

September 19, 1985

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Amdt. 118  
to DPR-52

Docket Nos. 50-259/260/296

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

Dear Mr. Parris:

The Commission has issued the enclosed Amendment Nos. 123 , 118 and 94 to Facility Operating License Nos. DPR-33, DPR-52 and DPR-68 for the Browns Ferry Nuclear Plant, Units 1, 2 and 3. These amendments are in response to your application dated September 21, 1984 (TVA BFNP TS 200) and supplemented by your letter dated June 6, 1985.

The amendments change the Technical Specifications requirements relating to failure of a Reactor Protection System instrument channel.

A copy of the Safety Evaluation is also enclosed.

Sincerely,

Richard J. Clark, Project Manager  
Operating Reactors Branch #2  
Division of Licensing

Enclosures:

- 1. Amendment No. 123 to License No. DPR-33
- 2. Amendment No. 118 to License No. DPR-52
- 3. Amendment No. 94 to License No. DPR-68
- 4. Safety Evaluation

cc w/enclosures:  
See next page

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Mr. Hugh G. Parris  
Tennessee Valley Authority

Browns Ferry Nuclear Plant

cc:

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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-259

BROWNS FERRY NUCLEAR PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 123  
License No. DPR-33

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Tennessee Valley Authority (the licensee) dated September 21, 1984, as supplemented June 6, 1985, 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-33 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 123, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective 90 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Domenic B. Vassallo, Chief  
Operating Reactors Branch #2  
Division of Licensing

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: September 19, 1985

ATTACHMENT TO LICENSE AMENDMENT NO. 123

FACILITY OPERATING LICENSE NO. DPR-33

DOCKET NO. 50-259

Revise Appendix A as follows:

1. Remove pages 31 and 35 and replace with revised pages 31 and 35.
2. The marginal lines on these pages denote the areas being changed.

LIMITING CONDITIONS FOR OPERATION

SURVEILLANCE REQUIREMENTS

3.1 REACTOR PROTECTION SYSTEM

Applicability

Applies to the instrumentation and associated devices which initiate a reactor scram.

Objective

To assure the operability of the reactor protection system.

Specification

- A. When there is fuel in the vessel, the setpoints, minimum number of trip systems, and minimum number of instrument channels that must be operable for each position of the mode switch shall be as given in Table 3.1.A.
- B. Two RPS power monitoring channels for each inservice RPS MG sets or alternate source shall be operable.
  - 1. With one RPS electric power monitoring channel for inservice RPS MG set or alternate power supply inoperable, restore the inoperable channel to operable status within 72 hours or remove the associated RPS MG set or alternate power supply from service.

4.1 REACTOR PROTECTION SYSTEM

Applicability

Applies to the surveillance of the instrumentation and associated devices which initiate reactor scram.

Objective

To specify the type and frequency of surveillance to be applied to the protection instrumentation.

Specification

- A. Instrumentation systems shall be functionally tested and calibrated as indicated in Tables 4.1.A and 4.1.B respectively.

NOTES FOR TABLE 3.1.A

1. There shall be two operable or tripped trip systems for each function. If the minimum number of operable instrument channels per trip system cannot be met for one trip system, trip the inoperable channels or entire trip system within one hour, or, alternatively, take the below listed action for that trip function. If the minimum number of operable instrument channels cannot be met by either trip system, the appropriate action listed below (refer to right-hand column of Table) shall be taken. An inoperable channel need not be placed in the tripped condition where this would cause the trip function to occur. In these cases, the inoperable channel shall be restored to operable status within two hours, or take the action listed below for that trip function.
  - A. Initiate insertion of operable rods and complete insertion of all operable rods within four hours. In refueling mode, suspend all operations involving core alterations and fully insert all operable control rods within one hour.
  - B. Reduce power level to IRM range and place mode switch in the Startup/Hot Standby position within 8 hours.
  - C. Reduce turbine load and close main steam line isolation valves within 8 hours.
  - D. Reduce power to less than 30% of rated.
2. Scram discharge volume high bypass may be used in shutdown or refuel to bypass scram discharge volume scram with control rod block for reactor protection system reset.
3. Bypassed if reactor pressure is less than 1055 psig and mode switch not in run.
4. Bypassed when turbine first stage pressure is less than 154 psig.
5. IRMs are bypassed when APRMs are onscale and the reactor mode switch is in the run position.
6. The design permits closure of any two lines without a scram being initiated.
7. When the reactor is subcritical and the reactor water temperature is less than 212°F, only the following trip functions need to be operable:
  - A. Mode switch in shutdown
  - B. Manual scram
  - C. High flux IRM
  - D. Scram discharge volume high level
  - E. APRM 15% scram
8. Not required to be operable when primary containment integrity is not required.
9. Not required if all main steamlines are isolated.



