

Docket Nos. 50-259/260/296

September 23, 1988

Posted

Amdt 151 to DPR-52

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

Dear Mr. White:

SUBJECT: REVISION TO TECHNICAL SPECIFICATION TABLES 3.2.B/4.2.B FOR THE
BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2 AND 3 (TAC 00101, 00102,
00103) (TS 243)

The Commission has issued the enclosed Amendments Nos. 155, 151, and 126 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 June 13, 1988. The amendments revise Technical Specification (TS) Tables 3.2.B and 4.2.B by adding the instrumentation used to trip and isolate the High Pressure Coolant Injection and the Reactor Core Isolation Cooling Systems on either low steam supply pressure or high turbine exhaust pressure. The TS are also revised to add turbine exhaust diaphragm high pressure to the lists of conditions that cause group 4 and 5 isolation in the notes for Table 3.7.A.

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

Suzanne Black, Assistant Director
for Projects
TVA Projects Division
Office of Special Projects

Enclosures:

1. Amendment No. 155 to License No. DPR-33
2. Amendment No. 151 to License No. DPR-52
3. Amendment No. 126 to License No. DPR-68
4. Safety Evaluation

cc w/enclosures:
See next page

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Mr. S. A. White

cc:

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State Health Officer
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State Office Building
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- 2 -

Browns Ferry Nuclear Plant

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Committee on Interior
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Washington, D.C. 20515

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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.155
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 June 13, 1988, 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.

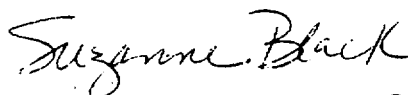
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-33 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 155, 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 60 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Suzanne Black, Assistant Director
for Projects
TVA Projects Division
Office of Special Projects

Attachment:
Changes to the Technical
Specifications

Date of Issuance: September 23, 1988

ATTACHMENT TO LICENSE AMENDMENT NO. 155

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

3.2/4.2-18

3.2/4.2-19

3.2/4.2-46

3.2/4.2-47

3.7/4.7-30

3.7/4/7-31

INSERT

3.2/4.2-18

3.2/4.2-19

3.2/4.2-46

3.2/4.2-47

3.7/4.7-30

3.7/4.7-31*

TABLE 3.2.B (Continued)

Minimum No. Operable Per Trip Sys(1)	Function	Trip Level Setting	Action	Remarks
1	HPCI Trip System bus power monitor	N/A	C	1. Monitors availability of power to logic systems.
1	RCIC Trip System bus power monitor	N/A	C	1. Monitors availability of power to logic systems.
1(2)	Instrument Channel - Condensate Header Low Level (LS-73-56A & B)	\geq Elev. 551'	A	1. Below trip setting will open HPCI suction valves to the suppression chamber.
1(2)	Instrument Channel - Suppression Chamber High Level	\leq 7" above instrument zero	A	1. Above trip setting will open HPCI suction valves to the suppression chamber.
2(2)	Instrument Channel - Reactor High Water Level	\leq 583" above vessel zero	A	1. Above trip setting trips RCIC turbine.
1	Instrument Channel - RCIC Turbine Steam Line High Flow	\leq 450" H ₂ O (7)	A	1. Above trip setting isolates RCIC system and trips RCIC turbine.
4(4)	Instrument Channel - RCIC Steam Line Space High Temperature	\leq 200°F.	A	1. Above trip setting isolates RCIC system and trips RCIC turbine.
3(2)	Instrument Channel - RCIC Steam Supply Pressure - Low (PS 71-1A-D)	\geq 50 psig	A	1. Below trip setting isolates RCIC system and trips RCIC turbine.
3(2)	Instrument Channel - RCIC Turbine Exhaust Diaphragm Pressure - High (PS 71-11A-D)	\leq 20 psig	A	1. Above trip setting isolates RCIC system and trips RCIC turbine.

