

March 14, 1983

Docket Nos: 50-327  
and 50-328

Mr. H. G. Parris  
Manager of Power  
Tennessee Valley Authority  
500A Chestnut Street, Tower II  
Chattanooga, Tennessee 37401

Dear Mr. Parris:

Subject: Issuance of Amendment No. 26 to Facility Operating License  
No. DPR-77 and Amendment No. 15 to Facility Operating  
License No. DPR-79 - Sequoyah Nuclear Plant, Units 1 and 2

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 26 to  
Facility Operating License No. DPR-77 and Amendment No. 15 to Facility Operating  
License No. DPR-79.

The amendments change the Technical Specifications related to the Rod Position  
Indication System. The amendments are in response to your letter dated  
August 16, 1982.

A copy of the related safety evaluation supporting Amendment No. 26 to Facility  
Operating License DPR-77 and Amendment No. 15 to Facility Operating License DPR-79  
is enclosed. Also enclosed is a copy of the Federal Register Notice which has  
been forwarded to the Office of the Federal Register for publication.

Sincerely,

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Elinor G. Adensam, Chief  
Licensing Branch No. 4  
Division of Licensing

Enclosures:

1. Amendment No. 26 to DPR-77
2. Amendment No. 15 to DPR-79
3. Safety Evaluation
4. Federal Register Notice

cc w/enclosures:

See next page

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SURNAME	MDuncan/hmc	CStahle	EAdensam				
DATE	2/10/83	2/10/83	2/10/83				

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Mr. H. G. Parris  
Manager of Power  
Tennessee Valley Authority  
500A Chestnut Street, Tower II  
Chattanooga, Tennessee 37401

cc: Herbert S. Sanger, Jr., Esq.  
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400 Commerce Avenue  
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Knoxville, Tennessee 37902

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Tennessee Valley Authority  
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Knoxville, Tennessee 37902

Mr. Bob Faas  
Westinghouse Electric Corp.  
P.O. Box 355  
Pittsburgh, Pennsylvania 15230

Mr. Jerry Willis  
Tennessee Valley Authority  
400 Chestnut Street, Tower II  
Chattanooga, Tennessee 37401

Mr. Donald L. Williams, Jr.  
Tennessee Valley Authority  
400 Commerce Avenue, W10C131C  
Knoxville, Tennessee 37902

Resident Inspector/Sequoyah NPS  
c/o U.S. Nuclear Regulatory  
Commission  
2600 Igou Ferry Road  
Soddy Daisy, Tennessee 37379

Director, Office of Urban  
& Federal Affairs  
108 Parkway Towers  
404 James Robertson Way  
Nashville, Tennessee 37219

Attorney General  
Supreme Court Building  
Nashville, Tennessee 37219

U.S. Environmental Protection  
Agency  
ATTN: EIS Coordinator  
345 Courtland Street  
Atlanta, Georgia 30308

Honorable Don Moore, Jr.  
County Judge  
Hamilton County Courthouse  
Chattanooga, Tennessee 37402

Regional Administrator  
Nuclear Regulatory Commission,  
Region II  
101 Marietta Street, Suite 3100  
Atlanta, Georgia 30303

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TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-327

SEQUOYAH NUCLEAR PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 26  
License No. DPR-77

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment to the Sequoyah Nuclear Plant, Unit 1 (the facility) Facility Operating License No. DPR-77 filed by the Tennessee Valley Authority (licensee), dated August 16, 1982, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's regulations as set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the license, as amended, 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 hereby amended by page changes to the Appendix A 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 Appendix A, as revised through Amendment No. 26, are hereby incorporated into the license.

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The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Elinor G. Adensam, Chief  
Licensing Branch No. 4  
Division of Licensing

Attachment:  
Appendix A Technical  
Specification Change

Date of Issuance: March 14, 1983

OFFICE	LA:DL:LB #4	DL:LB #4	OELD	DL:LB #4	AD:LB		
SURNAME	MDuncan/hmc	CStanie	<i>[Signature]</i>	EAdensam	Novak		
DATE	2/10/83	2/14/83	2/18/83	3/9/83	3/14/83		

ATTACHMENT TO LICENSE AMENDMENT NO. 26

FACILITY OPERATING LICENSE NO. DPR-77

DOCKET NO. 50-327

Replace the following page of the Appendix "A" Technical Specifications with the enclosed page. The revised page is identified by Amendment number and contains vertical lines indicating the area of change.

Amended  
Page

3/4 1-18

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## REACTIVITY CONTROL SYSTEMS

### POSITION INDICATION SYSTEM-SHUTDOWN

#### LIMITING CONDITION FOR OPERATION

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3.1.3.3 The group demand position indicator shall be OPERABLE and capable of determining within  $\pm 2$  steps, the demand position for each shutdown or control rod not fully inserted.

