



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555-0001

VIRGINIA ELECTRIC AND POWER COMPANY

OLD DOMINION ELECTRIC COOPERATIVE

DOCKET NO. 50-338

NORTH ANNA POWER STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 179  
License No. NPF-4

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Virginia Electric and Power Company et al., (the licensee) dated March 18, 1993, as supplemented by letter dated December 9, 1993, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

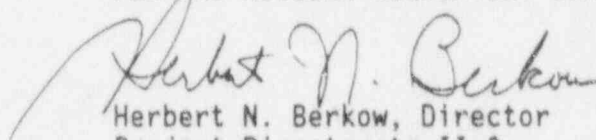
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.D.(2) of Facility Operating License No. NPF-4 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 179, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION



Herbert N. Berkow, Director  
Project Directorate II-2  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: March 1, 1994

ATTACHMENT TO LICENSE AMENDMENT NO. 179

TO FACILITY OPERATING LICENSE NO. NPF-4

DOCKET NO. 50-338

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages as indicated. The revised pages are identified by amendment number and contain vertical lines indicating the area of change. The corresponding overleaf pages are also provided to maintain document completeness.

Remove Pages

Insert Pages

3/4 1-18

3/4 1-18

3/4 1-24

3/4 1-24

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3/4 1-24a

3/4 1-25

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3/4 1-25a

B 3/4 1-4a

B 3/4 1-4a

REACTIVITY CONTROL SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

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- a. At least once per 7 days by:
  - 1. Verifying the boron concentration in each water source,
  - 2. Verifying the contained borated water volume of each water source, and
  - 3. Verifying the boric acid storage system solution temperature.
- b. At least once per 24 hours by verifying the RWST temperature.

## 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

### ROD DROP TIME

#### LIMITING CONDITION FOR OPERATION

3.1.3.4 The individual full length (shutdown and control) rod drop time from the 229 STEP withdrawn position shall be  $\leq 2.7$  seconds from beginning of decay of stationary gripper coil voltage to dashpot entry with:

- a.  $T_{avg} \geq 500^{\circ}\text{F}$ , and
- b. All reactor coolant pumps operating.

APPLICABILITY: MODES 1 and 2.

#### ACTION:

- a. With the drop time of any full length rod determined to exceed the above limit, restore the rod drop time to within the above limit prior to proceeding to MODE 1 or 2.
- b. With the rod drop times within limits but determined with 2 reactor coolant pumps operating, operation may proceed provided THERMAL POWER is restricted to:
  1.  $\leq 66\%$  of RATED THERMAL POWER when the reactor coolant stop valves in the nonoperating loop are open, or
  2.  $\leq 71\%$  of RATED THERMAL POWER when the reactor coolant stop valves in the nonoperating loop are closed.

#### SURVEILLANCE REQUIREMENTS

4.1.3.4 The rod drop time of full length rods shall be demonstrated through measurement prior to reactor criticality:

- a. For all rods following each removal of the reactor vessel head,
- b. For specifically affected individual rods following any maintenance on or modification to the control rod drive system which could affect the drop time of those specific rods, and
- c. At least once per 18 months.

## SURVEILLANCE REQUIREMENTS

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.

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## 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  $T_{avg} \geq 500^{\circ}F$  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.



UNITED STATES  
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VIRGINIA ELECTRIC AND POWER COMPANY

OLD DOMINION ELECTRIC COOPERATIVE

DOCKET NO. 50-339

NORTH ANNA POWER STATION, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 160  
License No. NPF-7

- I. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Virginia Electric and Power Company et al., (the licensee) dated March 18, 1993, as supplemented by letter dated December 9, 1993, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

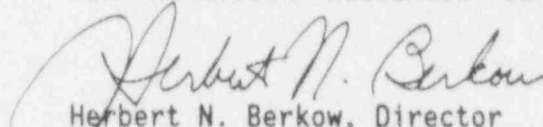
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-7 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 160 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION



Herbert N. Berkow, Director  
Project Directorate II-2  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: March 1, 1994

ATTACHMENT TO LICENSE AMENDMENT NO. 160

TO FACILITY OPERATING LICENSE NO. NPF-7

DOCKET NO. 50-339

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages as indicated. The revised pages are identified by amendment number and contain vertical lines indicating the area of change. The corresponding overleaf pages are also provided to maintain document completeness.

Remove Pages

3/4 1-16

3/4 1-22

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3/4 1-23

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B 3/4 1-4a

Insert Pages

3/4 1-16

3/4 1-22

3/4 1-22a

3/4 1-23

3/4 1-23a

B 3/4 1-4a

REACTIVITY CONTROL SYSTEMS

SURVEILLANCE REQUIREMENTS

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4.1.2.8 Each borated water source shall be demonstrated OPERABLE:

- a. At least once per 7 days by:
  1. Verifying the boron concentration in each water source,
  2. Verifying the contained borated water volume of each water source, and
  3. Verifying the boric acid storage system solution temperature.
  
- b. At least once per 24 hours by verifying the RWST temperature.

## 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

### ROD DROP TIME

#### LIMITING CONDITION FOR OPERATION

---

3.1.3.4 The individual full length (shutdown and control) rod drop time from the 229 STEP withdrawn position shall be less than or equal to 2.7 seconds from beginning of decay of stationary gripper coil voltage to dashpot entry with:

- a.  $T_{avg}$  greater than or equal to 500°F, and
- b. All reactor coolant pumps operating.

APPLICABILITY: MODES 1 and 2.

#### ACTION:

- a. With the drop time of any full length rod determined to exceed the above limit, restore the rod drop time to within the above limit prior to proceeding to MODE 1 or 2.
- b. With the rod drop times within limits but determined with 2 reactor coolant pumps operating, operation may proceed provided THERMAL POWER is restricted to:
  1. Less than or equal to 66% of RATED THERMAL POWER when the reactor coolant stop valves in the nonoperating loop are open, or
  2. Less than or equal to 71% of RATED THERMAL POWER when the reactor coolant stop valves in the nonoperating loop are closed.

#### SURVEILLANCE REQUIREMENTS

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4.1.3.4 The rod drop time of full length rods shall be demonstrated through measurement prior to reactor criticality:

- a. For all rods following each removal of the reactor vessel head.
- b. For specifically affected individual rods following any maintenance on or modification to the control rod drive system which could affect the drop time of those specific rods, and
- c. At least once per 18 months.

## 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. Enter 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.

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## 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.