BFN-Unit 1

TABLE 3.2.B (Continued)

Minimum No. Operable Per Trip Sys(1)	Function	Trip Level Setting	Action	Remarks
2(2)	Instrument Channel - Reactor High Water Level	≤583" above vessel zero.	A	1. Above trip setting trips HPCI turbine.
1	Instrument Channel - HPCI Turbine Steam Line High Flow	≤90 psi (7)	A	1. Above trip setting isolates HPCI system and trips HPCI turbine.
4(4)	Instrument Channel - HPCI Steam Line Space High Temperature	≤200°F.	A	1. Above trip setting isolates HPCI system and trips HPCI turbine.
3(2)	Instrument Channel - HPCI Steam Supply Pressure - Low (PS 73-1A-D)	≥100 psig	A	1. Below trip setting isolates HPCI system and trips HPCI turbine.
3(2)	Instrument Channel - HPCI Turbine Exhaust Diaphragm (PS 73-20A-D)	≤20 psig	A	1. Above trip setting isolates HPCI system and trips HPCI turbine.
1	Core Spray System Logic	N/A	B	1. Includes testing auto initiation inhibit to Core Spray Systems in other units.
1	RCIC System (Initiating) Logic	N/A	B	1. Includes Group 7 valves. Refer to Table 3.7.A for list of valves.
1	RCIC System (Isolation) Logic	N/A	B	1. Includes Group 5 valves. Refer to Table 3.7.A for list of valves.
1 (16)	ADS Logic	N/A	A	
1	RHR (LPCI) System (Initiation)	N/A	B	

BFN-Unit 1

3.2/4.2-19

Amendment No. 155

TABLE 4.2.b (continued)
SURVEILLANCE REQUIREMENTS FOR INSTRUMENTATION THAT INITIATE OR CONTROL THE CSCS

<u>Function</u>	<u>Functional Test</u>	<u>Calibration</u>	<u>Instrument Check</u>
Instrument Channel - RHR Pump Discharge Pressure	(1)	once/3 months	none
Instrument Channel - Core Spray Pump Discharge Pressure	(1)	once/3 months	none
Core Spray Sparger to RPV d/p	(1)	once/3 months	once/day
Trip System Bus Power Monitor	once/operating Cycle	N/A	none
Instrument Channel - Condensate Header Low Level (LS-73-56A, B)	(1)	once/3 months	none
Instrument Channel - Suppression Chamber High Level	(1)	once/3 months	none
Instrument Channel - Reactor High Water Level	(1)	once/3 months	once/day
Instrument Channel - RCIC Turbine Steam Line High Flow	(1)	once/3 months	none
Instrument Channel - RCIC Steam Line Space High Temperature	(1)	once/3 months	none
Instrument Channel - RCIC Steam Supply Low Pressure	once/31 days	once/18 months	once/day
Instrument Channel - RCIC Turbine Exhaust Diaphragm High Pressure	once/31 days	once/18 months	once/day

BFN-Unit 1

TABLE 4.2.B (Continued)
SURVEILLANCE REQUIREMENTS FOR INSTRUMENTATION THAT INITIATE OR CONTROL THE CSCS

<u>Function</u>	<u>Functional Test</u>	<u>Calibration</u>	<u>Instrument Check</u>
Instrument Channel - HPCI Turbine Steam Line High Flow	(1)	once/3 months	none
Instrument Channel - HPCI Steam Line Space High Temperature	(1)	once/3 months	none
Instrument Channel - HPCI Steam Supply Low Pressure	once/31 days	once/18 months	once/day
Instrument Channel - HPCI Turbine Exhaust Diaphragm High Pressure	once/31 days	once/18 months	once/day
Core Spray System Logic	once/18 months	(6)	N/A
RCIC System (Initiating) Logic	once/18 months	N/A	N/A
RCIC System (Isolation) Logic	once/18 months	(6)	N/A
HPCI System (Initiating) Logic	once/18 months	(6)	N/A
HPCI System (Isolation) Logic	once/18 months	(6)	N/A
ADS Logic	once/18 months	(6)	N/A
LPCI (Initiating) Logic	once/18 months	(6)	N/A
LPCI (Containment Spray) Logic	once/18 months	(6)	N/A
Core Spray System Auto Initiation Inhibit (Core Spray Auto Initiation)	once/18 months (7)	N/A	N/A
LPCI Auto Initiation Inhibit (LPCI Auto Initiation)	once/18 months (7)	N/A	N/A
BFN-Unit 1			

