

December 31, 1990

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

*Posted  
Amdt. 182 to DPR-52*

Mr. Oliver D. Kingsley, Jr.  
Senior Vice President, Nuclear Power  
Tennessee Valley Authority  
6N 38A Lookout Place  
1101 Market Street  
Chattanooga, Tennessee 37402-2801

Dear Mr. Kingsley:

SUBJECT: ISSUANCE OF AMENDMENTS (TAC NOS. 77280, 77281 AND 77282) (TS 282)

The Commission has issued the enclosed Amendment Nos. 177, 182, and 148 to Facility Operating Licenses Nos. DPR-33, DPR-52 and DPR-68 for the Browns Ferry Nuclear Plant, Units 1, 2 and 3, respectively. These amendments are in response to your application dated August 6, 1990.

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

Sincerely,

Original signed by  
David H. Moran for  
Thierry M. Ross, Project Manager  
Project Directorate II-4  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Enclosures:

- 1. Amendment No. 177 to License No. DPR-33
- 2. Amendment No. 182 to License No. DPR-52
- 3. Amendment No. 148 to License No. DPR-68
- 4. Safety Evaluation

cc w/enclosures:  
See next page

DFC	: PDII-4/LA	: PDII-4/PE	: PDII-4/PM	: OGC	: PDII-4/DD	: PDII-4/D	: SRXB/BC
IAM	: Krebs/MLK	: DMoran/as	: TRoss	: [Signature]	: SBTack	: FHebdon	: RJones
DATE	: 12/3/90	: 1/1/90	: 12/4/90	: 12/17/90	: 12/31/90	: 12/31/90	: 12/31/90

Mr. Oliver D. Kingsley, Jr.

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. 177  
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 August 6, 1990, 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. 177, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Frederick J. Hebdon, Director  
Project Directorate II-4  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: December 31, 1990

ATTACHMENT TO LICENSE AMENDMENT NO. 177

FACILITY OPERATING LICENSE NO. DPR-33

DOCKET NO. 50-259

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change. Overleaf pages\* are provided to maintain document completeness.

REMOVE

3.2/4.2-7

3.2/4.2-8

3.2/4.2-12

3.2/4.2-13

INSERT

3.2/4.2-7

3.2/4.2-8\*

3.2/4.2-12

3.2/4.2-13\*

TABLE 3.2.A  
PRIMARY CONTAINMENT AND REACTOR BUILDING ISOLATION INSTRUMENTATION

Minimum No.  
Instrument  
Channels Operable  
Per Trip Sys(1)(11)

	Function	Trip Level Setting	Action (1)	Remarks
2	Instrument Channel - Reactor Low Water Level(6)	$\geq 538''$ above vessel zero	A or (B and E)	1. Below trip setting does the following: a. Initiates Reactor Building Isolation b. Initiates Primary Containment Isolation (Groups 2, 3, and 6) c. Initiates SGTS
1	Instrument Channel - Reactor High Pressure (PS-68-93 and 94)	$100 \pm 15$ psig	D	1. Above trip setting isolates the shutdown cooling suction valves of the RHR system.
2	Instrument Channel - Reactor Low Water Level (LIS-3-56A-D, SW #1)	$\geq 378''$ above vessel zero	A	1. Below trip setting initiates Main Steam Line Isolation
2	Instrument Channel - High Drywell Pressure (6) (PS-64-56A-D)	$\leq 2.5$ psig	A or (B and E)	1. Above trip setting does the following: a. Initiates Reactor Building Isolation b. Initiates Primary Containment Isolation c. Initiates SGTS

