

DEC 23 1975

Docket Nos. 50-259  
50-260

Tennessee Valley Authority  
ATTN: Mr. James E. Watson  
Manager of Power  
818 Power Building  
Chattanooga, Tennessee 37201

Gentlemen:

The Commission has requested the Federal Register to publish the enclosed Notice of Proposed Issuance of Amendments to Facility License Nos. DPR-33 and DPR-52 for the Browns Ferry Nuclear Plant, Units 1 and 2. The proposed amendments include a change to the Technical Specifications based on our letter to you dated September 29, 1975.

These amendments would revise the Technical Specifications to add requirements that would prevent reactor startup with any immovable control rods that could have control rod drive mechanism collet housing failures.

A copy of our proposed license amendment with proposed changes to the Technical Specifications and Bases are also enclosed.

Sincerely,  
Original signed by:  
Robert A. Purple

Robert A. Purple, Chief  
Operating Reactors Branch #1  
Division of Reactor Licensing

Enclosures:

1. Federal Register Notice
2. Proposed Amendments w/Proposed  
Technical Specification  
changes

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SURNAME >	FWWambach:lb	RSilver		RAPurple	
DATE >	12/09/75	12/ /75	12/ /75	12/ /75	

Tennessee Valley Authority

- 2 - December 23, 1975

cc w/enclosures:

H. S. Sanger  
General Counsel  
629 New Sprankle Building  
Knoxville, Tennessee 37919

Athens Public Library,  
South and Forrest  
Athens, Alabama 35611

Mr. Thomas Lee Hammons  
Chairman, Limestone County Board  
of Revenue  
Athens, Alabama 35611

cc w/enclosures and incoming:

Ira L. Myers, M.D.  
State Health Officer  
State Department of Public Health  
State Office Building  
Montgomery, Alabama 36104

Mr. Dave Hopkins  
Environmental Protection Agency  
1421 Peachtree Street, NE.  
Atlanta, Georgia 30309

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-259

BROWNS FERRY NUCLEAR PLANT UNIT 1

PROPOSED AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No.

License No. LFF-33

1. The Nuclear Regulatory Commission (the Commission) has found that:

A. 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; and

B. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

2. Accordingly, the license is amended by a change to the Technical Specifications as indicated in the attachment to this license amendment and Paragraph 2.C.(2) of Facility License No. LFF-33 is hereby amended to read as follows:

"B. Technical Specifications

The technical specifications contained in Appendices A and B as revised, are hereby incorporated in the license. The license shall operate the facility in accordance with the technical specifications, as revised by issued changes thereto through Change No. "

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

FOR THE NUCLEAR REGULATORY COMMISSION

Karl R. Collier, Assistant Director  
for Operating Reactors  
Division of Reactor Licensing

Attachment:

Change No. to the	Technical Specifications				
OFFICE	SURNAME	DATE			
	Date of Issuance:				

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-260

BROWNS FERRY NUCLEAR PLANT UNIT 2

PROPOSED AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No.

License No. EPR-52

1. The Nuclear Regulatory Commission (the Commission) has found that:

A. 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; and

B. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

2. Accordingly, the license is amended by a change to the technical specifications as indicated in the attachment to this license amendment and Paragraph 2.C.(2) of Facility License No. EPR-52 is hereby amended to read as follows:

"B. Technical Specifications

The technical specifications contained in Appendices A and B, as revised, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the technical specifications, as revised by issued changes thereto through Change No. "

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

FOR THE NUCLEAR REGULATORY COMMISSION

Karl P. Collier, Assistant Director  
for Operating Reactors  
Division of Reactor Licensing

Attachment:

Change No. to the

Technical Specifications

OFFICER	DATE	SURNAME	DATE OF ISSUANCE	TECHNICAL SPECIFICATIONS

**3.3 REACTIVITY CONTROL****Applicability:**

Applies to the operational status of the control rod system.

**Objective:**

To assure the ability of the control rod system to control reactivity.

**Specification:****A. Reactivity Limitations****1. Reactivity margin - core loading**

A sufficient number of control rods shall be operable so that the core could be made subcritical in the most reactive condition during the operating cycle with the strongest control rod fully withdrawn and all other operable control rods fully inserted.

**2. Reactivity margin - inoperable control rods**

- a. Control rod drives which cannot be moved with control rod drive pressure shall be considered inoperable. If a partially or fully withdrawn control rod drive cannot be moved with drive or scram pressure the reactor shall be brought to the Cold Shutdown condition within 24 hours and shall not be started unless (1) investigation has demonstrated that the cause of the failure is not a failed control rod drive mechanism collet housing and (2) adequate shutdown margin has been demonstrated as required by Specification 4.3.A.2.c.

