

Docket File

Docket Nos. 50-259  
50-260  
50-296

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June 18, 1981

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

Dear Mr. Parris:

The Commission has issued the enclosed Amendment Nos. 71, 68 and 43 to Facility License Nos. DPR-33, DPR-52 and DPR-68 for the Browns Ferry Nuclear Plant, Unit Nos. 1, 2 and 3. These amendments are in response to your application dated September 9, 1980 (TVA BFNP TS 149), as supplemented by your letter of February 10, 1981 and subsequent discussions between the NRC staff and your staff.

These changes to the Technical Specifications involve incorporation of certain of the TMI-2 Lessons Learned Category "A" requirements. These requirements concern (1) Emergency Power Supply/Inadequate Core Cooling, (2) Valve Position Indication, (3) Containment Isolation, (4) Shift Technical Advisor, (5) Systems Integrity Measurements Program, and (6) Improved Iodine Measurements Capability. The changes to the Technical Specifications were requested by our generic letter of July 2, 1980 to "All Boiling Water Reactor Licensees."

Copies of the Safety Evaluation and Notice of Issuance are also enclosed.

Sincerely,

Thomas A. Ippolito, Chief  
Operating Reactors Branch #2  
Division of Licensing

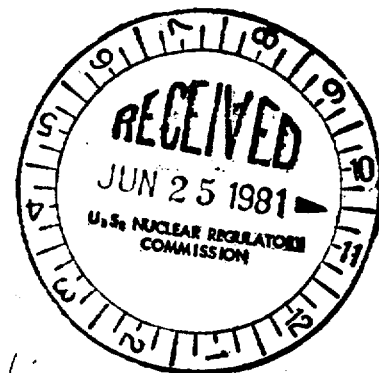
Enclosures:

1. Amendment No. 71 to DPR-33
2. Amendment No. 68 to DPR-52
3. Amendment No. 43 to DPR-68
4. Safety Evaluation
5. Notice

cc w/encs:  
See next page

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SURNAME	SNorris	RJClark	TAIppolito	TNovak	JALaverty		
DATE	4/28/81	5/01/81	5/5/81	5/5/81	5/22/81		



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

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June 18, 1981

Mr. Hugh G. Parris  
Manager of Power  
Tennessee Valley Authority  
500 A Chestnut Street, Tower II  
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These changes to the Technical Specifications involve incorporation of certain of the TMI-2 Lessons Learned Category "A" requirements. These requirements concern (1) Emergency Power Supply/Inadequate Core Cooling, (2) Valve Position Indication, (3) Containment Isolation, (4) Shift Technical Advisor, (5) Systems Integrity Measurements Program, and (6) Improved Iodine Measurements Capability. The changes to the Technical Specifications were requested by our generic letter of July 2, 1980 to "All Boiling Water Reactor Licensees."

Copies of the Safety Evaluation and Notice of Issuance are also enclosed.

Sincerely,

A handwritten signature in cursive script, appearing to read "T. Ippolito".

Thomas A. Ippolito, Chief  
Operating Reactors Branch #2  
Division of Licensing

Enclosures:

1. Amendment No. 71 to DPR-33
2. Amendment No. 68 to DPR-52
3. Amendment No. 43 to DPR-68
4. Safety Evaluation
5. Notice

cc w/encls:  
See next page

Mr. Hugh G. Parris

cc:

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Chairman, Limestone County Commission  
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State Office Building  
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Athens, Alabama 35611

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Agency  
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Atlanta, Georgia 30308

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Decatur, Alabama 35602

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Decatur, Alabama 35602



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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-259

BROWNS FERRY NUCLEAR PLANT, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 71  
License No. DPR-33

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendments by Tennessee Valley Authority (the licensee), dated September 9, 1980, as supplemented by letter dated February 10, 1981, 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 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. 71, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION



Thomas A. Ippolito, Chief  
Operating Reactors Branch #2  
Division of Licensing

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: June 18, 1981

ATTACHMENT TO LICENSE AMENDMENT NO. 71

FACILITY OPERATING LICENSE NO. DPR-33

DOCKET NO. 50-259

Revise Appendix A as follows:

1. Remove the following pages and replace with identically numbered pages:

61  
79/80  
109/110  
181/182  
358/359  
360/361

2. The underlined pages are those being changed; marginal lines on these pages indicate the area being revised. Overleaf pages are provided for convenience.
3. Add the following new page:

105a

4. Remove the following page:

359a

6. Channel shared by RPS and Primary Containment & Reactor Vessel Isolation Control System. A channel failure may be a channel failure in each system.
7. A train is considered a trip system.
8. Two out of three SGTS trains required. A failure of more than one will require action A and F.
9. There is only one trip system with auto transfer to two power sources.
10. Refer to Table 3.7.A and its notes for a listing of Isolation Valve Groups and their initiating signals.

TABLE 3.2.F  
Surveillance Instrumentation

<u>Minimum # of Operable Instrument Channels</u>	<u>Instrument #</u>	<u>Instrument</u>	<u>Type Indication and Range</u>	<u>Notes</u>
2	H <sub>2</sub> M - 76 - 37 H <sub>2</sub> M - 76 - 39	Drywell H <sub>2</sub> Concentration	0.1 - 20%	(1)
1	H <sub>2</sub> M - 76 - 38	Suppression Chamber H <sub>2</sub> Concentration	0.1 - 20%	(1)
2	PdI-64-137 PdI-64-138	Drywell to Suppression Chamber Differential pressure	Indicator 0 to 2 psid	(1) (2) (3)
1/Valve		Relief Valve Tailpipe Thermocouple Temperature or Acoustic Monitor on Relief Valve Tailpipe		(5)

79



NOTES FOR TABLE 3.2.F

- (1) From and after the date that one of these parameters is reduced to one indication, continued operation is permissible during the succeeding thirty days unless such instrumentation is sooner made operable.
- (2) From and after the date that one of these parameters is not indicated in the control room, continued operation is permissible during the succeeding seven days unless such instrumentation is sooner made operable.
- (3) If the requirements of notes (1) and (2) cannot be met, and if one of the indications cannot be restored in (6) hours, an orderly shutdown shall be initiated and the reactor shall be in a cold condition within 24 hours.
- (4) These surveillance instruments are considered to be redundant to each other.
- (5) From and after the date that both the acoustic monitor and the temperature indication on any one valve fails to indicate in the control room, continued operation is permissible during the succeeding thirty days, unless one of the two monitoring channels is sooner made operable. If both the primary and secondary indication on any SRV tail pipe is inoperable, the torus temperature will be monitored at least once per shift to observe any unexplained temperature increase which might be indicative of an open SRV.