BFN  
Unit 1

3.2/4.2-7

Amendment 177

TABLE 3.2.A (Continued)  
PRIMARY CONTAINMENT AND REACTOR BUILDING ISOLATION INSTRUMENTATION

Minimum No. Instrument Channels Operable Per Trip Sys(1)(11)	Function	Trip Level Setting	Action (1)	Remarks
2	Instrument Channel - High Radiation Main Steam Line Tunnel (6)	3 times normal rated full power background (13)	B	1. Above trip setting initiates Main Steam Line Isolation
2	Instrument Channel - Low Pressure Main Steam Line	$\geq 825$ psig (4)	B	1. Below trip setting initiates Main Steam Line Isolation
2(3)	Instrument Channel - High Flow Main Steam Line	$\leq 140\%$ of rated steam flow	B	1. Above trip setting initiates Main Steam Line Isolation
2(12)	Instrument Channel - Main Steam Line Tunnel High Temperature	$\leq 200^\circ\text{F}$	B	1. Above trip setting initiates Main Steam Line Isolation.
2(14)	Instrument Channel - Reactor Water Cleanup System Floor Drain High Temperature	160 - 180°F	C	1. Above trip setting initiates Isolation of Reactor Water Cleanup Line from Reactor and Reactor Water Return Line.
2	Instrument Channel - Reactor Water Cleanup System Space High Temperature	160 - 180°F	C	1. Same as above
1	Instrument Channel - Reactor Building Ventilation High Radiation - Reactor Zone	$\leq 100$ mr/hr or downscale	G	1. 1 upscale or 2 downscale will a. Initiate SGTS b. Isolate reactor zone and refueling floor. c. Close atmosphere control system.

BFN  
Unit 1

3.2/4.2-8

NOTES FOR TABLE 3.2.A

1. Whenever the respective functions are required to be OPERABLE there shall be two OPERABLE or tripped trip systems for each function. If the first column cannot be met for one of the trip systems, that trip system or logic for that function shall be tripped (or the appropriate action listed below shall be taken). If the column cannot be met for all trip systems, the appropriate action listed below shall be taken.
  - A. Initiate an orderly shutdown and have the reactor in Cold Shutdown in 24 hours.
  - B. Initiate an orderly load reduction and have Main Steam Lines isolated within eight hours.
  - C. Isolate Reactor Water Cleanup System.
  - D. Administratively control the affected system isolation valves in the closed position within one hour and then declare the affected system inoperable.
  - E. Initiate primary containment isolation within 24 hours.
  - F. The handling of spent fuel will be prohibited and all operations over spent fuels and open reactor wells shall be prohibited.
  - G. Isolate the reactor building and start the standby gas treatment system.
  - H. Immediately perform a logic system functional test on the logic in the other trip systems and daily thereafter not to exceed 7 days.
  - I. Deleted
  - J. Withdraw TIP.
  - K. Manually isolate the affected lines. Refer to Section 4.2.E for the requirements of an inoperable system.
  - L. If one SGTS train is inoperable take actions H or A and F. If two SGTS trains are inoperable take actions A and F.
2. When it is determined that a channel is failed in the unsafe condition, the other channels that monitor the same variable shall be functionally tested immediately before the trip system or logic for that function is tripped. The trip system or the logic for that function may remain untripped for short periods of time to allow functional testing of the other trip system or logic for that function.
3. There are four sensors per steam line of which at least one sensor per trip system must be OPERABLE.

NOTES FOR TABLE 3.2.A (Cont'd)

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 actions A and F.
9. Deleted
10. Refer to Table 3.7.A and its notes for a listing of Isolation Valve Groups and their initiating signals.
11. A channel may be placed in an inoperable status for up to four hours for required surveillance without placing the trip system in the tripped condition provided at least one OPERABLE channel in the same trip system is monitoring that parameter.
12. A channel contains four sensors, all of which must be OPERABLE for the channel to be OPERABLE.

Power operations permitted for up to 30 days with 15 of the 16 temperature switches OPERABLE.

In the event that normal ventilation is unavailable in the main steam line tunnel, the high temperature channels may be bypassed for a period of not to exceed four hours. During periods when normal ventilation is not available, such as during the performance of secondary containment leak rate tests, the control room indicators of the affected space temperatures shall be monitored for indications of small steam leaks. In the event of rapid increases in temperature (indicative of steam line break), the operator shall promptly close the main steam line isolation valves.

13. The nominal setpoints for alarm and reactor trip (1.5 and 3.0 times background, respectively) are established based on the normal background at full power. The allowable setpoints for alarm and reactor trip are 1.2-1.8 and 2.4-3.6 times background, respectively.
14. Requires two independent channels from each physical location; there are two locations.