If investigation demonstrates that the cause of control rod failure is a cracked collet housing, or if this possibility cannot be ruled out, the reactor shall not be started until the affected control rod drive has been replaced or repaired.

**4.3 REACTIVITY CONTROL****Applicability:**

Applies to the surveillance requirements of the control rod system.

**Objective:**

To verify the ability of the control rod system to control reactivity.

**Specification:****A. Reactivity Limitations****1. Reactivity margin - core loading**

Sufficient control rods shall be withdrawn following a refueling outage when core alterations were performed to demonstrate with a margin of 0.3%  $\Delta k/k$  the core can be made subcritical at any time in the subsequent fuel cycle with the analytically determined strongest operable control rod fully withdrawn and all other operable rods fully inserted.

**2. Reactivity margin - inoperable control rods**

- a. Each partially or fully withdrawn operable control rod shall be exercised one notch at least once each week when operating above 30% power. In the event power operation is continuous with three or more inoperable control rods, this test shall be performed at least once each day, when operating above 30% power.

**3.3.A. REACTIVITY CONTROLS**

- b. The control rod directional control valves for inoperable control rods shall be disarmed electrically.
- c. Control rods with scram times greater than those permitted by Specification 3.3.G.3 are inoperable, but if they can be inserted with control rod drive pressure they need not be disarmed electrically.
- d. Control rods with a failed "Full-in" or "Full-out" position switch may be bypassed in the Rod Sequence Control System and considered operable if the actual rod position is known. These rods must be moved in sequence to their correct positions (full-in on insertion or full-out on withdrawal).
- e. Control rods with inoperable accumulators or those whose position cannot be positively determined shall be considered inoperable.
- f. Inoperable control rods shall be positioned such that Specification 3.3.A.1 is met. In addition, during reactor power operation, no more than one control rod in any 5x5 array may be inoperable (at least 4 operable control rods must separate any 2 inoperable ones). If this Specification cannot be met the reactor shall not be started, or if at power, the reactor shall be brought to a shutdown condition within 24 hours.

**B. Control Rods**

- 1. Each control rod shall be coupled to its drive or completely inserted and the

**4.3.A. REACTIVITY CONTROLS**

- b. A second licensed operator shall verify the conformance to Specification 3.3.A.2.d before a rod may be bypassed in the Rod Sequence Control System.
- c. When it is initially determined that a control rod is incapable of normal insertion an attempt to fully insert the control rod shall be made. If the control rod cannot be fully inserted, a shutdown margin test shall be made to demonstrate under this condition that the core can be made subcritical for any reactivity condition during the remainder of the operating cycle with the analytically determined, highest worth control rod capable of withdrawal, fully withdrawn, and all other control rods capable of insertion fully inserted.

**B. Control Rods**

- 1. The coupling integrity shall be verified for each withdrawn control rod as follows:

### 3.3/4.3 BASES:

inserted and disarmed electrically\*, it is in a safe position of maximum contribution to shutdown reactivity. If it is disarmed electrically in a non-fully inserted position, that position shall be consistent with the shutdown reactivity limitations stated in Specification 3.3.A.1. This assures that the core can be shut down at all times with the remaining control rods assuming the strongest operable control rod does not insert. Also if damage within the control rod drive mechanism and in particular, cracks in drive internal housings, cannot be ruled out, then a generic problem affecting a number of drives cannot be ruled out. Circumferential cracks resulting from stress assisted intergranular corrosion have occurred in the collet housing of drives at several BWRs. This type of cracking could occur in a number of drives and if the cracks propagated until severance of the collet housing occurred, scram could be prevented in the affected rods. Limiting the period of operation with a potentially severed collet housing after detecting one stuck rod will assure that the reactor will not be operated with a large number of rods with failed collet housings. The Rod Sequence Control System is not automatically bypassed until reactor power is above about 30% power. Therefore, control rod movement is restricted and the single notch exercise surveillance test is only performed above this power level. The Rod Sequence Control System prevents movement of out-of-sequence rods unless power is above 30%.