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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-260

BROWNS FERRY NUCLEAR PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 118  
License No. DPR-52

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Tennessee Valley Authority (the licensee) dated September 21, 1984, as supplemented June 6, 1985, 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-52 is hereby amended to read as follows:



(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 118, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective 90 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Domenic B. Vassallo, Chief  
Operating Reactors Branch #2  
Division of Licensing

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: September 19, 1985

ATTACHMENT TO LICENSE AMENDMENT NO. 118

FACILITY OPERATING LICENSE NO. DPR-52

DOCKET NO. 50-260

Revise Appendix A as follows:

1. Remove pages 31 and 35 and replace with revised pages 31 and 35.
2. The marginal lines on these pages denote the areas being changed.

LIMITING CONDITIONS FOR OPERATION

SURVEILLANCE REQUIREMENTS

3.1 REACTOR PROTECTION SYSTEM

Applicability

Applies to the instrumentation and associated devices which initiate a reactor scram.

Objective

To assure the operability of the reactor protection system.

Specification

- A. When there is fuel in the vessel, the setpoints, minimum number of trip systems, and minimum number of instrument channels that must be operable for each position of the mode switch shall be as given in Table 3.1.A.

4.1 REACTOR PROTECTION SYSTEM

Applicability

Applies to the surveillance of the instrumentation and associated devices which initiate reactor scram.

Objective

To specify the type and frequency of surveillance to be applied to the protection instrumentation.

Specification

- A. Instrumentation systems shall be functionally tested and calibrated as indicated in Tables 4.1.A and 4.1.B respectively.

NOTES FOR TABLE 3.1.A

1. There shall be two operable or tripped trip systems for each function. If the minimum number of operable instrument channels per trip system cannot be met for one trip system, trip the inoperable channels or entire trip system within one hour, or, alternatively, take the below listed action for that trip function. If the minimum number of operable instrument channels cannot be met by either trip system, the appropriate action listed below (refer to right-hand column of Table) shall be taken. An inoperable channel need not be placed in the tripped condition where this would cause the trip function to occur. In these cases, the inoperable channel shall be restored to operable status within two hours, or take the action listed below for that trip function.
  - A. Initiate insertion of operable rods and complete insertion of all operable rods within four hours. In refueling mode, suspend all operations involving core alterations and fully insert all operable control rods within one hour.
  - B. Reduce power level to IRM range and place mode switch in the Startup/Hot Standby position within 8 hours.
  - C. Reduce turbine load and close main steam line isolation valves within 8 hours.
  - D. Reduce power to less than 30% of rated.
2. Scram discharge volume high bypass may be used in shutdown or refuel to bypass scram discharge volume scram with control rod block for reactor protection system reset.
3. Bypassed if reactor pressure is less than 1055 psig and mode switch not in run.
4. Bypassed when turbine first stage pressure is less than 154 psig.
5. IRMs are bypassed when APRMs are onscale and the reactor mode switch is in the run position.
6. The design permits closure of any two lines without a scram being initiated.
7. When the reactor is subcritical and the reactor water temperature is less than 212°F, only the following trip functions need to be operable:
  - A. Mode switch in shutdown
  - B. Manual scram
  - C. High flux IRM
  - D. Scram discharge volume high level
  - E. APRM 15% scram
8. Not required to be operable when primary containment integrity is not required.
9. Not required if all main steamlines are isolated.



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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-296

BROWNS FERRY NUCLEAR PLANT, UNIT 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 94  
License No. DPR-68

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Tennessee Valley Authority (the licensee) dated September 21, 1984, as supplemented June 6, 1985, 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-68 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 94, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective 90 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Domenic B. Vassallo, Chief  
Operating Reactors Branch #2  
Division of Licensing

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: September 19, 1985

ATTACHMENT TO LICENSE AMENDMENT NO. 94

FACILITY OPERATING LICENSE NO. DPR-68

DOCKET NO. 50-296

Revise Appendix A as follows:

1. Remove pages 31 and 34 and replace with revised pages 31 and 34.
2. The marginal lines on these pages denote the areas being changed.

LIMITING CONDITIONS FOR OPERATION

SURVEILLANCE REQUIREMENTS

3.1 REACTOR PROTECTION SYSTEM

Applicability

Applies to the instrumentation and associated devices which initiate a reactor scram.

Objective

To assure the operability of the reactor protection system.

Specification

- A. When there is fuel in the vessel, the setpoints, minimum number of trip systems, and minimum number of instrument channels that must be operable for each position of the mode switch shall be as given in Table 3.1.A.

4.1 REACTOR PROTECTION SYSTEM

Applicability

Applies to the surveillance of the instrumentation and associated devices which initiate reactor scram.

Objective

To specify the type and frequency of surveillance to be applied to the protection instrumentation.

Specification

- A. Instrumentation systems shall be functionally tested and calibrated as indicated in Tables 4.1.A and 4.1.B respectively.