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. 182  
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 August 6, 1990, 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.

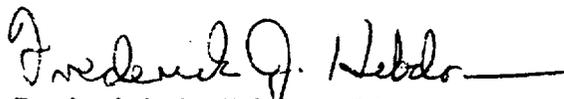
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-52 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 182, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Frederick J. Hebdon, Director  
Project Directorate II-4  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: December 31, 1990

ATTACHMENT TO LICENSE AMENDMENT NO. 182

FACILITY OPERATING LICENSE NO. DPR-52

DOCKET NO. 50-260

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change. Overleaf pages\* are provided to maintain document completeness.

REMOVE

3.2/4.2-7

3.2/4.2-8

3.2/4.2-12

3.2/4.2-13

INSERT

3.2/4.2-7

3.2/4.2-8\*

3.2/4.2-12

3.2/4.2-13\*

TABLE 3.2.A  
PRIMARY CONTAINMENT AND REACTOR BUILDING ISOLATION INSTRUMENTATION

Minimum No. Instrument Channels Operable Per Trip Sys(1)(11)	Function	Trip Level Setting	Action (1)	Remarks
* 2	Instrument Channel - Reactor Low Water Level(6) (LIS-3-203 A-D)	$\geq 538''$ above vessel zero	A or (B and E)	1. Below trip setting does the following: a. Initiates Reactor Building Isolation b. Initiates Primary Containment Isolation c. Initiates SGTS
1	Instrument Channel - Reactor High Pressure (PS-68-93 and 94)	$100 \pm 15$ psig	D	1. Above trip setting isolates the shutdown cooling suction valves of the RHR system.
2	Instrument Channel - Reactor Low Water Level (LIS-3-56A-D)	$\geq 378''$ above vessel zero	A	1. Below trip setting initiates Main Steam Line Isolation
2	Instrument Channel - High Drywell Pressure (6) (PIS-64-56A-D)	$\leq 2.5$ psig	A or (B and E)	1. Above trip setting does the following: a. Initiates Reactor Building Isolation b. Initiates Primary Containment Isolation c. Initiates SGTS

\* The automatic initiation capability of this instrument channel is not required to be OPERABLE while the Reactor Vessel water level monitoring modification is being performed. Manual initiation capability of the associated systems will be available during that time the automatic initiation logic is out-of-service.

TABLE 3.2.A (Continued)  
PRIMARY CONTAINMENT AND REACTOR BUILDING ISOLATION INSTRUMENTATION

Minimum No. Instrument Channels Operable Per Trip Sys(1)(11)	Function	Trip Level Setting	Action (1)	Remarks
2	Instrument Channel - High Radiation Main Steam Line Tunnel (6)	$\leq 3$ times normal rated full power background	B	1. Above trip setting initiates Main Steam Line Isolation
2	Instrument Channel - Low Pressure Main Steam Line (PIS-1-72, 76, 82, 86)	$\geq 825$ psig (4)	B	1. Below trip setting initiates Main Steam Line Isolation
2(3)	Instrument Channel - High Flow Main Steam Line (PdIS-1-13A-D, 25A-D, 36A-D, 50A-D)	$\leq 140\%$ of rated steam flow	B	1. Above trip setting initiates Main Steam Line Isolation
2(12)	Instrument Channel - Main Steam Line Tunnel High Temperature	$\leq 200^\circ\text{F}$	B	1. Above trip setting initiates Main Steam Line Isolation.
2(14)	Instrument Channel - Reactor Water Cleanup System Floor Drain High Temperature	160 - 180°F	C	1. Above trip setting initiates Isolation of Reactor Water Cleanup Line from Reactor and Reactor Water Return Line.
2	Instrument Channel - Reactor Water Cleanup System Space High Temperature	160 - 180°F	C	1. Same as above
2	Instrument Channel - Reactor Water Cleanup System Pipe Trench	$\leq 150^\circ\text{F}$	C	1. Same as above
1	Instrument Channel - Reactor Building Ventilation High Radiation - Reactor Zone	$\leq 100$ mr/hr or downscale	G	1. 1 upscale or 2 downscale will a. Initiate SGTS b. Isolate reactor zone and refueling floor. c. Close atmosphere control system.