#### B. Control Rods

1. Control rod dropout accidents as discussed in the FSAR can lead to significant core damage. If coupling integrity is maintained, the possibility of a rod dropout accident is eliminated. The overtravel position feature provides a positive check as only uncoupled drives may reach this position. Neutron instrumentation response to rod movement provides a verification that the rod is following its drive. Absence of such response to drive movement could indicate an uncoupled condition. Rod position indication is required for proper function of the rod sequence control system and the rod worth minimizer.
2. The control rod housing support restricts the outward movement of a control rod to less than 3 inches in the extremely remote event of a housing failure. The amount of reactivity which could be added by this small amount of rod withdrawal, which is less than a normal single withdrawal increment, will not contribute to any damage to the primary coolant system. The design basis is given in subsection 3.5.2 of the FSAR and the safety evaluation is given in subsection 3.5.4. This support is not required if the reactor coolant system is at atmospheric pressure since there would then be no driving force to rapidly eject a drive housing. Additionally, the support is not required if all control rods are fully inserted and if an adequate shutdown margin with one control rod withdrawn has been demonstrated, since the reactor would remain subcritical even in the event of complete ejection of the strongest control rod.

\*To disarm the drive electrically, four amphenol type plug connectors are removed from the drive insert and withdrawal solenoids rendering the rod incapable of withdrawal. This procedure is equivalent to valving out the drive and is preferred because, in this condition, drive water cools and minimizes crud accumulation in the drive. Electrical disarming does not eliminate position indication.

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NOS. 50-259 AND 50-260

TENNESSEE VALLEY AUTHORITY

NOTICE OF PROPOSED ISSUANCE OF AMENDMENTS  
TO FACILITY OPERATING LICENSES

The U. S. Nuclear Regulatory Commission (the Commission) is considering issuance of amendments to Facility Operating License Nos. DPR-33 and DPR-52 issued to Tennessee Valley Authority (the licensee) for operation of the Browns Ferry Nuclear Plant, Units 1 and 2 (the facilities) located in Limestone County, Alabama.

These amendments would revise the Technical Specifications to add requirements that would prevent reactor startup with any immovable control rods that could have control rod drive mechanism collet housing failures.

Prior to issuance of the proposed license amendments, the Commission will have made the findings required by the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations.

By Feb. 5, 1976, the licensee may file a request for a hearing and any person whose interest may be affected by this proceeding may file a request for a hearing in the form of a petition for leave to intervene

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with respect to the issuance of these amendments to the subject facility operating licenses. Petitions for leave to intervene must be filed under oath or affirmation in accordance with the provisions of Section 2.714 of 10 CFR Part 2 of the Commission's regulations. A petition for leave to intervene must set forth the interest of the petitioner in the proceeding, how that interest may be affected by the results of the proceeding, and the petitioner's contentions with respect to the proposed licensing action. Such petitions must be filed in accordance with the provisions of this FEDERAL REGISTER notice and Section 2.714, and must be filed with the Secretary of the Commission, U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Docketing and Service Section, by the above date. A copy of the petition and/or request for a hearing should be sent to the Executive Legal Director, U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, and to Mr. H. S. Sanger, General Counsel, 629 New Sprankle Building, Knoxville, Tennessee 37919, the attorney for the licensee.

A petition for leave to intervene must be accompanied by a supporting affidavit which identifies the specific aspect or aspects of the proceeding as to which intervention is desired and specifies with particularity the facts on which the petitioner relies as to both his interest and his contentions with regard to each aspect on which intervention is requested. Petitions stating contentions relating only to matters outside the Commission's jurisdiction will be denied.

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OFFICE	RT:ORB#1	ORLD	RT:ORB#1

Robert A. Purple, Chief  
 Operating Reactors Branch #1  
 Division of Reactor Licensing

FOR THE NUCLEAR REGULATORY COMMISSION  
 Original signed by:  
 Robert A. Purple

Dated at Bethesda, Maryland,

DEC 23 1975

Attention: Director, Division of Reactor Licensing.

addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, may be inspected at the above locations and a copy may be obtained upon request

Athens, Alabama 35611. These license amendments and the Safety Evaluation

Washington, D. C. and at the Athens Public Library, South and Forrest,

inspection at the Commission's Public Document Room, 1717 H Street, N. W.,

Commission's staff dated September 29, 1975, which are available for public

attached proposed technical specifications and the Safety Evaluation by the

letter to Tennessee Valley Authority dated September 29, 1975, and the

For further details with respect to these actions, see the Commission's

present evidence and examine and cross-examine witnesses.

participate fully in the conduct of the hearing. For example, he may

intervene, he becomes a party to the proceeding and has a right to

In the event that a hearing is held and a person is permitted to

regarding the disposition of the petitions.

whether a hearing should be noticed or another appropriate order issued

Licensing Board Panel. Timely petitions will be considered to determine

designated by the Commission or by the Chairman of the Atomic Safety and

All petitions will be acted upon by the Commission or Licensing board,