

November 21, 1995

Mr. Oliver D. Kingsley, Jr.
President, TVA Nuclear and
Chief Nuclear Officer
Tennessee Valley Authority
6A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

SUBJECT: ISSUANCE OF TECHNICAL SPECIFICATION AMENDMENTS FOR THE SEQUOYAH
NUCLEAR PLANT, UNITS 1 AND 2 (TAC NOS. M93271 AND M93272) (TS 95-03)

Dear Mr. Kingsley:

The Commission has issued the enclosed Amendment No. 215 to Facility Operating License No. DPR-77 and Amendment No. 205 to Facility Operating License No. DPR-79 for the Sequoyah Nuclear Plant, Units 1 and 2, respectively. These amendments are in response to your application dated August 7, 1995.

The amendments address operation with a rod urgent failure condition, including limited operation with one control or shutdown bank inserted up to 18 steps below its insertion point. In addition, the surveillance interval for rod movement verifications has been increased from 31 to 92 days.

A copy of the Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

Original signed by

David E. LaBarge, Sr. Project Manager
Project Directorate II-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-327 and 50-328

- Enclosures: 1. Amendment No. 215 to License No. DPR-77
- 2. Amendment No. 205 to License No. DPR-79
- 3. Safety Evaluation

cc w/enclosures: See next page

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AMENDMENT NO. 215 FOR SEQUOYAH UNIT NO. 1 - DOCKET NO. 50-327 and
AMENDMENT NO. 205 FOR SEQUOYAH UNIT NO. 2 - DOCKET NO. 50-328
DATED: November 21, 1995

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M. Lesser

RII



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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-327

SEQUOYAH NUCLEAR PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 215
License No. DPR-77

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Tennessee Valley Authority (the licensee) dated August 7, 1995, 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.

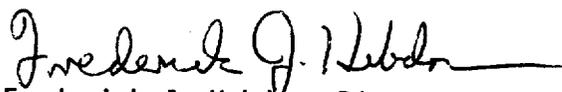
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-77 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 215, 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, to be implemented within 45 days.

FOR THE NUCLEAR REGULATORY COMMISSION



Frederick J. Hebdon, Director
Project Directorate II-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications

Date of Issuance: November 21, 1995

ATTACHMENT 1 TO LICENSE AMENDMENT NO. 215

FACILITY OPERATING LICENSE NO. DPR-77

DOCKET NO. 50-327

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change.

REMOVE

3/4 1-14
3/4 1-15
3/4 1-20
3/4 1-21
B 3/4 1-4

INSERT

3/4 1-14
3/4 1-15
3/4 1-20
3/4 1-21
B 3/4 1-4
B 3/4 1-4a

REACTIVITY CONTROL SYSTEMS

3/4.1.3 MOVABLE CONTROL ASSEMBLIES

GROUP HEIGHT

LIMITING CONDITION FOR OPERATION

3.1.3.1 All full length (shutdown and control) rods shall be OPERABLE and positioned within ± 12 steps (indicated position) of their group step counter demand position.

APPLICABILITY: MODES 1* and 2*

ACTION:

- a. With one or more full length rods untrippable, determine that the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is satisfied within 1 hour and be in HOT STANDBY within 6 hours.
- b. With more than one full length rod misaligned from the group step counter demand position by more than ± 12 steps (indicated position), be in HOT STANDBY within 6 hours.
- c. With one full length rod misaligned from its group step counter demand height by more than ± 12 steps (indicated position), POWER OPERATION may continue provided that within one hour either:
 1. The rod is restored within the above alignment requirements, or
 2. The remainder of the rods in the group with the misaligned rod are aligned to within ± 12 steps of the misaligned rod while maintaining the rod sequence and insertion limit of specification 3.1.3.6. The THERMAL POWER level shall be restricted pursuant to Specification 3.1.3.6 during subsequent operation, or
 3. 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:

|R159

*See Special Test Exceptions 3.10.2 and 3.10.3.

REACTIVITY CONTROL SYSTEMS

ACTION: (Continued)

- a) A reevaluation of each accident analysis of Table 3.1-1 is performed within 5 days; this reevaluation shall confirm that the previously analyzed results of these accidents remain valid for the duration of operation under these conditions.
- b) The SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is determined at least once per 12 hours.
- c) A power distribution map is obtained from the movable incore detectors and $F_Q(Z)$ and $F_{\Delta H}^N$ are verified to be within their limits within 72 hours.
- d) The THERMAL POWER level is reduced to less than or equal to 75% of RATED THERMAL POWER within one hour and within the next 4 hours the high neutron flux trip setpoint is reduced to less than or equal to 85% of RATED THERMAL POWER.