BRN  
Unit 2

3.2/4.2-8

AMENDMENT NO. 156

NOTES FOR TABLE 3.2.A

1. Whenever the respective functions are required to be OPERABLE there shall be two OPERABLE or tripped trip systems for each function. If the first column cannot be met for one of the trip systems, that trip system or logic for that function shall be tripped (or the appropriate action listed below shall be taken). If the column cannot be met for all trip systems, the appropriate action listed below shall be taken.
  - A. Initiate an orderly shutdown and have the reactor in Cold Shutdown in 24 hours.
  - B. Initiate an orderly load reduction and have Main Steam Lines isolated within eight hours.
  - C. Isolate Reactor Water Cleanup System.
  - D. Administratively control the affected system isolation valves in the closed position within one hour and then declare the affected system inoperable.
  - E. Initiate primary containment isolation within 24 hours.
  - F. The handling of spent fuel will be prohibited and all operations over spent fuels and open reactor wells shall be prohibited.
  - G. Isolate the reactor building and start the standby gas treatment system.
  - H. Immediately perform a logic system functional test on the logic in the other trip systems and daily thereafter not to exceed 7 days.
  - I. Deleted
  - J. Withdraw TIP.
  - K. Manually isolate the affected lines. Refer to Section 4.2.E for the requirements of an inoperable system.
  - L. If one SGTS train is inoperable take actions H or A and F. If two SGTS trains are inoperable take actions A and F.
2. When it is determined that a channel is failed in the unsafe condition, the other channels that monitor the same variable shall be functionally tested immediately before the trip system or logic for that function is tripped. The trip system or the logic for that function may remain untripped for short periods of time to allow functional testing of the other trip system or logic for that function.
3. There are four sensors per steam line of which at least one sensor per trip system must be OPERABLE.

NOTES FOR TABLE 3.2.A (Cont'd)

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 actions A and F.
9. Deleted
10. Refer to Table 3.7.A and its notes for a listing of Isolation Valve Groups and their initiating signals.
11. A channel may be placed in an inoperable status for up to four hours for required surveillance without placing the trip system in the tripped condition provided at least one OPERABLE channel in the same trip system is monitoring that parameter.
12. A channel contains four sensors, all of which must be OPERABLE for the channel to be OPERABLE.

Power operations permitted for up to 30 days with 15 of the 16 temperature switches OPERABLE.

In the event that normal ventilation is unavailable in the main steam line tunnel, the high temperature channels may be bypassed for a period of not to exceed four hours. During periods when normal ventilation is not available, such as during the performance of secondary containment leak rate tests, the control room indicators of the affected space temperatures shall be monitored for indications of small steam leaks. In the event of rapid increases in temperature (indicative of steam line break), the operator shall promptly close the main steam line isolation valves.

13. The nominal setpoints for alarm and reactor trip (1.5 and 3.0 times background, respectively) are established based on the normal background at full power. The allowable setpoints for alarm and reactor trip are 1.2-1.8 and 2.4-3.6 times background, respectively.
14. Requires two independent channels from each physical location; there are two locations.



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. 148  
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 August 6, 1990, 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. 148, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Frederick J. Hebdon, Director  
Project Directorate II-4  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: December 31, 1990

ATTACHMENT TO LICENSE AMENDMENT NO. 148

FACILITY OPERATING LICENSE NO. DPR-68

DOCKET NO. 50-296

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change. Overleaf pages\* are provided to maintain document completeness.