TABLE 4.2.F  
 MINIMUM TEST AND CALIBRATION FREQUENCY FOR SURVEILLANCE INSTRUMENTATION

<u>Instrument Channel</u>	<u>Calibration Frequency</u>	<u>Instrument Check</u>
17 Relief valve Tailpipe Thermocouple Temperature	NA	Once/month (24)
18 Acoustic Monitor on Relief Valve Tailpipe	Once/cycle (25)	Once/month (26)

105a

NOTES FOR TABLES 4.2.A THROUGH 4.2.H

1. Functional tests shall be performed once per month.
2. Functional tests shall be performed before each startup with a required frequency not to exceed once per week.
3. This instrumentation is excepted from the functional test definition. The functional test will consist of injecting a simulated electrical signal into the measurement channel.
4. Tested during logic system functional tests.
5. Refer to Table 4.1.B.
6. The logic system functional tests shall include a calibration once per operating cycle of time delay relays and timers necessary for proper functioning of the trip systems.
7. The functional test will consist of verifying continuity across the inhibit with a volt-ohmmeter.
8. Instrument checks shall be performed in accordance with the definition of Instrument Check (see Section 1.0, Definitions). An instrument check is not applicable to a particular setpoint, such as Upscale, but is a qualitative check that the instrument is behaving and/or indicating in an acceptable manner for the particular plant condition. Instrument check is included in this table for convenience and to indicate that an Instrument Check will be performed on the instrument. Instrument checks are not required when these instruments are not required to be operable or are tripped.
9. Calibration frequency shall be once/year.
10. Tested during logic system functional test of SGTS.
11. Portion of the logic is functionally tested during outage only.
12. The detector will be inserted during each operating cycle and the proper amount of travel into the core verified.
13. Functional test will consist of applying simulated inputs (see note 3). Local alarm lights representing upscale and downscale trips will be verified, but no rod block will be produced at this time. The inoperative trip will be initiated to produce a rod block (SRM and IRM inoperative also bypassed with the mode switch in RUN). The functions that cannot be verified to produce a rod block directly will be verified during the operating cycle.

NOTES FOR TABLES 4.2.A THROUGH 4.2.H (Continued)

14. Upscale trip is functionally tested during functional test time as required by section 4.7.B.1.a and 4.7.C.1.c.
15. The flow bias comparator will be tested by putting one flow unit in "Test" (producing 1/2 scram) and adjusting the test input to obtain comparator rod block. The flow bias upscale will be verified by observing a local upscale trip light during operation and verified that it will produce a rod block during the operating cycle.
16. Performed during operating cycle. Portions of the logic is checked more frequently during functional tests of the functions that produce a rod block.
17. This calibration consists of removing the function from service and performing an electronic calibration of the channel.
18. Functional test is limited to the condition where secondary containment integrity is not required as specified in sections 3.7.C.2 and 3.7.C.3.
19. Functional test is limited to the time where the SGTS is required to meet the requirements of section 4.7.C.1.c.
20. Calibration of the comparator requires the inputs from both recirculation loops to be interrupted, thereby removing the flow bias signal to the APRM and RBM and scrambling the reactor. This calibration can only be performed during an outage.
21. Logic test is limited to the time where actual operation of the equipment is permissible.
22. One channel of either the reactor zone or refueling zone Reactor Building Ventilation Radiation Monitoring System may be administratively bypassed for a period not to exceed 24 hours for functional testing and calibration.
23. The Reactor Cleanup System Space Temperature monitors are RTD's that feed a temperature switch in the control room. The temperature switch may be tested monthly by using a simulated signal. The RTD itself is a highly reliable instrument and less frequent testing is necessary.
24. This instrument check consists of comparing the thermocouple readings for all valves for consistence and for nominal expected values (not required during refueling outages).
25. During each refueling outage, all acoustic monitoring channels shall be calibrated. This calibration includes verification of accelerometer response due to mechanical excitation in the vicinity of the sensor.
26. This instrument check consists of comparing the background signal levels for all valves for consistency and for nominal expected values (not required during refueling outages).

3.6.C Coolant Leakage

3. If the condition in 1 or 2 above cannot be met, an orderly shutdown shall be initiated and the reactor shall be shutdown in the Cold Condition within 24 hours.

D. Relief Valves

1. When more than one relief valve or one or more safety valves are known to be failed, an orderly shutdown shall be initiated and the reactor depressurized to less than 105 psig within 24 hours.

E. Jet Pumps

1. Whenever the reactor is in the startup or run modes, all jet pumps shall be operable. If it is determined that a jet pump is inoperable, or if two or more jet pump flow instrument failures occur and cannot be corrected within 12 hours, an orderly shutdown shall be initiated and the reactor shall be shutdown in the Cold Condition within 24 hours.

4.6.C Coolant LeakageD. Relief Valves

1. At least one safety valve and approximately one-half of all relief valves shall be bench-checked or replaced with a bench-checked valve each operating cycle. All 13 valves (2 safety and 11 relief) will have been checked or replaced upon the completion of every second cycle.
2. Once during each operating cycle, each relief valve shall be manually opened until thermocouples and acoustic monitors downstream of the valve indicate steam is flowing from the valve.
3. The integrity of the relief/safety valve bellows shall be continuously monitored.
4. At least one relief valve shall be disassembled and inspected each operating cycle.

E. Jet Pumps

1. Whenever there is recirculation flow with the reactor in the startup or run modes with both recirculation pumps running, jet pump operability shall be checked daily by verifying that the following conditions do not occur simultaneously:
  - a. The two recirculation loops have a flow imbalance of 15% or more when the pumps are operated at the same speed.

3.6.E Jet Pumps3.6.F Jet Pump Flow Mismatch

1. The reactor shall not be operated with one recirculation loop out of service for more than 24 hours. With the reactor operating, if one recirculation loop is out of service, the plant shall be placed in a hot shutdown condition within 24 hours unless the loop is sooner returned to service.
2. Following one pump operation, the discharge valve of the low speed pump may not be opened unless the speed of the faster pump is less than 50% of its rated speed.
3. Steady state operation with both recirculation pumps out of service for up to 12 hrs is permitted. During such interval restart of the recirculation pumps is permitted, provided the loop discharge temperature is within 75°F of the saturation temperature of the reactor vessel water as determined by dome pressure.

G. Structural Integrity

1. The structural integrity of the primary system shall be

4.6.E Jet Pumps

- b. The indicated value of core flow rate varies from the value derived from loop flow measurements by more than 10%.
- c. The diffuser to lower plenum differential pressure reading on an individual jet pump varies from the mean of all jet pump differential pressures by more than 10%.

2. Whenever there is recirculation flow with the reactor in the Startup or Run Mode and one recirculation pump is operating with the equalizer valve closed, the diffuser to lower plenum differential pressure shall be checked daily and the differential pressure of an individual jet pump in a loop shall not vary from the mean of all jet pump differential pressures in that loop by more than 10%.

F. Jet Pump Flow Mismatch

1. Recirculation pump speeds shall be checked and logged at least once per day.

G. Structural Integrity

1. Table 4.6.A together with supplementary notes, specifies the

## 6.0 ADMINISTRATIVE CONTROLS

### 6.8 Minimum Plant Staffing

The minimum plant staffing for monitoring and conduct of operations is as follows.

1. A licensed senior operator shall be present at the site at all times when there is fuel in the reactor.
2. A licensed operator shall be in the control room whenever there is fuel in the reactor.
3. A licensed senior operator shall be in direct charge of a reactor refueling operation; i.e., able to devote full time to the refueling operation.
4. A health physics technician shall be present at the facility at all times there is fuel in the reactor.
5. Two licensed operators shall be in the control room during any cold startups, while shutting down the reactor, and during recovery from unit trip.
6. Either the plant superintendent or the assistant plant superintendent shall have acquired the experience and training normally required for examination by the NRC for a Senior Reactor Operator's License, whether or not the examination is taken. In addition, either the operations supervisor or the assistant operations supervisor shall have an SRO-license.
7. A Shift Technical Advisor shall be present at the site at all times.