NOTES FOR TABLE 3.1.A

1. There shall be two operable or tripped trip systems for each function. If the minimum number of operable instrument channels per trip system cannot be met for one trip system, trip the inoperable channels or entire trip system within one hour, or, alternatively, take the below listed action for that trip function. If the minimum number of operable instrument channels cannot be met by either trip system, the appropriate action listed below (refer to right-hand column of Table) shall be taken. An inoperable channel need not be placed in the tripped condition where this would cause the trip function to occur. In these cases, the inoperable channel shall be restored to operable status within two hours, or take the action listed below for that trip function.
  - A. Initiate insertion of operable rods and complete insertion of all operable rods within four hours. In refueling mode, suspend all operations involving core alterations and fully insert all operable control rods within one hour.
  - B. Reduce power level to IRM range and place mode switch in the Startup/Hot Standby position within 8 hours.
  - C. Reduce turbine load and close main steam line isolation valves within 8 hours.
  - D. Reduce power to less than 30% of rated.
2. Scram discharge volume high bypass may be used in shutdown or refuel to bypass scram discharge volume scram with control rod block for reactor protection system reset.
3. Deleted
4. Bypassed when turbine first stage pressure is less than 154 psig.
5. IRMs are bypassed when APRMs are onscale and the reactor mode switch is in the run position.
6. The design permits closure of any two lines without a scram being initiated.
7. When the reactor is subcritical and the reactor water temperature is less than 212°F, only the following trip functions need to be operable:
  - A. Mode switch in shutdown
  - B. Manual Scram
  - C. High flux IRM
  - D. Scram discharge volume high level
  - E. APRM 15% scram
8. Not required to operable when primary containment integrity is not required.
9. Not required if all main steamlines are isolated.
10. Not required to be operable when the reactor pressure vessel head is not bolted to the vessel.
11. The APRM downscale trip function is only active when the reactor mode switch is in run.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 123 TO FACILITY OPERATING LICENSE NO. DPR-33

AMENDMENT NO. 118 TO FACILITY OPERATING LICENSE NO. DPR-52

AMENDMENT NO. 94 TO FACILITY OPERATING LICENSE NO. DPR-68

TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2 AND 3

DOCKET NOS. 50-259, 50-260 AND 50-296

1.0 INTRODUCTION

By letter dated September 21, 1984, the Tennessee Valley Authority (the licensee or TVA) requested amendments to Facility Operating License Nos. DPR-33, DPR-52 and DPR-68 for the Browns Ferry Nuclear Plant, Units 1, 2 and 3. By a letter dated June 6, 1985, the licensee revised the request, proposing a more extensive rewording of the affected Technical Specifications to better clarify the proposed new requirements.

The current Technical Specification Section 4.1 contains a requirement that upon the failure of a reactor protection system (RPS) channel in the unsafe condition all RPS channels monitoring the same variable must be functionally tested. This testing must be performed immediately before the trip system containing the failure is tripped. The trip system may be in the untripped position for up to eight hours to perform the functional test. The proposed revision is to delete the functional test requirement and replace it with a requirement to trip the channel containing the failure. The amendments would revise Section 4.1 and a footnote in Table 3.1.A, of the Technical Specifications.

2.0 EVALUATION

The RPS is arranged as two separately powered independent trip systems. Each trip system has three logics. Two of the logics are used to produce automatic trip signals, and the remaining logic is used for a manual trip signal. Each logic used for automatic trip receives input signals from at least one channel for each monitored parameter. There are usually four channels provided to monitor each critical parameter, with one channel for each automatic trip system logic. The outputs of the channel in a trip system are combined in a logic such that either channel trip will actuate its associated trip system. The simultaneous tripping of both trip systems will produce a reactor scram. The overall logic of the reactor trip system is termed "one-out-of-two taken twice."

Technical Specification Section 4.1 presently contains a requirement that upon the failure of a RPS channel in the unsafe condition all RPS

channels monitoring the same variable must be functionally tested. An unsafe failure means that the failure did not result in tripping the channel and thus, the trip system. The testing must be performed immediately before the trip system containing the failure is tripped. The current Technical Specifications allow leaving the trip system containing the unsafe failure in the untripped condition for up to eight hours in order to functionally test the other trip system. This could possibly lead to a situation which could impair the ability of the RPS to respond correctly since the trip system containing the failure can be left as is for up to eight hours in order to test the other trip system. To alleviate this situation, the licensee has proposed a revision to the Technical Specifications that deletes the functional test requirement and replaces it with a requirement to trip the channel containing the failure within one hour. By tripping a failed channel in one hour as opposed to eight hours, the reliability of the RPS is increased, increasing the margin of safety.

Based on our review of the Browns Ferry FSAR including the Technical Specifications, the information submitted by the licensee, and the NUREG-0123, "Standard Technical Specifications for General Electric Boiling Water Reactors," the staff concludes that the proposed Technical Specification revision permits the operation of the facilities in a manner that is consistent with the licensing basis and the accident analysis. Therefore, the licensee's proposed revision to the Technical Specification is acceptable.

### 3.0 ENVIRONMENTAL CONSIDERATIONS

The amendments involve a change in the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The staff has determined that the amendments involve 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 amendments involve no significant hazards consideration and there has been no public comment on such finding. Accordingly, the amendments meet 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 amendments.

### 4.0 CONCLUSION

We have 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, and (2) such activities will be conducted in compliance with the Commission's regulations, and the issuance of these amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: J. Mauck

Dated: September 19, 1985