REMOVE

3.2/4.2-7

3.2/4.2-8

3.2/4.2-12

3.2/4.2-13

INSERT

3.2/4.2-7

3.2/4.2-8\*

3.2/4.2-12

3.2/4.2-13\*

TABLE 3.2.A  
PRIMARY CONTAINMENT AND REACTOR BUILDING ISOLATION INSTRUMENTATION

Minimum No. Instrument Channels Operable Per Trip Sys(1)(11)	Function	Trip Level Setting	Action (1)	Remarks
2	Instrument Channel - Reactor Low Water Level(6)	$\geq 538''$ above vessel zero	A or (B and E)	1. Below trip setting does the following: a. Initiates Reactor Building Isolation b. Initiates Primary Containment Isolation (Groups 2, 3, and 6) c. Initiates SGTS
1	Instrument Channel - Reactor High Pressure (PS-68-93 and 94)	$100 \pm 15$ psig	D	1. Above trip setting isolates the shutdown cooling suction valves of the RHR system.
2	Instrument Channel - Reactor Low Water Level (LIS-3-56A-D, SW #1)	$\geq 378''$ above vessel zero	A	1. Below trip setting initiates Main Steam Line Isolation
2	Instrument Channel - High Drywell Pressure (6) (PS-64-56A-D)	$\leq 2.5$ psig	A or (B and E)	1. Above trip setting does the following: a. Initiates Reactor Building Isolation b. Initiates Primary Containment Isolation c. Initiates SGTS

BFN  
Unit 3

3.2/4.2-7

Amendment 148

TABLE 3.2.A (Continued)  
PRIMARY CONTAINMENT AND REACTOR BUILDING ISOLATION INSTRUMENTATION

Minimum No. Instrument Channels Operable Per Trip Sys(1)(11)	Function	Trip Level Setting	Action (1)	Remarks
2	Instrument Channel - High Radiation Main Steam Line Tunnel (6)	3 times normal rated full power background (13)	B	1. Above trip setting initiates Main Steam Line Isolation
2	Instrument Channel - Low Pressure Main Steam Line	$\geq 825$ psig (4)	B	1. Below trip setting initiates Main Steam Line Isolation
2(3)	Instrument Channel - High Flow Main Steam Line	$\leq 140\%$ of rated steam flow	B	1. Above trip setting initiates Main Steam Line Isolation
2(12)	Instrument Channel - Main Steam Line Tunnel High Temperature	$\leq 200^\circ\text{F}$	B	1. Above trip setting initiates Main Steam Line Isolation.
2(14)	Instrument Channel - Reactor Water Cleanup System Floor Drain High Temperature	160 - 180°F	C	1. Above trip setting initiates Isolation of Reactor Water Cleanup Line from Reactor and Reactor Water Return Line.
2	Instrument Channel - Reactor Water Cleanup System Space High Temperature	160 - 180°F	C	1. Same as above
1	Instrument Channel - Reactor Building Ventilation High Radiation - Reactor Zone	$\leq 100$ mr/hr or downscale	G	1. 1 upscale or 2 downscale will a. Initiate SGTS b. Isolate reactor zone and refueling floor. c. Close atmosphere control system.

BFN  
Unit 3

3.2/4.2-8

NOTES FOR TABLE 3.2.A

1. Whenever the respective functions are required to be OPERABLE, there shall be two OPERABLE or tripped trip systems for each function. If the first column cannot be met for one of the trip systems, that trip system or logic for that function shall be tripped (or the appropriate action listed below shall be taken). If the column cannot be met for all trip systems, the appropriate action listed below shall be taken.
  - A. Initiate an orderly shutdown and have the reactor in COLD SHUTDOWN CONDITION in 24 hours.
  - B. Initiate an orderly load reduction and have main steam lines isolated within eight hours.
  - C. Isolate Reactor Water Cleanup System.
  - D. Administratively control the affected system isolation valves in the closed position within one hour and then declare the affected system inoperable.
  - E. Initiate primary containment isolation within 24 hours.
  - F. The handling of spent fuel will be prohibited and all operations over spent fuels and open reactor wells shall be prohibited.
  - G. Isolate the reactor building and start the standby gas treatment system.
  - H. Immediately perform a logic system functional test on the logic in the other trip systems and daily thereafter not to exceed 7 days.
  - I. DELETED
  - J. Withdraw TIP.
  - K. Manually isolate the affected lines. Refer to Section 4.2.E for the requirements of an inoperable system.
  - L. If one SGTS train is inoperable take action H or actions A and F. If two SGTS trains are inoperable take actions A and F.
2. When it is determined that a channel is failed in the unsafe condition, the other channels that monitor the same variable shall be functionally tested immediately before the trip system or logic for that function is tripped. The trip system or the logic for that function may remain untripped for short periods of time to allow functional testing of the other trip system or logic for that function.
3. There are four sensors per steam line of which at least one sensor per trip system must be OPERABLE.