NOTES FOR TABLE 3.7.A

Key: O = Open
C = Closed
SC = Stays Closed
GC = Goes Closed

Note: Isolation groupings are as follows:

Group 1: The valves in Group 1 are actuated by any one of the following conditions:

1. Reactor Vessel Low Water Level (378")
2. Main Steamline High Radiation
3. Main Steamline High Flow
4. Main Steamline Space High Temperature
5. Main Steamline Low Pressure

Group 2: The valves in Group 2 are actuated by any of the following conditions:

1. Reactor Vessel Low Water Level (538")
2. High Drywell Pressure

Group 3: The valves in Group 3 are actuated by any of the following conditions:

1. Reactor Low Water Level (538")
2. Reactor Water Cleanup System High Temperature
3. Reactor Water Cleanup System High Drain Temperature

Group 4: The valves in Group 4 are actuated by any of the following conditions:

1. HPCI Steamline Space High Temperature
2. HPCI Steamline High Flow
3. HPCI Steamline Low Pressure
4. HPCI Turbine Exhaust Diaphragm High Pressure

Group 5: The valves in Group 5 are actuated by any of the following condition:

1. RCIC Steamline Space High Temperature
2. RCIC Steamline High Flow
3. RCIC Steamline Low Pressure
4. RCIC Turbine Exhaust Diaphragm High Pressure

Group 6: The valves in Group 6 are actuated by any of the following conditions:

1. Reactor Vessel Low Water Level (538")
2. High Drywell Pressure
3. Reactor Building Ventilation High Radiation

Group 7: The valves in Group 7 are automatically actuated by only the following condition:

1. The respective turbine steam supply valve not fully closed.

Group 8: The valves in Group 8 are automatically actuated by only the following conditions:

1. High Drywell Pressure
2. Reactor Vessel Low Water Level (538")



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. 151
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 June 13, 1988, 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.

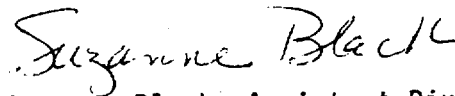
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-52 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 151, 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 60 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Suzanne Black, Assistant Director
for Projects
TVA Projects Division
Office of Special Projects

Attachment:
Changes to the Technical
Specifications

Date of Issuance: September 23, 1988

ATTACHMENT TO LICENSE AMENDMENT NO. 151

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

3.2/4.2-18

3.2/4.2-19

3.2/4.2-46

3.2/4.2-47

3.7/4.7-30

3.7/4.7-31

INSERT

3.2/4.2-18

3.2/4.2-19

3.2/4.2-46

3.2/4.2-47

3.7/4.7-30

3.7/4.7-31*

TABLE B (Continued)

Minimum No. Operable Per Trip Sys(1)	Function	Trip Level Setting	Action	Remarks
1	HPCI Trip System bus power monitor	N/A	C	1. Monitors availability of power to logic systems.
1	RCIC Trip System bus power monitor	N/A	C	1. Monitors availability of power to logic systems.
1(2)	Instrument Channel - Condensate Header Low Level (LS-73-55A & B)	\geq Elev. 551'	A	1. Below trip setting will open HPCI suction valves to the suppression chamber.
1(2)	Instrument Channel - Suppression Chamber High Level	\leq 7" above instrument zero	A	1. Above trip setting will open HPCI suction valves to the suppression chamber.
2(2)	Instrument Channel - Reactor High Water Level	\leq 583" above vessel zero	A	1. Above trip setting trips RCIC turbine.
1	Instrument Channel - RCIC Turbine Steam Line High Flow	\leq 450" H ₂ O (7)	A	1. Above trip setting isolates RCIC system and trips RCIC turbine.
4(4)	Instrument Channel - RCIC Steam Line Space High Temperature	\leq 200°F.	A	1. Above trip setting isolates RCIC system and trips RCIC turbine.
3(2)	Instrument Channel - RCIC Steam Supply Pressure - Low (PS 71-1A-D)	\geq 50 psig	A	1. Below trip setting isolates RCIC system and trips RCIC turbine.
3(2)	Instrument Channel - RCIC Turbine Exhaust Diaphragm Pressure - High (PS 71-11A-D)	\leq 20 psig	A	1. Above trip setting isolates RCIC system and trips RCIC turbine.