### 6.9 Environmental Qualification

- A. By no later than June 30, 1982 all safety-related electrical equipment in the facility shall be qualified in accordance with the provisions of: Division of Operating Reactors "Guidelines for Evaluating Environmental Qualification of Class IE Electrical Equipment in Operating Reactors" (DOR Guidelines); or, NUREG-0588 "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment," December 1979. Copies of these documents are attached to Order for Modification of License DPR-33 dated October 24, 1980.
- B. By no later than December 1, 1980, complete and auditable records must be available and maintained at a central location which describe the environmental qualification method used for all safety-related electrical equipment in sufficient detail to document the degree of compliance with the DOR Guidelines or NUREG-0588. Thereafter, such records should be updated and maintained current as equipment is replaced, further tested, or otherwise further qualified.

#### 6.10 Integrity Systems Outside Containment

A program shall be implemented to reduce leakage from systems outside containment that would or could contain highly radioactive fluids during a serious transient or accident to as low as practical levels. This program shall include the following:

- 1) Provisions establishing preventive maintenance and periodic visual inspection requirements at a frequency not to exceed refueling cycle intervals. Systems subject to this program are (1) residual heat removal, (2) core spray, (3) reactor water cleanup, (4) HPCI, and (5) RCIC.
- 2) System leak test requirements, to the extent permitted by system design and radiological conditions, for each system at a frequency in accordance with ASME code section XI. The systems subject to this testing are (1) residual heat removal, (2) core spray, (3) HPCI, and (4) RCIC.

#### 6.11 Iodine Monitoring

A program shall be implemented which will ensure the capability to accurately determine the airborne iodine concentration in vital areas\* under accident conditions. This program shall include the following:

- 1) Training of personnel,
- 2) Procedures for monitoring, and
- 3) Provisions for maintenance of sampling and analysis equipment.

\*Areas requiring personnel access for establishing hot shutdown condition.



6.0 ADMINISTRATIVE CONTROLS

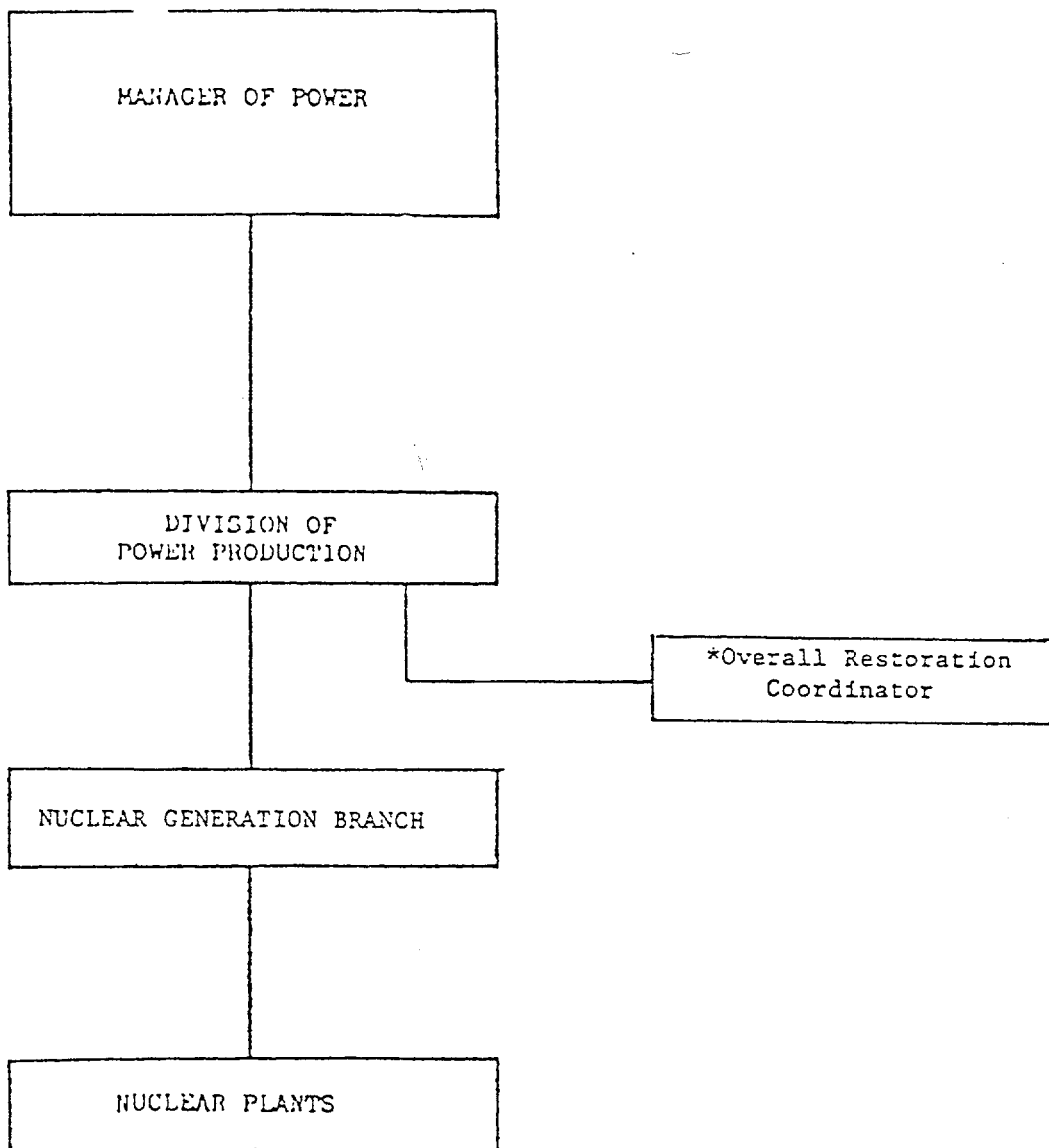
Table 6.8.A

<u>Minimum Shift Crew Requirements</u> <u>Shift Position</u>	<u>Units in Operation</u>			<u>Type of License</u>
	<u>1</u>	<u>2</u>	<u>3</u>	
Shift Engineers (SE)	1	1	1	SRO
Assistant Shift Engineers (ASE)	0	1	2	SRO
Licensed Reactor Operator <sup>1</sup>	1	1	1	RO
Unit Operators (UO)	1	2	3	RO
Assistant Unit Operators (AUO)	4	4	6	None
Shift Technical Advisor	1	1	1	None <sup>2</sup>
Health Physics Technician	<u>1</u>	<u>1</u>	<u>1</u>	None
Minimum Shift Crew	9	11	15	

Notes: SRO - Senior Reactor Operator  
RO - Reactor Operator

Note for Table 6.8.A

1. This position is normally filled by an assistant shift engineer, but as a minimum it may be filled by a licensed reactor operator. When the incumbent is not a senior reactor operator, he shall not be assigned duties requiring him to direct licensed activities of reactor operators.
2. The Shift Technical Advisor shall have a bachelor's degree or equivalent in a scientific or engineering discipline with specific training in plant design and transient and accident response and analysis.



\* This is a temporary position which will only continue until all restoration commitments have been completed.