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SURVEILLANCE REQUIREMENTS

4.1.3.1.1 The position of each full length rod shall be determined to be within the group demand limit by verifying the individual rod positions at least once per 12 hours except during time intervals when the Rod Position Deviation Monitor is inoperable, then verify the group positions at least once per 4 hours.

4.1.3.1.2 Each full-length rod not fully inserted in the core shall be determined to be trippable by verifying rod freedom of movement by movement of ≥ 10 steps in either direction at least once per 92 days.

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 COLR.

|R159

APPLICABILITY: MODES 1* and 2*#

ACTION:

- a. With a maximum of one shutdown rod inserted beyond the insertion limit specified in the COLR, except for surveillance testing pursuant to Specification 4.1.3.1.2 or when complying with ACTION b of this specification, within one hour either:
1. Restore the rod to within the insertion limit specified in the COLR, or
 2. Declare the rod to be inoperable and apply ACTION 3.1.3.1.c.3.
- b. With a maximum of one shutdown bank inserted beyond the insertion limit specified in the COLR 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 ± 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. No reactor coolant system boron concentration dilution activities or power level increases are allowed,
 6. The SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is determined to be met at least once per 12 hours or upon insertion of the controlling bank more than 5 steps from the initial position, and
 7. The shutdown bank is restored to within the insertion limit specified in the COLR within 72 hours.

|R159

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

SURVEILLANCE REQUIREMENTS

4.1.3.5 Each shutdown rod shall be determined to be within the insertion limit specified in the COLR:

|R159

- a. Within 15 minutes prior to withdrawal of any rods in control banks A, B, C or D during an approach to reactor criticality, and
- b. At least once per 12 hours thereafter.

*See Special Test Exceptions 3.10.2 and 3.10.3.

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

|R159

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 COLR.

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APPLICABILITY: MODES 1* and 2*#.

ACTION:

a. With the control banks inserted beyond the above insertion limits, except for surveillance testing pursuant to Specification 4.1.3.1.2 or when complying with ACTION b of this specification, either:

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1. Restore the control banks to within the 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 group position using the insertion limits specified in the COLR, or
3. Be in HOT STANDBY within 6 hours.

R159

b. With a maximum of one control bank inserted beyond the insertion limit specified in the COLR 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 ± 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,
5. No reactor coolant system boron concentration dilution activities or power level increases are allowed,
6. The SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is determined to be met at least once per 12 hours or upon insertion of the controlling bank more than 5 steps from the initial position, and
7. The control bank is restored to within the insertion limit specified in the COLR 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 the individual rod positions at least once per 4 hours.

*See Special Test Exceptions 3.10.2 and 3.10.3.

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

Provision for continued POWER OPERATION does not apply to the controlling bank(s) (normally Control Bank D) inserted beyond the insertion limit.

REACTIVITY CONTROL SYSTEMS

BASES

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 and a restriction in THERMAL POWER. These restrictions provide assurance of fuel rod integrity during continued operation. In addition, those accident analyses affected by a misalignment rod are reevaluated to confirm that the results remain valid during future operation.

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

- o The affected control rods remain trippable, and
- o 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:

- o The affected control rod banks remains trippable,
- o The individual control rod alignment limits are met,
- o A maximum of one control or shutdown bank is inserted no more than 18 steps below the insertion limit,
- o No reactor coolant system boron concentration dilution activities or power level increases are allowed, and
- o The SHUTDOWN MARGIN requirements are verified every 12 hours or upon insertion of controlling bank during the period the insertion limit is not met.

The requirements to preclude Reactor Coolant System boron concentration dilution, while a control or shutdown bank is below insert limits, will minimize the impact on shutdown margin.

The controlling bank(s), which is normally Control Bank D, is excluded from the 72-hour provision since insertion of this bank(s) below the insertion limit is not required for control rod assembly surveillance testing. A controlling bank is defined as any control bank that is less than fully withdrawn as defined in the COLR with the exception of fully withdrawn banks that have been inserted in accordance with Surveillance Requirement 4.1.3.1.2. This provision excludes the use of the 72-hour allowance for control banks that can be exercised 10 steps in either direction without exceeding the insertion limits.

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). Administrative requirements on the initial controlling bank position will ensure that this insertion and an additional controlling bank insertion of five steps or less will not violate the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 during the repair period. If the controlling bank is inserted more than five steps deeper than its initial position, a calculation will be performed to ensure that the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is met. Since no dilution or power level increases are allowed, shutdown margin will be maintained as long as the controlling bank is far enough above its insertion limit to compensate for the inserted worth of the bank that is beyond its insertion limit.