BFN-Unit 2

3.2/4.2-18

Amendment No. 151

TABLE 3.2.B (Continued)

Minimum No. Operable Per Trip Sys(1)	Function	Trip Level Setting	Action	Remarks
2(2)	Instrument Channel - Reactor High Water Level	≤ 583 " above vessel zero.	A	1. Above trip setting trips HPCI turbine.
1	Instrument Channel - HPCI Turbine Steam Line High Flow	≤ 90 psi (7)	A	1. Above trip setting isolates HPCI system and trips HPCI turbine.
3(2)	Instrument Channel - HPCI Steam Supply Pressure - Low (PS 73-1A-D)	≥ 100 psig	A	1. Below trip setting isolates HPCI system and trips HPCI turbine.
3(2)	Instrument Channel - HPCI Turbine Exhaust Diaphragm (PS 73-20A-D)	≤ 20 psig	A	1. Above trip setting isolates HPCI system and trips HPCI turbine.
4(4)	Instrument Channel - HPCI Steam Line Space High Temperature	$\leq 200^{\circ}\text{F.}$	A	1. Above trip setting isolates HPCI system and trips HPCI turbine.
1	Core Spray System Logic	N/A	B	1. Includes testing auto initiation inhibit to Core Spray Systems in other units.
1	RCIC System (Initiating) Logic	N/A	B	1. Includes Group 7 valves. Refer to Table 3.7.A for list of valves.
1	RCIC System (Isolation) Logic	N/A	B	1. Includes Group 5 valves. Refer to Table 3.7.A for list of valves.
1 (16)	ADS Logic	N/A	A	
1	RHR (LPCI) System (Initiation)	N/A	B	

BFN-Unit 2

3.2/4.2-19

Amendment No. 151

TABLE 4.2.B (Continued)
SURVEILLANCE REQUIREMENTS FOR INSTRUMENTATION THAT INITIATE OR CONTROL THE CSCS

<u>Function</u>	<u>Functional Test</u>	<u>Calibration</u>	<u>Instrument Check</u>
Instrument Channel - RHR Pump Discharge Pressure	(1)	once/3 months	none
Instrument Channel - Core Spray Pump Discharge Pressure	(1)	once/3 months	none
Core Spray Sparger to RPV d/p	(1)	once/3 months	once/day
Trip System Bus Power Monitor	once/operating Cycle	N/A	none
Instrument Channel - Condensate Header Low Level (LS-73-56A, B)	(1)	once/3 months	none
Instrument Channel - Suppression Chamber High Level	(1)	once/3 months	none
Instrument Channel - Reactor High Water Level	(1)	once/3 months	once/day
Instrument Channel - RCIC Turbine Steam Line High Flow	(1)	once/3 months	none
Instrument Channel - RCIC Steam Line Space High Temperature	(1)	once/3 months	none
Instrument Channel - RCIC Steam Supply Low Pressure	once/31 days	once/18 months	once/day
Instrument Channel - RCIC Turbine Exhaust Diaphragm High Pressure	once/31 days	once/18 months	once/day

BFN-Unit 2

TABLE 4.2.B (Continued)
SURVEILLANCE REQUIREMENTS FOR INSTRUMENTATION THAT INITIATE OR CONTROL THE CSCS

Function	Functional Test	Calibration	Instrument Check
Instrument Channel - HPCI Turbine Steam Line High Flow	(1)	Once/3 months	none
Instrument Channel - HPCI Steam Line Space High Temperature	(1)	Once/3 months	none
Instrument Channel - HPCI Steam Supply Low Pressure	once/31 days	once/18 months	once/day
Instrument Channel - HPCI Turbine Exhaust Diaphragm High Pressure	once/31 days	once/18 months	once/day
Core Spray System Logic	once/18 months	(6)	N/A
RCIC System (Initiating) Logic	once/18 months	N/A	N/A
RCIC System (Isolation) Logic	once/18 months	(6)	N/A
HPCI System (Initiating) Logic	once/18 months	(6)	N/A
HPCI System (Isolation) Logic	once/18 months	(6)	N/A
ADS Logic	once/18 months	(6)	N/A
LPCI (Initiating) Logic	once/18 months	(6)	N/A
LPCI (Containment Spray) Logic	once/18 months	(6)	N/A
Core Spray System Auto Initiation Inhibit (Core Spray Auto Initiation)	once/18 months (7)	N/A	N/A
LPCI Auto Initiation Inhibit (LPCI Auto Initiation)	once/18 months (7)	N/A	N/A
BFN-Unit 2			

