its demand position. The  $\pm 24$  step/hour limit is not applicable when control rod position is known to be greater than 12 steps from the rod group step counter demand position indication.

\* \* See Special Test Exceptions 3.10.2 and 3.10.3.



## REACTIVITY CONTROL SYSTEMS

### SHUTDOWN ROD INSERTION LIMIT

#### LIMITING CONDITION FOR OPERATION

---

3.1.3.5 All shutdown rods shall be limited in physical insertion as specified in the CORE OPERATING LIMITS REPORT.

APPLICABILITY: MODES 1\* and 2\*#.

ACTION:

- a. With a maximum of one shutdown rod inserted beyond the insertion limit specified in the CORE OPERATING LIMITS REPORT, except for surveillance testing pursuant to Specification 4.1.3.1.2, within one hour either:
  1. Restore the rod to within the insertion limit specified in the CORE OPERATING LIMITS REPORT, or
  2. Declare the rod to be misaligned and apply Specification 3.1.3.1
- b. With a maximum of one shutdown bank inserted beyond the insertion limit specified in the CORE OPERATING LIMITS REPORT during surveillance testing pursuant to Specification 4.1.3.1.2 and immovable due to malfunctions in the rod control system, POWER OPERATION may continue provided that:
  1. the shutdown bank is inserted no more than 18 steps below the insertion limit as measured by the group step counter demand position indicators,
  2. the affected bank is trippable,
  3. each shutdown and control rod is aligned to within  $\pm 12$  steps of its respective group step counter demand position,
  4. the insertion limits of Specification 3.1.3.6 are met for each control bank,
  5. the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is determined to be met at least once per 12 hours, and
  6. the shutdown bank is restored to within the insertion limit specified in the CORE OPERATING LIMITS REPORT within 72 hours.

Otherwise, be in HOT STANDBY within the next 6 hours.

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\* See Special Test Exceptions 3.10.2 and 3.10.3.

# With  $K_{eff}$  greater than or equal to 1.0

#### SURVEILLANCE REQUIREMENTS

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4.1.3.5 Each shutdown rod shall be determined to be within the insertion limit specified in the CORE OPERATING LIMITS REPORT

- a. Within 15 minutes prior to initial control rod bank withdrawal during an approach to reactor criticality, and
- b. At least once per 12 hours thereafter.

## REACTIVITY CONTROL SYSTEMS

### CONTROL ROD INSERTION LIMITS

#### LIMITING CONDITION FOR OPERATION

---

3.1.3.6 The control banks shall be limited in physical insertion as specified in the CORE OPERATING LIMITS REPORT.

APPLICABILITY: MODES 1\* and 2\*#.

ACTION:

- a. With the control banks inserted beyond the insertion limits, except for surveillance testing pursuant to Specification 4.1.3.1.2, either:
  1. Restore the control banks to within the insertion limits within two hours, or
  2. Reduce THERMAL POWER within two hours to less than or equal to that fraction of RATED THERMAL POWER which is allowed by the rod group step counter demand position using the insertion limits specified in the CORE OPERATING LIMITS REPORT, or
  3. Be in HOT STANDBY within 6 hours.
- b. With a maximum of one control bank inserted beyond the insertion limit specified in the CORE OPERATING LIMITS REPORT during surveillance testing pursuant to Specification 4.1.3.1.2 and immovable due to malfunctions in the rod control system, POWER OPERATION##may continue provided that:
  1. the control bank is inserted no more than 18 steps below the insertion limit as measured by the group step counter demand position indicators,
  2. the affected bank is trippable,
  3. each shutdown and control rod is aligned to within  $\pm 12$  steps of its respective group step counter demand position,
  4. the insertion limits of Specification 3.1.3.5 are met for each shutdown bank,

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\* See Special Test Exceptions 3.10.2 and 3.10.3.

# With  $K_{eff} \geq 1.0$ .

# # Provision for continued POWER OPERATION does not apply to Control Bank D inserted beyond the insertion limit.

#### LIMITING CONDITION FOR OPERATION (cont'd.)

5. the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is determined to be met at least once per 12 hours, and
6. the control bank is restored to within the insertion limit specified in the CORE OPERATING LIMITS REPORT within 72 hours.

Otherwise, be in HOT STANDBY within the next 6 hours.

#### SURVEILLANCE REQUIREMENTS

4.1.3.6 The position of each control bank shall be determined to be within the insertion limits at least once per 12 hours except during time intervals when the Rod Insertion Limit Monitor is inoperable, then verify either the individual rod positions (indicated positions) or the group step counter demand position of each rod group to be within the insertion limits at least once per 4 hours.