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.

REACTIVITY CONTROL SYSTEMS

BASES

The maximum rod drop time restriction is consistent with the assumed rod drop time used in the accident analyses. Measurement with T_{avg} greater than or equal to 541°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.

Control rod positions and OPERABILITY of the rod position indicators are required to be verified on a nominal basis of once per 12 hours with more frequent verifications required if an automatic monitoring channel is inoperable. These verification frequencies are adequate for assuring that the applicable LCO's are satisfied.

3/4.1.3.4 ROD DROP TIME and 3/4.1.3.5 SHUTDOWN ROD INSERTION LIMIT

Fully withdrawn for shutdown and control rod banks is defined as a condition where the rod banks are positioned in a range of 222 to 231 steps fully withdrawn. This range is defined to permit axial repositioning of rod banks to mitigate rod wear on internal guide surfaces.

R112



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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-328

SEQUOYAH NUCLEAR PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 205
License No. DPR-79

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Tennessee Valley Authority (the licensee) dated August 7, 1995, 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.

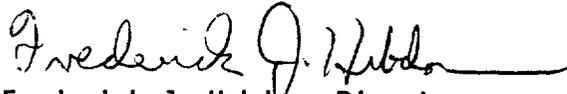
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-79 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 205, 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, to be implemented within 45 days.

FOR THE NUCLEAR REGULATORY COMMISSION



Frederick J. Hebden, Director
Project Directorate II-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications

Date of Issuance: November 21, 1995

ATTACHMENT TO LICENSE AMENDMENT NO. 205

FACILITY OPERATING LICENSE NO. DPR-79

DOCKET NO. 50-328

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change.

REMOVE

3/4 1-14
3/4 1-15
3/4 1-20
3/4 1-21
B 3/4 1-4

INSERT

3/4 1-14
3/4 1-15
3/4 1-20
3/4 1-21
B 3/4 1-4
B 3/4 1-4a

REACTIVITY CONTROL SYSTEMS

3/4.1.3 MOVABLE CONTROL ASSEMBLIES

GROUP HEIGHT

LIMITING CONDITION FOR OPERATION

3.1.3.1 All full length (shutdown and control) rods shall be OPERABLE and positioned within ± 12 steps (indicated position) of their group step counter demand position.

APPLICABILITY: Modes 1* and 2*.

ACTION:

- a. With one or more full length rods untrippable, determine that the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is satisfied within 1 hour and be in HOT STANDBY within 6 hours.
- b. With more than one full length rod misaligned from the group step counter demand position by more than ± 12 steps (indicated position), be in HOT STANDBY within 6 hours.
- c. With one full length rod misaligned from its group step counter demand height by more than ± 12 steps (indicated position), POWER OPERATION may continue provided that within one hour either:
 1. The rod is restored within the above alignment requirements, or
 2. The remainder of the rods in the group with the misaligned rod are aligned to within ± 12 steps of the misaligned rod while maintaining the rod sequence and insertion limit of specification 3.1.3.6. The THERMAL POWER level shall be restricted pursuant to Specification 3.1.3.6 during subsequent operation, or
 3. 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 previously analyzed results of these accidents remain valid for the duration of operation under these conditions.

R146

*See Special Test Exceptions 3.10.2 and 3.10.3.

REACTIVITY CONTROL SYSTEMS

ACTION: (Continued)

- b) The SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is determined at least once per 12 hours.
- c) A power distribution map is obtained from the movable incore detectors and $F_Q(Z)$ and $F_{\Delta H}^N$ are verified to be within their limits within 72 hours.
- d) The THERMAL POWER level is reduced to less than or equal to 75% of RATED THERMAL POWER within one hour and within the next 4 hours the high neutron flux trip setpoint is reduced to less than or equal to 85% of RATED THERMAL POWER.

SURVEILLANCE REQUIREMENTS

4.1.3.1.1 The position of each full length rod shall be determined to be within the group demand limit by verifying the individual rod positions at least once per 12 hours except during time intervals when the Rod Position Deviation Monitor is inoperable, then verify the group positions at least once per 4 hours.

4.1.3.1.2 Each full-length rod not fully inserted in the core shall be determined to be trippable by verifying rod freedom of movement by movement of ≥ 10 steps in either direction at least once per 92 days.

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 COLR:

R146

APPLICABILITY: Modes 1* and 2*#.