3.2/4.2-47

Amendment No. 151

NOTES FOR TABLE 3.7.A

Key: 0 = Open
C = Closed
SC = Stays Closed
GC = Goes Closed

Note: Isolation groupings are as follows:

Group 1: The valves in Group 1 are actuated by any one of the following conditions:

1. Reactor Vessel Low Water Level (378")
2. Main Steamline High Radiation
3. Main Steamline High Flow
4. Main Steamline Space High Temperature
5. Main Steamline Low Pressure

Group 2: The valves in Group 2 are actuated by any of the following conditions:

1. Reactor Vessel Low Water Level (538")
2. High Drywell Pressure

Group 3: The valves in Group 3 are actuated by any of the following conditions:

1. Reactor Low Water Level (538")
2. Reactor Water Cleanup System High Temperature
3. Reactor Water Cleanup System High Drain Temperature

Group 4: The valves in Group 4 are actuated by any of the following conditions:

1. HPCI Steamline Space High Temperature
2. HPCI Steamline High Flow
3. HPCI Steamline Low Pressure
4. HPCI Turbine Exhaust Diaphragm High Pressure

Group 5: The valves in Group 5 are actuated by any of the following condition:

1. RCIC Steamline Space High Temperature
2. RCIC Steamline High Flow
3. RCIC Steamline Low Pressure
4. RCIC Turbine Exhaust Diaphragm High Pressure

Group 6: The valves in Group 6 are actuated by any of the following conditions:

1. Reactor Vessel Low Water Level (538")
2. High Drywell Pressure
3. Reactor Building Ventilation High Radiation

Group 7: The valves in Group 7 are automatically actuated by only the following condition:

1. The respective turbine steam supply valve not fully closed.

Group 8: The valves in Group 8 are automatically actuated by only the following conditions:

1. High Drywell Pressure
2. Reactor Vessel Low Water Level (538")



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. 126
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 June 13, 1988, 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;
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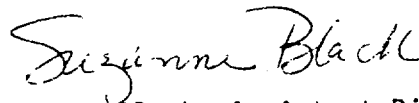
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-68 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 126, 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 60 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Suzanne Black, Assistant Director
for Projects
TVA Projects Division
Office of Special Projects

Attachment:
Changes to the Technical
Specifications

Date of Issuance: September 23, 1988

ATTACHMENT TO LICENSE AMENDMENT NO. 126

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.

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3.7/4.7-30*

TABLE 3.2.B (Continued)

Minimum No. Operable Per Trip Sys(1)	Function	Trip Level Setting	Action	Remarks
1	HPCI Trip System bus power monitor	N/A	C	1. Monitors availability of power to logic systems.
1	RCIC Trip System bus power monitor	N/A	C	1. Monitors availability of power to logic systems.
1(2)	Instrument Channel - Condensate Header Low Level (LS-73-56A & B)	\geq Elev. 551'	A	1. Below trip setting will open HPCI suction valves to the suppression chamber.
2(2)	Instrument Channel - Suppression Chamber High Level	\leq 7" above instrument zero	A	1. Above trip setting will open HPCI suction valves to the suppression chamber.
2(2)	Instrument Channel - Reactor High Water Level	\leq 583" above vessel zero	A	1. Above trip setting trips RCIC turbine.
1	Instrument Channel - RCIC Turbine Steam Line High Flow	\leq 450" H ₂ O (7)	A	1. Above trip setting isolates RCIC system and trips RCIC turbine.
4(4)	Instrument Channel - RCIC Steam Line Space High Temperature	\leq 200°F.	A	1. Above trip setting isolates RCIC system and trips RCIC turbine.
3(2)	Instrument Channel - RCIC Steam Supply Pressure - Low (PS 71-1A-D)	\geq 50 psig	A	1. Below trip setting isolates RCIC system and trips RCIC turbine.
3(2)	Instrument Channel - RCIC Turbine Exhaust Diaphragm Pressure - High (PS 71-11A-D)	\leq 20 psig	A	1. Above trip setting isolates RCIC system and trips RCIC turbine.