APPLICABILITY: MODES 3\*#, 4\*# and 5\*#.

#### ACTION:

With less than the above required group demand position indicator(s) OPERABLE; immediately open the reactor trip system breakers.

#### SURVEILLANCE REQUIREMENTS

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4.1.3.3 Each of the above required group demand position indicator(s) shall be determined to be OPERABLE by movement of the associated control rod at least 10 steps in any one direction at least once per 31 days.

\*With the reactor trip system breakers in the closed position.

#See Special Test Exception 3.10.5.

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-328

SEQUOYAH NUCLEAR PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 15  
License No. DPR-79

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment to the Sequoyah Nuclear Plant, Unit 2 (the facility) Facility Operating License No. DPR-79 filed by the Tennessee Valley Authority (licensee), dated August 16, 1982, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's regulations as set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the license, as amended, 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 hereby amended by page changes to the Appendix A Technical Specifications as indicated in the attachments 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 Appendix A, as revised through Amendment No. 15, are hereby incorporated into the license.

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The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Elinor G. Adensam, Chief  
Licensing Branch No. 4  
Division of Licensing

Attachment:  
Appendix A Technical  
Specification Change

Date of Issuance: March 14, 1983

OFFICE	LA:DL:NB #4	DL:LB #4	OELD	DL:LB #4	AD:L:DL		
SURNAME	MDuncan/hmc	CStamle	R.P.	EAdensam	JNovak		
DATE	2/19/83	2/19/83	2/19/83	3/9/83	2/19/83		

ATTACHMENT TO LICENSE AMENDMENT NO. 15

FACILITY OPERATING LICENSE NO. DPR-79

DOCKET NO. 50-328

Replace the following page of the Appendix "A" Technical Specifications with the enclosed page. The revised page is identified by Amendment number and contains vertical lines indicating the area of change.

Amended  
Page

3/4 1-18

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## REACTIVITY CONTROL SYSTEMS

### POSITION INDICATION SYSTEM-SHUTDOWN

#### LIMITING CONDITION FOR OPERATION

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3.1.3.3 The group demand position indication shall be OPERABLE and capable of determining within  $\pm 2$  steps the demand position for each shutdown or control rod not fully inserted.

APPLICABILITY: MODES 3\*#, 4\*# and 5\*#.

ACTION:

With less than the above required group demand position indicator(s) OPERABLE, immediately open the reactor trip system breakers.

#### SURVEILLANCE REQUIREMENTS

---

4.1.3.3 Each of the above required group demand rod position indicator(s) shall be determined to be OPERABLE by movement of the associated control rod at least 10 steps in any one direction at least once per 31 days.

\*With the reactor trip system breakers in the closed position.

#See Special Test Exception 3.10.5.

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 26 TO FACILITY OPERATING LICENSE DPR-77  
AND AMENDMENT NO. 15 TO FACILITY OPERATING LICENSE DPR-79  
TENNESSEE VALLEY AUTHORITY

INTRODUCTION

In a letter dated August 16, 1982, TVA requested changes to the rod position indication (RPI) system Technical Specification (TS 3.1.3.3) for Sequoyah Nuclear Plant Units 1 and 2. The subject of the W analog rod indication system has been under review for some time because of calibration problems encountered at Sequoyah and other plants that utilize this system.

The RPI system was originally installed so that there would be an accurate means of telling the location of individual control rods during power operation in order to avoid misaligned rods. The Westinghouse safety analysis shows that a control rod misalignment of +24 steps is acceptable. Since there is a 12 step uncertainty, this leaves a requirement for no more than a +12 step indicated misalignment. Thus the present Technical Specification requires individual control rods to be aligned with their banks within +12 steps in all modes. The RPI system was not originally intended to be used in the shutdown modes.

Calibration of the RPI system has been a problem both during power operation and in the shutdown modes. Various solutions to the calibration problems for Modes 1 and 2 (power operation) have been worked out and presently the licensees have the +12 step accuracy requirement for Modes 1 and 2.

The RPI for each individual rod is calibrated at beginning of cycle at operating temperature. The calibration of the RPIs is highly temperature sensitive. Thus as the reactor cools down in Modes 3, 4 and 5, the hot calibration becomes inaccurate and may be off as much as 60 steps (total rod is 228 steps). Thus the Technical Specification which states that the RPIs and group demand counters must agree within +12 steps cannot be met as the plant cools down unless there are calibrations as a function of temperature.