ACTION:

- a. With a maximum of one shutdown rod inserted beyond the insertion limit specified in the COLR, except for surveillance testing pursuant to Specification 4.1.3.1.2 or when complying with ACTION b. of this specification, within one hour either:
 1. Restore the rod to within the insertion limit specified in the COLR, or
 2. Declare the rod to be inoperable and apply ACTION 3.1.3.1.c.3.
- b. With a maximum of one shutdown bank inserted beyond the insertion limit specified in the COLR 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 ± 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. No reactor coolant system boron concentration dilution activities or power level increases are allowed,
 6. The SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is determined to be met at least once per 12 hours or upon insertion of the controlling bank more than 5 steps from the initial position, and
 7. The shutdown bank is restored to within the insertion limit specified in the COLR within 72 hours.

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

SURVEILLANCE REQUIREMENTS

4.1.3.5 Each shutdown rod shall be determined to be within the insertion limit specified in the COLR:

R146

- a. Within 15 minutes prior to withdrawal of any rods in control banks A, B, C or D during an approach to reactor criticality, and
- b. At least once per 12 hours thereafter.

*See Special Test Exceptions 3.10.2 and 3.10.3.

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

R146

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 COLR

R146

APPLICABILITY: Modes 1* and 2*#.

ACTION:

- a. With the control banks inserted beyond the above insertion limits, except for surveillance testing pursuant to Specification 4.1.3.1.2 or when complying with ACTION b of this specification, either:
 - 1. Restore the control banks to within the 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 group position using the insertion limits specified in the COLR, 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 COLR 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 ± 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,
 - 5. No reactor coolant system boron concentration dilution activities or power level increases are allowed,
 - 6. The SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is determined to be met at least once per 12 hours or upon insertion of the controlling bank more than 5 steps from the initial position, and
 - 7. The control bank is restored to within the insertion limit specified in the COLR 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 the individual rod positions at least once per 4 hours.

*See Special Test Exceptions 3.10.2 and 3.10.3.

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

##Provision for continued POWER OPERATION does not apply to the controlling bank(s) (normally Control Bank D) inserted beyond the insertion limit.

REACTIVITY CONTROL SYSTEMS

BASES

MOVEABLE CONTROL ASSEMBLIES (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 and a restriction in THERMAL POWER. These restrictions provide assurance of fuel rod integrity during continued operation. In addition, those safety analyses affected by a misaligned rod are reevaluated to confirm that the results remain valid during future operation.

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

- o The affected control rods remain trippable, and
- o 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:

- o The affected control rod banks remains trippable,
- o The individual control rod alignment limits are met,
- o A maximum of one control or shutdown bank is inserted no more than 18 steps below the insertion limit,
- o No reactor coolant system boron concentration dilution activities or power level increases are allowed, and
- o The SHUTDOWN MARGIN requirements are verified every 12 hours or upon insertion of controlling bank during the period the insertion limit is not met.

The requirements to preclude Reactor Coolant System boron concentration dilution, while a control or shutdown bank is below insert limits, will minimize the impact on shutdown margin.

The controlling bank(s), which is normally Control Bank D, is excluded from the 72-hour provision since insertion of this bank(s) below the insertion limit is not required for control rod assembly surveillance testing. A controlling bank is defined as any control bank that is less than fully withdrawn as defined in the COLR with the exception of fully withdrawn banks that have been inserted in accordance with Surveillance Requirement 4.1.3.1.2. This provision excludes the use of the 72-hour allowance for control banks that can be exercised 10 steps in either direction without exceeding the insertion limits.

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). Administrative requirements on the initial controlling bank position will ensure that this insertion and an additional controlling bank insertion of five steps or less will not violate the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 during the repair period. If the controlling bank is inserted more than five steps deeper than its initial position, a calculation will be performed to ensure that the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is met. Since no dilution or power level increases are allowed, shutdown margin will be maintained as long as the controlling bank is far enough above its insertion limit to compensate for the inserted worth of the bank that is beyond its insertion limit.

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.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 215 TO FACILITY OPERATING LICENSE NO. DPR-77
AND AMENDMENT NO. 205 TO FACILITY OPERATING LICENSE NO. DPR-79
TENNESSEE VALLEY AUTHORITY
SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2
DOCKET NOS. 50-327 AND 50-328

1.0 INTRODUCTION

By application dated August 7, 1995, the Tennessee Valley Authority (the licensee) proposed an amendment to the Technical Specifications (TS) for Sequoyah Nuclear Plant (SQN) Units 1 and 2. The requested changes would address operation with a rod urgent failure condition, including limited operation with one control or shutdown bank inserted up to 18 steps below its insertion point. In addition, the surveillance interval for rod movement verifications would be increased from 31 to 92 days.