NOTES FOR TABLE 3.2.A (Cont'd)

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 actions A and F.
9. DELETED
10. Refer to Table 3.7.A and its notes for a listing of Isolation Valve Groups and their initiating signals.
11. A channel may be placed in an inoperable status for up to four hours for required surveillance without placing the trip system in the tripped condition provided at least one OPERABLE channel in the same trip system is monitoring that parameter.
12. A channel contains four sensors, all of which must be OPERABLE for the channel to be OPERABLE.

Power operations permitted for up to 30 days with 15 of the 16 temperature switches OPERABLE.

In the event that normal ventilation is unavailable in the main steam line tunnel, the high temperature channels may be bypassed for a period of not to exceed four hours. During periods when normal ventilation is not available, such as during the performance of secondary containment leak rate tests, the control room indicators of the affected space temperatures shall be monitored for indications of small steam leaks. In the event of rapid increases in temperature (indicative of steam line break), the operator shall promptly close the main steam line isolation valves.

13. The nominal setpoints for alarm and reactor trip (1.5 and 3.0 times background, respectively) are established based on the normal background at full power. The allowable setpoints for alarm and reactor trip are 1.2-1.8 and 2.4-3.6 times background, respectively.
14. Requires two independent channels from each physical location; there are two locations.



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

ENCLOSURE 4

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 177 TO FACILITY OPERATING LICENSE NO. DPR-33

AMENDMENT NO. 182 TO FACILITY OPERATING LICENSE NO. DPR-52

AMENDMENT NO. 148 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

On August 6, 1990, the Tennessee Valley Authority (TVA) proposed to revise the Browns Ferry (BFN) Nuclear Plant Technical Specifications (TS) for Units 1, 2, and 3 by revising Table 3.2.A, Note 1.D to allow the operators one hour to isolate shutdown cooling under certain circumstances. This TS change will resolve a deficiency noted by the TVA TS task force.

This TS change will resolve a deficiency noted by the TVA TS Task Force.

The Browns Ferry Technical Specifications (BFN TSs) currently require isolation of the shutdown cooling mode of the Residual Heat Removal (RHR) system whenever the minimum number of operable instrument channels per trip system (for Table 3.2.A functions, "Instrument Channel-Reactor High Pressure" and "Group 2 [RHR Isolation-Actuation] Logic") decreases to zero and primary containment integrity is required. If only one trip system is inoperable, the trip system may be tripped or isolation implemented. If both trip systems are inoperable, there is no option, shutdown cooling must be isolated. The proposed TS changes would revise Table 3.2.A, Note 1.D to allow one hour before the affected system isolation valves are administratively controlled in the closed position and the affected system is declared inoperable. An administrative change is also proposed to reference "PS-68-93&94" in Table 3.2.A. A detailed summary of the specific changes is provided by Enclosure 2.

2.0 EVALUATION

The shutdown cooling mode of RHR is placed in operation during a normal reactor shutdown and cooldown. Shutdown cooling is comprised of a single suction line with two redundant pairs of RHR pumps and two redundant discharge lines. The initial phase of nuclear system cooldown is accomplished by dumping steam from the reactor vessel to the main condenser with the main condenser acting as the heat sink. When reactor water temperature has decreased to the point where the steam supply pressure is no longer necessary to maintain the turbine shaft gland seals, vacuum in the main condenser is no longer required. The RHR

operation to complete the cooldown and provide for decay heat removal. The shutdown cooling mode alone is capable of completing cooldown to 125°F in less than 20 hours and maintaining the nuclear system at 125°F so that the reactor can be refueled and serviced.

Note 1.D of Table 3.2.A currently requires that the shutdown cooling mode of RHR shall be isolated if primary containment integrity is required and either the Reactor High Pressure instrument channel or the Group 2 (RHR Isolation-Actuation) Logic function is inoperable. The reactor high pressure instrument channel provides for automatic isolation of the shutdown cooling suction valves when the reactor pressure increases to 100 psig. Shutdown cooling is isolated to prevent low pressure portions of the RHR system from being over-pressurized. The Group 2 RHR Isolation-Actuation logic provides for isolation on low reactor water level to maintain the primary containment pressure boundary.