If the plants wanted to operate in Modes 3, 4 and 5 only with all the rods fully inserted, the Technical Specification could be met because it does not apply to rods fully inserted. However, many plants prefer to operate with the shutdown banks "cocked" in order to have reactivity available if needed. They cannot meet the +12 step accuracy unless they recalibrate as temperature decreases.

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EVALUATION

To prevent inadvertent criticality from Modes 3, 4 and 5, the licensee is required to maintain the reactor in a sub-critical condition with  $k_{eff} < 0.99$ . This is accomplished thru boron concentration and insertion of control rods. Calculation of the necessary boron concentration takes into account the position of the control rods. While it would be extremely useful to have the RPI system indicating rod positions, it is not possible to use the system accurately in Modes 3, 4 and 5.

Westinghouse has proposed a specification which requires only the group demand counters be operable and capable of determining rod position for Modes 3, 4 and 5. In this way the analog system is used for the Modes 1 and 2 where it was intended to be used and is not required for Modes 3, 4 and 5.

The group demand counters have proven to be extremely reliable over the 15 years they have been used. They have proved to be the most accurate means of determining rod position and are in fact used to calibrate the RPIs. In addition, meeting the requirement that  $k_{eff} < 0.99$  for Modes 3, 4 and 5 provides margin to inadvertent criticality.

Based on our review the staff finds that the safety consideration of maintaining adequate sub-criticality can be accomplished by requiring that the group demand counters be used for rod position indication. The requirement to maintain a 12 step accuracy with the RPIs is not necessary. Therefore, TVA's proposed Technical Specification change is acceptable.

ENVIRONMENTAL CONSIDERATION

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR §51.5(d)(4), that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

CONCLUSION

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously considered, does not create the possibility of an accident of a type different from any evaluated previously, and does not

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involve a significant decrease in a safety margin, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Date: March 14, 1983

Principal Contributors: Margaret Chatterton, Core Performance Branch, DSI  
Melanie Miller, Licensing Branch No. 4, DL  
Carl Stahle, Licensing Branch No. 4, DL

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UNITED STATES NUCLEAR REGULATORY COMMISSIONDOCKET NOS. 50-327 AND 50-328TENNESSEE VALLEY AUTHORITYNOTICE OF ISSUANCE OF AMENDMENTSFACILITY OPERATING LICENSE NOS. DPR-77 AND DPR-79

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. <sup>26</sup> to Facility Operating License No. DPR-77 and Amendment No. <sup>15</sup> to Facility Operating License No. DPR-79, issued to Tennessee Valley Authority (licensee) for the Sequoyah Nuclear Plant, Units 1 and 2 (the facilities) located in Hamilton County, Tennessee. These amendments change the Technical Specifications related to the Rod Position Indication System. The amendments are effective as of their dates of issuance.

The application for the amendments complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations. The Commission has made appropriate findings as required by the Act and the Commission's regulations in 10 CFR Chapter I, which are set forth in the license amendments. Prior public notice of these amendments was not required since the amendments do not involve a significant hazards consideration.

The Commission has determined that the issuance of these amendments will not result in any significant environmental impact and that pursuant to 10 CFR §51.5(d)(4) environmental impact statements, or negative declarations and environmental impact appraisals need not be prepared in connection with issuance of these amendments.

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For further details with respect to this action, see (1) Tennessee Valley Authority letter dated August 16, 1982, (2) Amendment No. 26 to Facility Operating License No. DPR-77 with Appendix A Technical Specification page change; (3) Amendment No. 15 to Facility Operating License No. DPR-79 with Appendix A Technical Specification page change; and (4) the Commission's related Safety Evaluation.

All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N.W., Washington, D. C., and the Chattanooga Hamilton County Bicentennial Library, 1001 Broad Street, Chattanooga, Tennessee 37402. A copy of Amendment No. 26 and Amendment No. 15 may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Licensing.

Dated at Bethesda, Maryland, this 14<sup>th</sup> day of March 1983.

FOR THE NUCLEAR REGULATORY COMMISSION

Elinor G. Adensam, Chief  
Licensing Branch No. 4  
Division of Licensing

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SURNAME	MDuncan/hmc	CStahle	<i>[Signature]</i>	EAdensam			
DATE	2/14/83	2/14/83	2/14/83	3/9/83			

March 14, 1983

AMENDMENT NO. 26 TO FACILITY OPERATING LICENSE DPR-77 - SEQUOYAH UNIT 1  
AMENDMENT NO. 15 TO FACILITY OPERATING LICENSE DPR-79 - SEQUOYAH UNIT 2

DISTRIBUTION w/enclosures:

Docket No. 50-327/328  
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