BROWNS FERRY NUCLEAR PLANT  
FINAL SAFETY ANALYSIS REPORT

TVA Office of Power Organization for  
Operation of Nuclear Plants

FIGURE 6.1-1



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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-260

BROWNS FERRY NUCLEAR PLANT, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 68  
License No. DPR-52

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendments by Tennessee Valley Authority (the licensee), dated September 9, 1980, as supplemented by letter dated February 10, 1981, 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 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. 68, 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 the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Thomas A. Ippolito, Chief  
Operating Reactors Branch #2  
Division of Licensing

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: June 18, 1981

ATTACHMENT TO LICENSE AMENDMENT NO. 68

FACILITY OPERATING LICENSE NO. DPR-52

DOCKET NO. 50-260

Revise Appendix A as follows:

1. Remove the following pages and replace with identically numbered pages:

61  
79/80  
109/110  
181/182  
357/358  
359/360

2. The underlined pages are those being changed; marginal lines on these pages indicate the area being revised. Overleaf pages are provided for convenience.

3. Add the following new page:

105a

4. Remove the following page:

359a

6. Channel shared by RPS and Primary Containment & Reactor Vessel Isolation Control System. A channel failure may be a channel failure in each system.
7. A train is considered a trip system.
8. Two out of three SGTS trains required. A failure of more than one will require action A and F.
9. There is only one trip system with auto transfer to two power sources.
10. Refer to Table 3.7.A and its notes for a listing of Isolation Valve Groups and their initiating signals.

TABLE 3.2.F  
Surveillance Instrumentation

<u>Minimum # of Operable Instrument Channels</u>	<u>Instrument #</u>	<u>Instrument</u>	<u>Type Indication and Range</u>	<u>Notes</u>
2	H <sub>2</sub> M - 76 - 94 H <sub>2</sub> M - 76 - 104	Drywell and Torus Hydrogen Concentration	0.1 - 20%	(1)
2	PdI-64-137 PdI-64-138	Drywell to Suppression Chamber Differential pressure	Indicator 0 to 2 psid	(1) (2) (3)
1/Valve		Relief Valve Tailpipe Thermocouple Temperature or Acoustic Monitor on Relief Valve Tailpipe		(5)

79

NOTES FOR TABLE 3.2.P

- (1) From and after the date that one of these parameters is reduced to one indication, continued operation is permissible during the succeeding thirty days unless such instrumentation is sooner made operable.
- (2) From and after the date that one of these parameters is not indicated in the control room, continued operation is permissible during the succeeding seven days unless such instrumentation is sooner made operable.
- (3) If the requirements of notes (1) and (2) cannot be met, and if one of the indications cannot be restored in (6) hours, an orderly shutdown shall be initiated and the reactor shall be in a cold condition within 24 hours.
- (4) These surveillance instruments are considered to be redundant to each other.
- (5) From and after the date that both the acoustic monitor and the temperature indication on any one valve fails to indicate in the control room, continued operation is permissible during the succeeding thirty days, unless one of the two monitoring channels is sooner made operable. If both the primary and secondary indication on any SRV tail pipe is inoperable, the torus temperature will be monitored at least once per shift to observe any unexplained temperature increase which might be indicative of an open SRV.



TABLE 4.2.F  
 MINIMUM TEST AND CALIBRATION FREQUENCY FOR SURVEILLANCE INSTRUMENTATION

<u>Instrument Channel</u>	<u>Calibration Frequency</u>	<u>Instrument Check</u>
17 Relief valve Tailpipe Thermocouple Temperature	NA	Once/month (24)
18 Acoustic Monitor on Relief Valve Tailpipe	Once/cycle (25)	Once/month (26)

105a

NOTES FOR TABLES 4.2.A THROUGH 4.2.H

1. Functional tests shall be performed once per month.
2. Functional tests shall be performed before each startup with a required frequency not to exceed once per week.
3. This instrumentation is excepted from the functional test definition. The functional test will consist of injecting a simulated electrical signal into the measurement channel.
4. Tested during logic system functional tests.
5. Refer to Table 4.1.B.
6. The logic system functional tests shall include a calibration once per operating cycle of time delay relays and timers necessary for proper functioning of the trip systems.
7. The functional test will consist of verifying continuity across the inhibit with a volt-ohmmeter.
8. Instrument checks shall be performed in accordance with the definition of Instrument Check (see Section 1.0, Definitions). An instrument check is not applicable to a particular setpoint, such as Upscale, but is a qualitative check that the instrument is behaving and/or indicating in an acceptable manner for the particular plant condition. Instrument check is included in this table for convenience and to indicate that an Instrument Check will be performed on the instrument. Instrument checks are not required when these instruments are not required to be operable or are tripped.
9. Calibration frequency shall be once/year.
10. Tested during logic system functional test of SGTS.
11. Portion of the logic is functionally tested during outage only.
12. The detector will be inserted during each operating cycle and the proper amount of travel into the core verified.
13. Functional test will consist of applying simulated inputs (see note 3). Local alarm lights representing upscale and downscale trips will be verified, but no rod block will be produced at this time. The inoperative trip will be initiated to produce a rod block (SRM and IRM inoperative also bypassed with the mode switch in RUN). The functions that cannot be verified to produce a rod block directly will be verified during the operating cycle.

NOTES FOR TABLES 4.2.A THROUGH 4.2.H (Continued)

14. Upscale trip is functionally tested during functional test time as required by section 4.7.B.1.a and 4.7.C.1.c.
15. The flow bias comparator will be tested by putting one flow unit in "Test" (producing 1/2 scram) and adjusting the test input to obtain comparator rod block. The flow bias upscale will be verified by observing a local upscale trip light during operation and verified that it will produce a rod block during the operating cycle.
16. Performed during operating cycle. Portions of the logic is checked more frequently during functional tests of the functions that produce a rod block.
17. This calibration consists of removing the function from service and performing an electronic calibration of the channel.
18. Functional test is limited to the condition where secondary containment integrity is not required as specified in sections 3.7.C.2 and 3.7.C.3.
19. Functional test is limited to the time where the SGTS is required to meet the requirements of section 4.7.C.1.c.
20. Calibration of the comparator requires the inputs from both recirculation loops to be interrupted, thereby removing the flow bias signal to the APRM and RBM and scrambling the reactor. This calibration can only be performed during an outage.
21. Logic test is limited to the time where actual operation of the equipment is permissible.
22. One channel of either the reactor zone or refueling zone Reactor Building Ventilation Radiation Monitoring System may be administratively bypassed for a period not to exceed 24 hours for functional testing and calibration.
23. The Reactor Cleanup System Space Temperature monitors are RTD's that feed a temperature switch in the control room. The temperature switch may be tested monthly by using a simulated signal. The RTD itself is a highly reliable instrument and less frequent testing is necessary.
24. This instrument check consists of comparing the thermocouple readings for all valves for consistence and for nominal expected values (not required during refueling outages).
25. During each refueling outage, all acoustic monitoring channels shall be calibrated. This calibration includes verification of accelerometer response due to mechanical excitation in the vicinity of the sensor.
26. This instrument check consists of comparing the background signal levels for all valves for consistency and for nominal expected values (not required during refueling outages).