In addition to the shutdown cooling suction valves, the following valves are automatically operated by the Group 2 (RHR Isolation - Actuation) Logic:

1. LPCI discharge valves (FCV-74-53, -67),
2. RHR flush and drain valves (FCV-74-102, -103, -119, -120) Units 1 and 3 only, and
3. Reactor vessel head spray isolation valves (FCV-74-77, -78) Unit 1 only

Each of these valves can be manually closed from the control room when the minimum number of operable instrument channels per trip system decreases below one.

When primary containment is required, the limiting conditions for operation for the instrumentation that initiates primary containment isolation is given by Table 3.2.A. Primary containment integrity is required whenever the reactor is critical or when the reactor water temperature is above 212°F and fuel is in the reactor vessel except while performing "open vessel" physics tests at power levels not to exceed 5 MW(t) (TS 3.7.A.2.a). With less than the minimum number of instrument channels at Reactor High Pressure or Group 2 (RHR Isolation-Actuation) logic operable, Note 1.D directs the operator to isolate shutdown cooling. The action currently required by BFN TS Table 3.2.A, Note 1.D, does not allow the plant operator any time to establish a means of alternative decay heat removal prior to isolating shutdown cooling. The proposed change would revise Table 3.2.A, Note 1.D to state the following: "Administratively control the affected system isolation valves in the closed position within one hour and then declare the affected system inoperable."

The Boiling Water Reactor Standard Technical Specifications (BWR STSs) state that if the number of operable channels is less than required, lock the affected system isolation valves closed within one hour and declare the affected system inoperable. The current BFN TS is more restrictive than the BWR STS in that it required isolation of the shutdown cooling mode of the RHR System with no time specified. The BWR STSs allow one hour to complete the isolation. The required action of controlling the affected system isolation

valves in the closed position performs the intended safety function of the instrumentation. If shutdown cooling is needed to provide core cooling, one hour allows time to restore the minimum required instrumentation to operable status or provide an alternate decay heat removal method.

Loss of shutdown cooling has been previously evaluated (BFN Final Safety Analysis Report [FSAR], Appendix G, Event 35). The evaluation concluded that for most single failures no unusual safety actions are required since cooling can be reestablished without alternative equipment. The RHR system has redundant pumps, heat exchangers and discharge piping pathways. In cases where the RHR shutdown cooling suction line becomes inoperable, a unique requirement for cooling arises. If the reactor head is off, the RHR Low Pressure Coolant Injection (LPCI) mode can be used to maintain water level. In this mode, pressure control is not a problem. If the reactor pressure vessel head is on and the system can be pressurized, the main steam line relief valves (manually operated) can be used to maintain pressure, with core spray or RHR LPCI used to maintain water level.

The proposed revision to the BFN TS is justified because it allows plant operators time to establish alternate cooling prior to isolating shutdown cooling. This action is appropriate because operating procedures exist which provide various options to reestablish cooling. The revision is acceptable because the probability of an accident during the allowed one hour period is remote since the reactor vessel pressure is at or below 100 psig. Existing restrictions on reactor water level and reactor vessel pressure ensure that the primary containment integrity and reactor coolant pressure boundary are not compromised. Therefore, the staff determines that the proposed TS revision will allow operational flexibility without adversely affecting plant safety and, as such, is acceptable.

### 3.0 ENVIRONMENTAL CONSIDERATION

These amendments involve a change to a requirement with respect to the 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 these 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 nor environmental assessment need be prepared in connection with the issuance of these amendments.

### 4.0 CONCLUSION

The Commission made a proposed determination that the amendments involve no significant hazards consideration which was published in the Federal Register (55 FR 36355) on September 5, 1990 and consulted with the State of Alabama. No public comments were received and the State of Alabama did not have any comments.

The staff has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security nor to the health and safety of the public.

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Dated: December 31, 1990