## REACTIVITY CONTROL SYSTEMS

### BASES (Continued)

The ACTION statements which permit limited variations from the basic requirements are accompanied by additional restrictions which ensure that the original design criteria are met. Misalignment of a rod requires measurement of peaking factors or a restriction in THERMAL POWER: either of these restrictions provides assurance of fuel rod integrity during continued operation. In addition those accident analyses affected by a misaligned rod are reevaluated to confirm that the results remain valid during future operation.

Continuous monitoring of rod position with respect to insertion limits and rod deviation is provided by the rod insertion limit monitor and rod position deviation monitor, respectively. OPERABILITY of the rod position deviation monitor is verified by a functional test at least once per 7 days and by comparison of the indicated positions versus the respective demand position indicators at least once per 12 hours. If the rod position deviation monitor or the rod insertion limit monitor is inoperable, the frequency of manual comparison of indicated rod (or bank) position is increased to an interval of at least once per 4 hours.

In the event that a malfunction of the Rod Control System renders control rods immovable, provision is made for continued operation provided:

- the affected control rods remain trippable, and
- the individual control rod alignment limits are met.

In the event that a malfunction of the Rod Control System renders control rod banks immovable during surveillance testing, provision is made for 72 hours of continued operation provided:

- the affected control rod banks remain trippable,
- the individual control rod alignment limits are met,
- a maximum of one control or shutdown bank is inserted no more than 18 steps below the insertion limit, and
- the SHUTDOWN MARGIN requirements are verified every 12 hours during the period the insertion limit is not met.

Control Bank D is excluded from the 72 hour provision since insertion of D Bank below the insertion limit is not required for control rod assembly surveillance testing.

Checks are performed for each reload core to ensure that bank insertions of up to 18 steps will not result in power distributions which violate the DNB criterion for ANS Condition II transients ( moderate frequency transients analyzed in Section 15.2 of the UFSAR) or in a violation of the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 during the repair period.

The 72 hour period for a control rod assembly bank to be inserted below its insertion limit restricts the likelihood of a more severe (i.e., ANS Condition III or IV) accident or transient condition occurring concurrently with the insertion limit violation.

The maximum rod drop time restriction is consistent with the assumed rod drop time used in the accident analyses. Measurement with  $T_{avg} \geq 500^{\circ}\text{F}$  and with all reactor coolant pumps operating ensures that the measured drop times will be representative of insertion times experienced during a reactor trip at operating conditions.

Attachment 3

Significant Hazards Consideration

## SIGNIFICANT HAZARDS CONSIDERATION

Virginia Electric and Power Company has proposed changes to the North Anna Power Station Units 1 and 2 Technical Specifications which provide for operation with one or more aligned and trippable control or shutdown banks which cannot be moved by the Rod Control System. In addition, provision is made for limited operation with a bank below its insertion limit under certain restricted conditions. It has been determined that the proposed changes do not involve a significant hazards consideration as defined in 10 CFR 50.92. The basis for this determination may be stated as follows:

1. The proposed changes will not involve a significant increase in either the probability of occurrence or potential consequences of an accident previously evaluated in the UFSAR. Allowing for continued operation during diagnosis and repair associated with electronic or electrical malfunctions of the Rod Control System is acceptable, since the design safety function of the control rods (reactor trip) will remain unaffected during the repair period. During the extended troubleshooting and maintenance period, the requirements for control rod alignment, insertion limits (except for a small allowed deviation for one bank) and shutdown margin will



be maintained. The small deviation from the control rod insertion limits allowed for one bank for up to 72 hours will not adversely impact the current Technical Specification requirements for normal operation core power distributions. The proposed changes do not affect the ability of the control rods to perform their intended safety function when a safety system setting is reached. Nor will any new or unique accident precursors be introduced by the proposed changes. Therefore the probability and consequences of accidents related to or dependent on control rod operation will remain unaffected.

The proposed change will result in a small increase in the probability that, at any given time, a control or shutdown bank will be inserted slightly below (i.e. up to 18 steps) its insertion limit. However, by design, the control and shutdown banks will continue to meet the safety analysis criterion for steady state and ANS Condition II (moderate frequency) transients. The allowed insertion is not a malfunction of equipment important to safety in this case and therefore the probability of such a malfunction is not increased.

2. The proposed changes will not create the possibility of a new or different kind of accident from any previously evaluated. There are no new failure modes or mechanisms

associated with plant operation for an extended period to perform maintenance on the Rod Control System. Limited periods of operation with immovable but trippable control rods does not involve any modification to the operational limits or physical design of the involved systems. There are no new accident precursors created due to the allowed maintenance period.

3. The results of the current accident analyses are not impacted by this change. Therefore the margin of safety is not impacted.