3.6.C Coolant Leakage

3. If the condition in 1 or 2 above cannot be met, an orderly shutdown shall be initiated and the reactor shall be shutdown in the Cold Condition within 24 hours.

D. Relief Valves

1. When more than one relief valve or one or more safety valves are known to be failed, an orderly shutdown shall be initiated and the reactor depressurized to less than 105 psig within 24 hours.

E. Jet Pumps

1. Whenever the reactor is in the startup or run modes, all jet pumps shall be operable. If it is determined that a jet pump is inoperable, or if two or more jet pump flow instrument failures occur and cannot be corrected within 12 hours, an orderly shutdown shall be initiated and the reactor shall be shutdown in the Cold Condition within 24 hours.

4.6.C Coolant LeakageD. Relief Valves

1. At least one safety valve and approximately one-half of all relief valves shall be bench-checked or replaced with a bench-checked valve each operating cycle. All 13 valves (2 safety and 11 relief) will have been checked or replaced upon the completion of every second cycle.
2. Once during each operating cycle, each relief valve shall be manually opened until thermocouples and acoustic monitors downstream of the valve indicate steam is flowing from the valve.
3. The integrity of the relief/safety valve bellows shall be continuously monitored.
4. At least one relief valve shall be disassembled and inspected each operating cycle.

E. Jet Pumps

1. Whenever there is recirculation flow with the reactor in the startup or run modes with both recirculation pumps running, jet pump operability shall be checked daily by verifying that the following conditions do not occur simultaneously:
  - a. The two recirculation loops have a flow imbalance of 15% or more when the pumps are operated at the same speed.

LIMITING CONDITIONS FOR OPERATION

3.6.E Jet Pumps

3.6.F Jet Pump Flow Mismatch

1. The reactor shall not be operated with one recirculation loop out of service for more than 24 hours. With the reactor operating, if one recirculation loop is out of service, the plant shall be placed in a hot shutdown condition within 24 hours unless the loop is sooner returned to service.
2. Following one pump operation, the discharge valve of the low speed pump may not be opened unless the speed of the faster pump is less than 50% of its rated speed.
3. Steady state operation with both recirculation pumps out of service for up to 12 hrs is permitted. During such interval restart of the recirculation pumps is permitted, provided the loop discharge temperature is within 75°F of the saturation temperature of the reactor vessel water as determined by dome pressure. The total elapsed time in natural circulation and one pump operation must be no greater than 24 hrs.

G. Structural Integrity

1. The structural integrity of the primary system shall be

SURVEILLANCE REQUIREMENT

4.6.E Jet Pumps

- b. The indicated value of core flow rate varies from the value derived from loop flow measurements by more than 10%.
- c. The diffuser to lower plenum differential pressure reading on an individual jet pump varies from the mean of all jet pump differential pressures by more than 10%.

2. Whenever there is recirculation flow with the reactor in the Startup or Run Mode and one recirculation pump is operating with the equalizer valve closed, the diffuser to lower plenum differential pressure shall be checked daily and the differential pressure of an individual jet pump in a loop shall not vary from the mean of all jet pump differential pressures in that loop by more than 10%.

F. Jet Pump Flow Mismatch

1. Recirculation pump speeds shall be checked and logged at least once per day.

G. Structural Integrity

1. Table 4.6.A together with supplementary notes, specifies the

FOOTNOTES

1. A single submittal may be made for a multiple unit station. The submittal should combine those sections that are common to all units at the station.
2. The term "forced reduction in power" is normally defined in the electric power industry as the occurrence of a component failure or other condition which requires that the load on the unit be reduced for corrective action immediately or up to and including the very next weekend. Note that routine preventive maintenance, surveillance, and calibration activities requiring power reductions are not covered by this section.
3. The term "forced outage" is normally defined in the electric power industry as the occurrence of a component failure or other condition which requires that the unit be removed from service for corrective action immediately or up to and including the very next weekend.
4. This tabulation supplements the requirements of §20.407 of 10 CFR Part 20.
5. Each integrated leak rate test of the secondary containment shall be the subject of a summary technical report. This report should include data on the wind speed, wind direction, outside and inside temperatures during the test, concurrent reactor building pressure, and emergency ventilation flow rate. The report shall also include analyses and interpretations of those data which demonstrate compliance with the specified leak rate limits.

## 6.0 ADMINISTRATIVE CONTROLS

### 6.8 Minimum Plant Staffing

The minimum plant staffing for monitoring and conduct of operations is as follows.

1. A licensed senior operator shall be present at the site at all times when there is fuel in the reactor.
2. A licensed operator shall be in the control room whenever there is fuel in the reactor.
3. A licensed senior operator shall be in direct charge of a reactor refueling operation; i.e., able to devote full time to the refueling operation.
4. A health physics technician shall be present at the facility at all times there is fuel in the reactor.
5. Two licensed operators shall be in the control room during any cold startups, while shutting down the reactor, and during recovery from unit trip.
6. Either the plant superintendent or the assistant plant superintendent shall have acquired the experience and training normally required for examination by the NRC for a Senior Reactor Operator's License, whether or not the examination is taken. In addition, either the operations supervisor or the assistant operations supervisor shall have an SRO license.
7. A Shift Technical Advisor shall be present at the site at all times.

### 6.9 Environmental Qualification

- A. By no later than June 30, 1982 all safety-related electrical equipment in the facility shall be qualified in accordance with the provisions of: Division of Operating Reactors "Guidelines for Evaluating Environmental Qualification of Class IE Electrical Equipment in Operating Reactors" (DOR Guidelines); or, NUREG-0588 "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment," December 1979. Copies of these documents are attached to Order for Modification of License DPR-52 dated October 24, 1980.
- B. By no later than December 1, 1980; complete and auditable records must be available and maintained at a central location which describe the environmental qualification method used for all safety-related electrical equipment in sufficient detail to document the degree of compliance with the DOR Guidelines or NUREG-0588. Thereafter, such records should be updated and maintained current as equipment is replaced, further tested, or otherwise further qualified.

#### 6.10 Integrity of Systems Outside Containment

A program shall be implemented to reduce leakage from systems outside containment that would or could contain highly radioactive fluids during a serious transient or accident to as low as practical levels. This program shall include the following:

- 1) Provisions establishing preventive maintenance and periodic visual inspection requirements at a frequency not to exceed refueling cycle intervals. Systems subject to this program are (1) residual heat removal, (2) core spray, (3) reactor water cleanup, (4) HPCI, and (5) RCIC.
- 2) System leak test requirements, to the extent permitted by system design and radiological conditions, for each system at a frequency in accordance with ASME code section XI. The systems subject to this testing are (1) residual heat removal, (2) core spray, (3) HPCI, and (4) RCIC.

#### 6.11 Iodine Monitoring

A program shall be implemented which will ensure the capability to accurately determine the airborne iodine concentration in vital areas\* under accident conditions. This program shall include the following:

- 1) Training of personnel,
- 2) Procedures for monitoring, and
- 3) Provisions for maintenance of sampling and analysis equipment.

\*Areas requiring personnel access for establishing hot shutdown condition.