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TABLE 3.2.B (Continued)

Minimum No. Operable Per Trip Sys(1)	Function	Trip Level Setting	Action	Remarks
2(2)	Instrument Channel - Reactor High Water Level	$\leq 583"$ above vessel zero.	A	1. Above trip setting trips HPCI turbine.
1	Instrument Channel - HPCI Turbine Steam Line High Flow	≤ 90 psi (7)	A	1. Above trip setting isolates HPCI system and trips HPCI turbine.
4(4)	Instrument Channel - HPCI Steam Line Space High Temperature	$\leq 200^{\circ}\text{F.}$	A	1. Above trip setting isolates HPCI system and trips HPCI turbine.
3(2)	Instrument Channel - HPCI Steam Supply Pressure- Low (PS 73-1A-D)	≥ 100 psig	A	1. Below trip setting isolates HPCI system and trips HPCI turbine.
3(2)	Instrument Channel - HPCI Turbine Exhaust Diaphragm (PS 73-20A-D)	≤ 20 psig	A	1. Above trip setting isolates HPCI system and trips HPCI turbine.
1	Core Spray System Logic	N/A	B	1. Includes testing auto initiation inhibit to Core Spray Systems in other units.
1	RCIC System (Initiating) Logic	N/A	B	1. Includes Group 7 valves. Refer to Table 3.7.A for list of valves.
1	RCIC System (Isolation) Logic	N/A	B	1. Includes Group 5 valves. Refer to Table 3.7.A for list of valves.
1 (16)	ADS Logic	N/A	A	
1	RHR (LPCI) System (Initiation)	N/A	B	
1	RHR (LPCI) System (Containment Cooling Spray) Logic	N/A	A	

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TABLE 4.2 (cont'd)
SURVEILLANCE REQUIREMENTS FOR INSTRUMENTATION THAT INITIATE OR CONTROL THE CSCS

<u>Function</u>	<u>Functional Test</u>	<u>Calibration</u>	<u>Instrument Check</u>
Instrument Channel - RHR Pump Discharge Pressure	(1)	once/3 months	none
Instrument Channel - Core Spray Pump Discharge Pressure	(1)	once/3 months	none
Core Spray Sparger to RPV d/p	(1)	once/3 months	once/day
Trip System Bus Power Monitor	once/operating Cycle	N/A	none
Instrument Channel - Condensate Header Level (LS-73-56A, B)	(1)	once/3 months	none
Instrument Channel - Suppression Chamber High Level	(1)	once/3 months	none
Instrument Channel - Reactor High Water Level	(1)	once/3 months	once/day
Instrument Channel - RCIC Turbine Steam Line High Flow	(1)	once/3 months	none
Instrument Channel - RCIC Steam Line Space High Temperature	(1)	once/3 months	none
Instrument Channel - RCIC Steam Supply Low Pressure	once/31 days	once/18 months	once/day
Instrument Channel - RCIC Turbine Exhaust Diaphragm High Pressure	once/31 days	once/18 months	once/day

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TABLE 4.2.B (Cont'd)
SURVEILLANCE REQUIREMENTS FOR INSTRUMENTATION THAT INITIATE OR CONTROL THE CSCS