2.0 EVALUATION

The TS require periodic testing of each control and shutdown control rod assembly bank during power operation to ensure the control rod assemblies are trippable. This testing requires partial movement of each control rod assembly not fully inserted into the core. The current TS can be interpreted such that rods immovable as a result of a rod urgent failure are declared inoperable. Inoperable rods require a plant shutdown (under certain conditions).

The proposed TS 3.1.3.1 modifies the wording to clearly define a control rod assembly as operable if it is trippable. Specifically, the licensee is proposing to delete all references to "inoperable" control rods and instead rely on the more explicit terms "untrippable" and "misaligned." The licensee's reference to "untrippable" and "misaligned" rods is consistent with the wording of NUREG-1431, Revision 1, "Standard Technical Specifications Westinghouse Plants." Therefore, the licensee's proposed TS clarification is acceptable.

Also, the licensee is proposing to delete the words "within one hour" from Unit 1's TS 3.1.3.1.c.2. This phrase is not in the corresponding Unit 2 TS. This is an editorial change since the one hour requirement is stated in TS 3.1.3.1.c. Therefore, the deletion of the redundant and potentially misleading phrase is acceptable.

ENCLOSURE

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The proposed TS Surveillance Requirement (SR) 4.1.3.1.2 clarifies the requirements relative to rod trippability and extends the surveillance interval to 92 days. The licensee's proposal is consistent with the corresponding wording of NUREG-1431, and Generic Letter (GL) 93-05, "Line-Item Technical Specifications Improvements to Reduce Surveillance Requirements for Testing During Power Operation." As requested in GL 93-05, the licensee stated that the surveillance interval extension was consistent with plant operating experience. Therefore, the licensee's proposed TS change is acceptable.

The proposed TS 3.1.3.5 and TS 3.1.3.6 define limits of both time and insertion if a bank is immovable due to failures external to the control rod drive mechanism. A maximum of one control or shutdown bank may be inserted no more than 18 steps below its insertion limit for up to 72 hours during diagnosis and repair of the rod control system provided the bank is trippable and the shutdown margin requirements are satisfied once per 12 hours. The provision for continued power operation does not apply to the controlling bank(s), which is normally Control Bank D, because insertion of this bank below the insertion limit is not required for rod surveillance testing. Concurrent control rod misalignment (misalignment of individual control rod assemblies from their group step counter demand position by more than ± 12 steps) is not allowed.

Because of the misalignment constraints and the 18 step limit, the impact on core reactivity and power distribution is very small. In addition, the shutdown margin is specifically reconfirmed every 12 hours and, as the licensee stated in its submittal, explicit analytical checks on the radial power distribution are performed as part of the reload safety evaluation process. The reload safety calculations for SQN are performed by the vendor using NRC approved methodology. Furthermore, if the affected bank is not restored to above the insertion limit within the allowed 72 hours, the unit must be placed in hot shutdown within the next 6 hours. This change will allow sufficient time for diagnosis and repairs while maintaining the safety function of the control rods since the affected rods are still trippable.

The proposed changes to TS 3.1.3.5 and TS 3.1.3.6 are acceptable because:

- 1) all control and shutdown rod assemblies are trippable,
- 2) all immovable rod assemblies exceed insertion limits by no more than 18 steps,
- 3) all immovable rod assemblies are aligned,
- 4) shutdown margin is specifically reconfirmed every 12 hours,
- 5) no reactor coolant system boron concentration dilution activities or power level increases are allowed, and
- 6) if rod assemblies are not restored to within insertion limits within 72 hours, the unit must be placed in hot shutdown within the next 6 hours.

Based on the above discussion, the staff finds all of the proposed TS changes to be acceptable.

REACTIVITY CONTROL SYSTEMS

BASES

The maximum rod drop time restriction is consistent with the assumed rod drop time used in the safety analyses. Measurement with T_{avg} greater than or equal to 541°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.

Control rod positions and OPERABILITY of the rod position indicators are required to be verified on a nominal basis of once per 12 hours with more frequent verifications required if an automatic monitoring channel is inoperable. These verification frequencies are adequate for assuring that the applicable LCO's are satisfied.

3/4.1.3.4 ROD DROP TIME and 3/4.1.3.5 SHUTDOWN ROD INSERTION LIMIT

Fully withdrawn for shutdown and control rod banks is defined as a condition where the rod banks are positioned in a range of 222 to 231 steps fully withdrawn. This range is defined to permit axial repositioning of rod banks to mitigate rod wear on internal guide surfaces.

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3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Tennessee State official was notified of the proposed issuance of the amendment. The State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (60 FR 45186). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

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Dated: November 21, 1995

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SEQUOYAH NUCLEAR PLANT

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