6.0 ADMINISTRATIVE CONTROLS

Table 6.8.A

<u>Minimum Shift Crew Requirements</u> <u>Shift Position</u>	<u>Units in Operation</u>			<u>Type of License</u>
	<u>1</u>	<u>2</u>	<u>3</u>	
Shift Engineers (SE)	1	1	1	SRO
Assistant Shift Engineers (ASE)	0	1	2	SRO
Licensed Reactor Operator <sup>1</sup>	1	1	1	RO
Unit Operators (UO)	1	2	3	RO
Assistant Unit Operators (AUO)	4	4	6	None
Shift Technical Advisor	1	1	1	None <sup>2</sup>
Health Physics Technician	<u>1</u>	<u>1</u>	<u>1</u>	None
Minimum Shift Crew	9	11	15	

Notes: SRO - Senior Reactor Operator  
RO - Reactor Operator

Note for Table 6.8.A

1. This position is normally filled by an assistant shift engineer, but as a minimum it may be filled by a licensed reactor operator. When the incumbent is not a senior reactor operator, he shall not be assigned duties requiring him to direct licensed activities of reactor operators.
2. The Shift Technical Advisor shall have a bachelor's degree or equivalent in a scientific or engineering discipline with specific training in plant design and transient and accident response and analysis.



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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-296

BROWNS FERRY NUCLEAR PLANT, UNIT NO. 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 43  
License No. DPR-68

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendments by Tennessee Valley Authority (the licensee), dated September 9, 1980, as supplemented by letter dated February 10, 1981, 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 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. 43, 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 the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Thomas A. Ippolito, Chief  
Operating Reactors Branch #2  
Division of Licensing

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: June 18, 1981

ATTACHMENT TO LICENSE AMENDMENT NO. 43

FACILITY OPERATING LICENSE NO. DPR-68

DOCKET NO. 50-296

Revise Appendix A as follows:

1. Remove the following pages and replace with identically numbered pages:

63  
82  
83  
107  
192  
388  
389  
390

2. Marginal lines on the above pages indicate revised area.

3. Add the following new page:

102a

4. Remove the following page:

389a

3. There are four channels per steam line of which two must be operable.
4. Only required in Run Mode (interlocked with Mode Switch).
5. Not required in Run Mode (bypassed by mode switch).
6. Channel shared by RPS and Primary Containment & Reactor Vessel Isolation Control System. A channel failure may be a channel failure in each system.
7. A train is considered a trip system.
8. Two out of three SGTS trains required. A failure of more than one will require action A and F.
9. There is only one trip system with auto transfer to two power sources.
10. Refer to Table 3.7.A and its notes for a listing of Isolation Valve Groups and their initiating signals.

TABLE 3.2.F

Surveillance Instrumentation

<u>Minimum # of Operable Instrument Channels</u>	<u>Instrument #</u>	<u>Instrument</u>	<u>Type Indication and Range</u>	<u>Notes</u>
2	H <sub>2</sub> M - 76 - 94 H <sub>2</sub> M - 76 - 104	Drywell and Torus Hydrogen Concentration	0.1 - 20%	(1)
2	PdI-64-137 PdI-64-138	Drywell to Suppression Chamber Differential pressure	Indicator 0 to 2 psid	(1) (2) (3)
1/Valve		Relief Valve Tailpipe Thermocouple Temperature or Acoustic Monitor on Relief Valve Tailpipe		(5)

82

NOTES FOR TABLE 3.2.F

- (1) From and after the date that one of these parameters is reduced to one indication, continued operation is permissible during the succeeding thirty days unless such instrumentation is sooner made operable.
- (2) From and after the date that one of these parameters is not indicated in the control room, continued operation is permissible during the succeeding seven days unless such instrumentation is sooner made operable.
- (3) If the requirements of notes (1) and (2) cannot be met, and if one of the indications cannot be restored in (6) hours, an orderly shutdown shall be initiated and the reactor shall be in a cold condition within 24 hours.
- (4) These surveillance instruments are considered to be redundant to each other.
- (5) From and after the date that both the acoustic monitor and the temperature indication on any one valve fails to indicate in the control room, continued operation is permissible during the succeeding thirty days, unless one of the two monitoring channels is sooner made available. If both the primary and secondary indication on any SRV tailpipe is inoperable, the torus temperature will be monitored at least once per shift to observe any unexplained temperature increase which might be indicative of an open SRV.

TABLE 4.2.F  
MINIMUM TEST AND CALIBRATION FREQUENCY FOR SURVEILLANCE INSTRUMENTATION

<u>Instrument Channel</u>	<u>Calibration Frequency</u>	<u>Instrument Check</u>
17 Relief valve Tailpipe Thermocouple Temperature	NA	Once/month (24)
18 Acoustic Monitor on Relief Valve Tailpipe	Once/cycle (25)	Once/month (26)



NOTES FOR TABLES 4.2.A THROUGH 4.2.H (Continued)

14. Upscale trip is functionally tested during functional test time as required by section 4.7.B.1.a and 4.7.C.1.c.
15. The flow bias comparator will be tested by putting one flow unit in "Test" (producing 1/2 scram) and adjusting the test input to obtain comparator rod block. The flow bias upscale will be verified by observing a local upscale trip light during operation and verified that it will produce a rod block during the operating cycle.
16. Performed during operating cycle. Portions of the logic is checked more frequently during functional tests of the functions that produce a rod block.
17. This calibration consists of removing the function from service and performing an electronic calibration of the channel.
18. Functional test is limited to the condition where secondary containment integrity is not required as specified in sections 3.7.C.2 and 3.7.C.3.
19. Functional test is limited to the time where the SGTS is required to meet the requirements of section 4.7.C.1.c.
20. Calibration of the comparator requires the inputs from both recirculation loops to be interrupted, thereby removing the flow bias signal to the APRM and RBM and scrambling the reactor. This calibration can only be performed during an outage.
21. Logic test is limited to the time where actual operation of the equipment is permissible.
22. One channel of either the reactor zone or refueling zone Reactor Building Ventilation Radiation Monitoring System may be administratively bypassed for a period not to exceed 24 hours for functional testing and calibration.
23. The Reactor Cleanup System Space Temperature monitors are RTD's that feed a temperature switch in the control room. The temperature switch may be tested monthly by using a simulated signal. The RTD itself is a highly reliable instrument and less frequent testing is necessary.
24. This instrument check consists of comparing the thermocouple readings for all valves for consistence and for nominal expected values (not required during refueling outages).
25. During each refueling outage, all acoustic monitoring channels shall be calibrated. This calibration includes verification of accelerometer response due to mechanical excitation in the vicinity of the sensor.
26. This instrument check consists of comparing the background signal levels for all valves for consistency and for nominal expected values (not required during refueling outages).

1.6 PRIMARY SYSTEM BOUNDARYD. Relief Valves

1. When one or more valves, safety or relief, is known to be failed, an orderly shutdown shall be initiated and the reactor depressurized to less than 105 psig within 24 hours.

4.6 PRIMARY SYSTEM BOUNDARYD. Relief Valves

1. At least one safety valve and approximately one-half of all relief valves shall be bench-checked or replaced with a bench-checked valve each operating cycle. All 13 valves (2 safety and 11 relief) will have been checked or replaced upon the completion of every second cycle.
2. Once during each operating cycle, each relief valve shall be manually opened until thermocouples and acoustic monitors downstream of the valve indicate steam is flowing from the valve.
3. The integrity of the relief/safety valve bellows shall be continuously monitored.
4. At least one relief valve shall be disassembled and inspected each operating cycle.