<u>Function</u>	<u>Functional Test</u>	<u>Calibration</u>	<u>Instrument Check</u>
Instrument Channel - HPCI Turbine Steam Line High Flow	(1)	once/3 months	none
Instrument Channel - HPCI Steam Line Space High Temperature	(1)	once/3 months	none
Instrument Channel - HPCI Steam Supply Low Pressure	once/31 days	once/18 months	once/day
Instrument Channel - HPCI Turbine Exhaust Diaphragm High Pressure	once/31 days	once/18 months	once/day
Core Spray System Logic	once/18 months	(6)	N/A
RCIC System (Initiating) Logic	once/18 months	N/A	N/A
RCIC System (Isolation) Logic	once/18 months	(6)	N/A
HPCI System (Initiating) Logic	once/18 months	(6)	N/A
HPCI System (Isolation) Logic	once/18 months	(6)	N/A
ADS Logic	once/18 months	(6)	N/A
LPCI (Initiating) Logic	once/18 months	(6)	N/A
LPCI (Containment Spray) Logic	once/18 months	(6)	N/A

BFN-Unit 3

NOTES FOR TABLE 3.7.A

Key: 0 = Open
C = Closed
SC = Stays Closed
GC = Goes Closed

Note: Isolation groupings are as follows:

Group 1: The valves in Group 1 are actuated by any of the following conditions:

1. Reactor Vessel Low Water Level (378")
2. Main Steamline High Radiation
3. Main Steamline High Flow
4. Main Steamline Space High Temperature
5. Main Steamline Low Pressure

Group 2: The valves in Group 2 are actuated by any of the following conditions:

1. Reactor Vessel Low Water Level (538")
2. High Drywell Pressure

Group 3: The valves in Group 3 are actuated by any of the following conditions:

1. Reactor Low Water Level (538")
2. Reactor Water Cleanup System High Temperature
3. Reactor Water Cleanup System High Drain Temperature

Group 4: The valves in Group 4 are actuated by any of the following conditions:

1. HPCI Steamline Space High Temperature
2. HPCI Steamline High Flow
3. HPCI Steamline Low Pressure
4. HPCI Turbine Exhaust Diaphragm High Pressure

Group 5: The valves in Group 5 are actuated by any of the following conditions:

1. RCIC Steamline Space High Temperature
2. RCIC Steamline High Flow
3. RCIC Steamline Low Pressure
4. RCIC Turbine Exhaust Diaphragm High Pressure

Group 6: The valves in Group 6 are actuated by any of the following conditions:

1. Reactor Vessel Low Water Level (538")
2. High Drywell Pressure
3. Reactor Building Ventilation High Radiation

Group 7: The valves in Group 7 are automatically actuated by only the following condition:

1. The respective turbine steam supply valve not fully closed.

Group 8: The valves in Group 8 are automatically actuated by only the following conditions:

1. High Drywell Pressure
2. Reactor Vessel Low Water Level (538")



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

SAFETY EVALUATION BY THE OFFICE OF SPECIAL PROJECTS

SUPPORTING AMENDMENT NO. 155 TO FACILITY OPERATING LICENSE NO. DPR-33

AMENDMENT NO. 151 TO FACILITY OPERATING LICENSE NO. DPR-52

AMENDMENT NO. 126 TO FACILITY OPERATING LICENSE NO. DPR-68

TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2 AND 3

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

1.0 INTRODUCTION

By letter dated June 13, 1988, the Tennessee Valley Authority (TVA or the licensee) requested an amendment to Appendix A of the Browns Ferry Nuclear Plant (BFN), Units 1, 2 and 3 Technical Specifications (TS). The proposed amendment would revise TS Table 3.2.B, Instrumentation that Initiates or Controls the Core and Containment Cooling Systems, and Table 4.2.B, Surveillance Requirements for Instrumentation that Initiates or Controls the Core Standby Cooling Systems. The four additional instruments to be listed are to trip and isolate the High Pressure Coolant Injection (HPCI) System or Reactor Core Isolation Cooling (RCIC) System on low steam supply pressure and high turbine exhaust pressure. The TS are also modified to add turbine exhaust diaphragm high pressure to the lists of conditions that cause Group 4 and 5 (HPCI and RCIC) isolation in the notes for Table 3.7.A.

2.0 EVALUATION

The current TS Tables 3.2.B and 4.2.B list setpoints and surveillance requirements for instrumentation that initiates or controls the Core Standby Cooling System. TVA has proposed the following additions to those tables:

HPCI Steam Supply Low Pressure Instrument Channel
HPCI Turbine Exhaust Diaphragm Pressure Instrument Channel
RCIC Steam Supply Low Pressure Instrument Channel
RCIC Turbine Exhaust Diaphragm Pressure Instrument Channel

The above instrumentation is already installed and in operation at BFN, Units 1, 2 and 3. The proposed change to the TS is meant to clarify and complete the TS requirements for trips and isolation signals to the HPCI and RCIC systems.

2.1 HPCI System

The HPCI system is a turbine driven system using steam to inject either condensate storage tank water or suppression pool water into the reactor vessel in the event of an intermediate or small line break. Specific trip features have been installed on the HPCI System to provide isolation capabilities and added protection to the subject system. Since these trip features have been installed, they need to be incorporated into the BFN TS.

The HPCI Steam Supply Low Pressure Instrument Channels will automatically close the HPCI steam supply line isolation valves when the steam pressure has decreased to such a low value that the HPCI turbine is inoperable, thus preventing steam and radioactive gases from escaping through the HPCI turbine shaft seals into the Reactor Building. General Electric Company has recommended an allowable limiting trip setting of ≥ 100 psig. Use of this setpoint will ensure that the instrumentation will generate a HPCI isolation signal when the steam supply falls below 100 psig. This value is sufficiently below the lower end of the HPCI operating range (150 psig) to avoid affecting HPCI System operational requirements yet high enough to generate an isolation signal before the reactor vessel has fully depressurized while still ensuring that no radioactive gases will escape through the HPCI turbine shaft seals.

The HPCI turbine exhaust diaphragm pressure instruments provide an exhaust rupture disc high pressure signal to the HPCI steam supply isolation valve control circuitry for HPCI isolation. The HPCI turbine exhaust line contains a branch line with two rupture discs in series which open into the HPCI turbine room. In the event that a high pressure event occurs in the turbine exhaust line and the HPCI turbine is not tripped by the existing sensors, the rupture discs are designed to fail at a pressure below the HPCI turbine casing failure pressure.

The HPCI Turbine Exhaust Diaphragm Signal is used to detect ruptures in either the inner rupture disc or both rupture discs which protect the HPCI turbine casing from overpressurization. The maximum calculated limit setting is ≤ 52 psig. Using 20 psig as an allowable limit setting will assure isolation prior to 52 psig, and therefore prevent HPCI turbine casing failure.

2.2 RCIC System

RCIC Steam Supply Low Pressure Instrument Channels provide RCIC steam line isolation in the event low pressure is detected. General Electric recommends an allowable setpoint for these instruments of ≥ 50 psig. RCIC isolation will result when the steam supply pressure falls below 50 psig. This value is sufficiently below the lower end of the RCIC System operating range (150 psig) to avoid affecting RCIC System operational requirements. However, this setpoint is high enough to generate an isolation signal before the reactor vessel becomes depressurized while still ensuring that no radioactive gases will escape through the RCIC turbine shaft seals.

The RCIC Turbine Exhaust Diaphragm Pressure Instrument detects pressure between the turbine exhaust rupture discs. A high pressure signal will initiate RCIC steam line isolation. As with the HPCI Turbine Exhaust Diaphragm, the allowable trip value is ≤ 20 psig. The actual calculated maximum setting is ≤ 50 psig. Using a ≤ 20 psig as an allowable limit will assure isolation prior to 50 psig.

2.3 Conclusion

The above changes simply add TS requirements to instruments and functions that already exist at the plant. The FSAR discusses these systems and specifies the trip signals added by these changes in sections 4.7.5, 6.4.1, and 7.3.4.7. Since TVA is only adding requirements to the TS and no change will be made to plant operation, the staff has concluded that the proposed changes to the TS will not adversely affect plant safety and are acceptable.

3.0 ENVIRONMENTAL CONSIDERATION

The amendments involve a change to a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and/or changes to the surveillance requirements. 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 amendment involves no significant hazards consideration which was published in the Federal Register (53 FR 26533) on July 13, 1988 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, and (2) such activities will be conducted in compliance with the Commission's regulations, and the issuance of the amendments will not be inimical to the common defense and security nor to the health and safety of the public.

Principal Contributor: J. Kelly

Dated: September 23, 1988