## 6.0 ADMINISTRATIVE CONTROLS

### 6.8 Minimum Plant Staffing

The minimum plant staffing for monitoring and conduct of operations is as follows.

1. A licensed senior operator shall be present at the site at all times when there is fuel in the reactor.
2. A licensed operator shall be in the control room whenever there is fuel in the reactor.
3. A licensed senior operator shall be in direct charge of a reactor refueling operation; i.e., able to devote full time to the refueling operation.
4. A health physics technician shall be present at the facility at all times there is fuel in the reactor.
5. Two licensed operators shall be in the control room during any cold startups, while shutting down the reactor, and during recovery from unit trip.
6. Either the plant superintendent or the assistant plant superintendent shall have acquired the experience and training normally required for examination by the NRC for a Senior Reactor Operator's License, whether or not the examination is taken. In addition, either the operations supervisor or the assistant operations supervisor shall have an SRO license.
7. A Shift Technical Advisor shall be present at the site at all times.

### 6.9 Environmental Qualification

- A. By no later than June 30, 1982 all safety-related electrical equipment in the facility shall be qualified in accordance with the provisions of: Division of Operating Reactors "Guidelines for Evaluating Environmental Qualification of Class IE Electrical Equipment in Operating Reactors" (DOR Guidelines); or, NUREG-0588 "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment," December 1979. Copies of these documents are attached to Order for Modification of License DPR-68 dated October 24, 1980.
- B. By no later than December 1, 1980, complete and auditable records must be available and maintained at a central location which describe the environmental qualification method used for all safety-related electrical equipment in sufficient detail to document the degree of compliance with the DOR Guidelines or NUREG-0588. Thereafter, such records should be updated and maintained current as equipment is replaced, further tested, or otherwise further qualified.

#### 6.10 Integrity of Systems Outside Containment

A program shall be implemented to reduce leakage from systems outside containment that would or could contain highly radioactive fluids during a serious transient or accident to as low as practical levels. This program shall include the following:

- 1) Provisions establishing preventive maintenance and periodic visual inspection requirements at a frequency not to exceed refueling cycle intervals. Systems subject to this program are (1) residual heat removal, (2) core spray, (3) reactor water cleanup, (4) HPCI, and (5) RCIC.
- 2) System leak test requirements, to the extent permitted by system design and radiological conditions, for each system at a frequency in accordance with ASME code section XI. The systems subject to this testing are (1) residual heat removal, (2) core spray, (3) HPCI, and (4) RCIC.

#### 6.11 Iodine Monitoring

A program shall be implemented which will ensure the capability to accurately determine the airborne iodine concentration in vital areas\* under accident conditions. This program shall include the following:

- 1) Training of personnel,
- 2) Procedures for monitoring, and
- 3) Provisions for maintenance of sampling and analysis equipment.

\*Areas requiring personnel access for establishing hot shutdown condition.

6.0 ADMINISTRATIVE CONTROLS

Table 6.8.A

<u>Minimum Shift Crew Requirements</u> <u>Shift Position</u>	<u>Units in Operation</u>			<u>Type of License</u>
	<u>1</u>	<u>2</u>	<u>3</u>	
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Assistant Shift Engineers (ASE)	0	1	2	SRO
Licensed Reactor Operator <sup>1</sup>	1	1	1	RO
Unit Operators (UO)	1	2	3	RO
Assistant Unit Operators (AUO)	4	4	6	None
Shift Technical Advisor	1	1	1	None <sup>2</sup>
Health Physics Technician	<u>1</u>	<u>1</u>	<u>1</u>	None
Minimum Shift Crew	9	11	15	

Notes: SRO - Senior Reactor Operator  
RO - Reactor Operator

Note for Table 6.8.A

1. This position is normally filled by an assistant shift engineer, but as a minimum it may be filled by a licensed reactor operator. When the incumbent is not a senior reactor operator, he shall not be assigned duties requiring him to direct licensed activities of reactor operators.
2. The Shift Technical Advisor shall have a bachelor's degree or equivalent in a scientific or engineering discipline with specific training in plant design and transient and accident response and analysis.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 71 TO FACILITY OPERATING LICENSE NO. DPR-33

AMENDMENT NO. 68 TO FACILITY OPERATING LICENSE NO. DPR-52

AMENDMENT NO. 43 TO FACILITY OPERATING LICENSE NO. DPR-68

TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT, UNIT NOS. 1, 2 AND 3

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

1.0 Introduction

By letter dated September 9, 1980 (TVA BFNP TS 149), and supplemented by letter dated February 10, 1981, the Tennessee Valley Authority (the licensee or TVA) requested changes to the Technical Specifications (Appendix A) appended to Facility Operating License Nos. DPR-33, DPR-52 and DPR-68 for the Browns Ferry Nuclear Plant, Unit Nos. 1, 2 and 3. The proposed amendments and revised Technical Specifications would incorporate certain of the TMI-2 Lessons Learned Category "A" requirements. The licensee's request is in response to the NRC's generic letter "To All Boiling Water Reactor Licensees" dated July 2, 1980.

2.0 Background Information

By our letter dated September 13, 1979, we issued to all operating nuclear power plants requirements established as a result of our review of the TMI-2 accident. Certain of these requirements, designated Lessons Learned Category "A" requirements, were to have been completed by the licensee prior to any operation subsequent to January 1, 1980. Our evaluation of the licensee's compliance with these Category "A" items was attached to our letter to the Tennessee Valley Authority dated February 29, 1980 wherein we concluded that TVA had satisfactorily met all Category "A" requirements.

In order to provide reasonable assurance that operating reactor facilities are maintained within the limits determined acceptable following the implementation of the TMI-2 Lessons Learned Category "A" items, we requested that licensees amend their TS to incorporate additional Limiting Conditions of Operation and Surveillance Requirements, as appropriate. This request was transmitted to all licensees on July 2, 1980. Included therein were model specifications that we had determined to be acceptable. The licensee's application is in direct response to our request. Each of the issues identified by the NRC staff and the licensee's response is discussed in the Evaluation below.

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### 3.0 Evaluation

#### 1. Emergency Power Supply/Inadequate Core Cooling

As applicable to Boiling Water Reactors (BWRs), we indicated that water level instrumentation is important to post-accident monitoring and that surveillance of this instrumentation should be performed. The licensee's response to this request stated that the current surveillance requirements for the reactor water level instrumentation at Browns Ferry meet or exceed our guidance.

We have reviewed the current specifications (Tables 3.2.A, 3.2.B, 3.2.F, 4.1.A, 4.2.A, 4.2.B and 4.2.F) and determined that water level instrumentation is included. The specifications provide ACTION statements for inoperable instrument channels. Surveillance requirements for instrument checks and calibration are also included. The frequency of surveillance meets or exceeds our guidelines. Based on this review, we conclude that no changes are required to satisfy our request.

#### 2. Valve Position Indication

Our requirements for installation of a reliable position indicating system for relief and safety valves was based on the need to provide the operator with a diagnostic aid to reduce the ambiguity between indications that might indicate either an open relief/safety valve or a small line break. Such a system did not need to be safety grade provided that backup methods of determining valve position are available.

The licensee's request would add both the primary indicating system (relief valve tailpipe thermocouple temperature detector) and the secondary indicating system (acoustic monitor on relief valve tailpipe) to the list of surveillance instrumentation in Table 3.2.F that must be available during plant operation.

Since the indicating system provides no automatic action, the licensee proposed that limiting conditions for operation in the event of an inoperable channel are not appropriate and that the Technical Specifications should be limited to surveillance requirements. The licensee did not present a basis or justification for this position or provide an evaluation of the safety significance of failure of both valve position indicators on any relief valve tailpipe or discuss alternate methods that might be available to control room operators to diagnose failure of a relief valve to fully seat. Based on submittals by other licensees, we agree with the basic premise that there are a number of alternative backup methods for determining that a valve is open. For example, a periodic check of the torus temperature for any unexplained temperature increase which might be indicative of a stuck open or partially open relief valve would be an acceptable interim action condition. However, these alternate methods

would not provide indications that a valve has reseated. Therefore, we suggested that the TSs should require at least a primary or backup system of valve position indication to be operable or the reactor should be shutdown after 30 days. A 30-day limit is consistent with current practices for post-accident monitoring instrumentation. Accordingly, we find the licensee's submittal as modified by the NRC staff and agreed to by the licensee to be acceptable. In the submittal of February 10, 1981, TVA had proposed a monthly check of the valve position instrument channels and a once-per cycle calibration frequency for the acoustic monitors. These requirements are being added to Table 4.2.F. We find that the licensee's proposed surveillance requirements on the relief valve position indicators satisfy our guidelines and are acceptable.

### 3. Containment Isolation

Our letter of July 2, 1980 indicated that the specifications should include a Table of Containment Isolation Valves which reflect the diverse isolation signal requirement of this Lessons Learned issue.

Table 3.7.A of the Technical Specifications lists the "Primary Containment Isolation Valves" along with the minimum number required to be operable on each line, the operating characteristics of the valves, their normal position and the action of the valves on the "Primary Containment and Reactor Building Isolation Instrumentation" along with the trip level settings and the systems that are isolated when these trip level settings are exceeded. Based on our review, we have determined that the current technical specifications satisfy our requirements and that no changes are necessary. However, the licensee proposes to add a note to Table 3.2.A relating this table to Table 3.7.A; the proposed change is acceptable.

### 4. Shift Technical Advisor (STA)

Our request indicated that the TSs related to minimum shift manning should be revised to reflect the augmentation of a STA. The licensee's application would add one STA to each shift to perform the function of accident assessment. The individual performing this function will have at least a bachelor's degree or equivalent in a scientific or engineering discipline with special training in plant design, and response and analysis of the plant for transients and accidents. Part of the STA duties are related to operating experience review function. Based on our review, we find the licensee's submittal to satisfy our requirements and is acceptable.



#### 5. Integrity of Systems Outside Containment

Our letter dated July 2, 1980, indicated that the license should be amended by adding a license condition related to a Systems Integrity Measurements Program. Such a condition would require the licensee to effect an appropriate program to eliminate or prevent the release of significant amounts of radioactivity to the environment via leakage from engineered safety systems and auxiliary systems, which are located outside reactor containment.

The licensee's application did not address this issue. Discussions between members of our staffs indicated that (1) the licensee has implemented a leakage reduction program as discussed in TVA's submittal of October 17, 1979 and as reported in our evaluation dated February 29, 1980, and (2) the application did not address this issue since TSs are not involved.

The licensee's representatives indicated that they did not object to including such provisions. They suggested that they be incorporated into the Administrative Controls Section of the specifications. Accordingly, we have included the requirements and determined that our request has been satisfied.

#### 6. Iodine Monitoring

Our letter dated July 2, 1980, indicated that the license should be amended by adding a license condition related to iodine monitoring. Such a condition would require the licensee to effect a program which would ensure the capability to determine the airborne iodine concentration in areas requiring personnel access under accident conditions.

The licensee's application did not address this issue. Discussions between members of our staffs indicated that (1) the licensee has implemented a program to satisfy this issue, as reported in our evaluation dated February 29, 1980. As discussed in TVA's submittal of October 17, 1979, this program includes the training of personnel, procedures for monitoring, and provisions for maintenance of sampling and analysis equipment; (2) the licensee's application did not address this issue since TSs are not involved.

The licensee's representatives indicated that they did not object to including such provisions as part of the Administrative Controls Section of the TSs. Accordingly, we have included the requirement and determined that our request has been satisfied. To include this and the above requirement on system integrity, the existing Section 6.9 - "Overall Restoration Coordinator" was deleted. This position was created following the cable fire which occurred at Browns Ferry on March 22, 1975 to coordinate the restoration work and programs to return Units 1 and 2 to service. This function has been completed

and the present Section 6.9 is not appropriate. The present Section 6.10 regarding "Environmental Qualification" has been renumbered as Section 6.9; this section was imposed as a separate page by Order dated October 24, 1980. The above requirements on systems integrity and iodine monitoring were added as Sections 6.10 and 6.11, respectively.

#### 4.0 Environmental Consideration

We have determined that these amendments do 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 these amendments involve an action which is insignificant from the standpoint of environmental impact, and pursuant to 10 CFR Section 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 these amendments.

#### 5.0 Conclusion

We have concluded based on the considerations discussed above that: (1) because the amendments do not involve a significant increase in the probability or consequences of accidents previously considered and do not involve a significant decrease in a safety margin, the amendments do 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 these amendments will not be inimical to the common defense and security or to the health and safety of the public.

Dated: June 18, 1981

UNITED STATES NUCLEAR REGULATORY COMMISSIONDOCKET NOS. 50-259, 50-260, AND 50-296TENNESSEE VALLEY AUTHORITYNOTICE OF ISSUANCE OF AMENDMENTS TO FACILITYOPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 71 to Facility Operating License-No. DPR-33, Amendment No. 68 to Facility Operating License No. DPR-52, and Amendment No. 43 to Facility Operating License No. DPR-68 issued to Tennessee Valley Authority (the licensee), which revised Technical Specifications for operation of the Browns Ferry Nuclear Plant, Units Nos. 1, 2, and 3, located in Limestone County, Alabama. The amendments are effective as of the date of issuance.

These changes to the Technical Specifications involve incorporation of certain of the TMI-2 Lessons Learned Category "A" requirements. These requirements concern (1) Emergency Power Supply/Inadequate Core Cooling, (2) Valve Position Indication, (3) Containment Isolation, (4) Shift Technical Advisor, (5) Systems Integrity Measurements Program, and (6) Improved Iodine Measurements Capability.

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 rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and 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) an environmental impact statement or negative declaration

and environmental impact appraisal need not be prepared in connection with issuance of these amendments.

For further details with respect to this action, see (1) the application for amendments dated September 9, 1980, as supplemented by letter dated February 10, 1981, (2) Amendment No. 71 to License No. DPR-33, Amendment No. 68 to License No. DPR-52, and Amendment No. 43 to License No. DPR-68, and (3) 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, NW., Washington, D. C. and at the Athens Public Library, South and Forrest, Athens, Alabama 35611. A copy of items (2) and (3) 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 18th day of June 1981.

FOR THE NUCLEAR REGULATORY COMMISSION



Thomas A. Ippolito, Chief  
Operating Reactors Branch #2  
Division of Licensing