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

June 11, 1984

Docket Nos. 50-259/260/296

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

Dear Mr. Parris:

The Commission has issued the enclosed Amendment Nos. 100, 94 and 67 to Facility Operating License Nos. DPR-33, DPR-52 and DPR-68 for the Browns Ferry Nuclear Plant, Units 1, 2 and 3. These amendments are in response to your application dated December 17, 1982 (TVA BFNP TS 176 Supplement 2).

The amendments change the Technical Specifications to (1) Clarify the definition of "channel" to indicate that a channel may have more than one sensor; (2) Clarify requirements for rod block instrumentation operability; (3) Designate main steam line drain header instrument isolation valves as "normally open"; (4) Add new "suppression chamber access hatch, X-233" to the table of "Testable Penetrations with Double O-Ring Seals", and (5) Revise the Site Radiological Emergency Plan audit frequency for consistency with 10 CFR 50.54(t).

A copy of the Safety Evaluation is also enclosed.

Sincerely,

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

Enclosures:

1. Amendment No. 100 to License No. DPR-33
2. Amendment No. 94 to License No. DPR-52
3. Amendment No. 67 to License No. DPR-68
4. Safety Evaluation

cc w/enclosures:
See next page

DO NOT REMOVE
Posted
Amdt. 94
to DPR-52
See Correction
Letter of 6/11/84

Mr. Hugh G. Parris
Tennessee Valley Authority
Browns Ferry Nuclear Plant, Units 1, 2 and 3

cc:

H. S. Sanger, Jr., Esquire
General Counsel
Tennessee Valley Authority
400 Commerce Avenue
E 11B 330 -
Knoxville, Tennessee 37902

Mr. Ron Rogers
Tennessee Valley Authority
400 Chestnut Street, Tower II
Chattanooga, Tennessee 37401

Mr. Charles R. Christopher
Chairman, Limestone County Commission
Post Office Box 188
Athens, Alabama 35611

Ira L. Myers, M. D.
State Health Officer
State Department of Public Health
State Office Building
Montgomery, Alabama 36130

Mr. H. N. Culver
249A HBD
400 Commerce Avenue
Tennessee Valley Authority
Knoxville, Tennessee 37902

James P. O'Reilly
Regional Administrator
Region II Office
U. S. Nuclear Regulatory Commission
101 Marietta Street, Suite 3100
Atlanta, Georgia 30303

U. S. Environmental Protection
Agency
Region IV Office
Regional Radiation Representative
345 Courtland Street, N. W.
Atlanta, Georgia 30308

Resident Inspector
U. S. Nuclear Regulatory Commission
Route 2, Box 311
Athens, Alabama 35611

Mr. Donald L. Williams, Jr.
Tennessee Valley Authority
400 West Summit Hill Drive, W10B85
Knoxville, Tennessee 37902

George Jones
Tennessee Valley Authority
Post Office Box 2000
Decatur, Alabama 35602

Mr. Oliver Havens
U. S. Nuclear Regulatory Commission
Reactor Training Center
Osborne Office Center, Suite 200
Chattanooga, Tennessee 37411



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. 100
License No. DPR-33

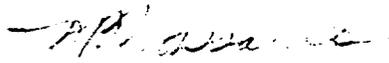
1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Tennessee Valley Authority (the licensee) dated December 17, 1982, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules 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. 100, 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 issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



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

Attachment:
Changes to the Technical
Specifications

Date of Issuance: June 11, 1984

ATTACHMENT TO LICENSE AMENDMENT NO. 100

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.
6, 73, 74, 250, 256, 334
2. The marginal lines on these pages denote the areas being changed.

1.0 DEFINITIONS (Cont'd)

V. Instrumentation

1. Instrument Calibration - An instrument calibration means the adjustment of an instrument signal output so that it corresponds, within acceptable range, and accuracy, to a known value(s) of the parameter which the instrument monitors.
2. Channel - A channel is an arrangement of a sensor(s) and associated components used to evaluate plant variables and produce discrete outputs used in logic. A channel terminates and loses its identity where individual channel outputs are combined in logic.
3. Instrument Functional Test - An instrument functional test means the injection of a simulated signal into the instrument primary sensor to verify the proper instrument channel response, alarm and/or initiating action.
4. Instrument Check - An instrument check is qualitative determination of acceptable operability by observation of instrument behavior during operation. This determination shall include, where possible, comparison of the instrument with other independent instruments measuring the same variable.
5. Logic System Functional Test - A logic system functional test means a test of all relays and contacts of a logic circuit to insure all components are operable per design intent. Where practicable, action will go to completion; i.e., pumps will be started and valves operated.
6. Trip System - A trip system means an arrangement of instrument channel trip signals and auxiliary equipment required to initiate action to accomplish a protective trip function. A trip system may require one or more instrument channel trip signals related to one or more plant parameters in order to initiate trip system action. Initiation of protective action may require the tripping of a single trip system or the coincident tripping of two trip systems.
7. Protective Action - An action initiated by the protection system when a limit is reached. A protective action can be at a channel or system level.
8. Protective Function - A system protective action which results from the protective action of the channels monitoring a particular plant condition.
9. Simulated Automatic Actuation - Simulated automatic actuation means applying a simulated signal to the sensor to actuate the circuit in question.

Amendment Nos. 22, 100

Minimum Operable
Channels Per
Trip Function (5)

73

Correction letter
of June 26, 1984

TABLE 3.2.C
INSTRUMENTATION THAT INITIATES MOD BLOCKS

Function	Trip Level Setting
4(1) APRM Upscale (Flow Bias)	$\leq 0.66W + 42\% (2)$
4(1) APRM Upscale (Startup Mode) (8)	$\leq 12\%$
4(1) APRM Downscale (9)	$\geq 3\%$
4(1) APRM Inoperative	(10b)
2(7) RBM Upscale (Flow Bias)	$\leq 0.66W + 40\% (2)(13)$
2(7) RBM Downscale (9)	$\geq 3\%$
2(7) RBM Inoperative	(10c)
6(1) IRM Upscale (8)	$\leq 108/125$ of full scale
6(1) IRM Downscale (3) (8)	$\geq 5/125$ of full scale
6(1) IRM Detector not in Startup Position (8)	(11)
6(1) IRM Inoperative (8)	(10a)
3(1) (6) SRM Upscale (8)	$\leq 1 \times 10^5$ counts/sec.
3(1) (6) SRM Downscale (4) (8)	≥ 3 counts/sec.
3(1) (6) SRM Detector not in Startup Position (4)(8)	(11)
3(1) (6) SRM Inoperative (8)	(10a)
2(1) Flow Bias Comparator	$\leq 10\%$ difference in recirculation flows
2(1) Flow Bias Upscale	$\leq 115\%$ recirculation flow
1 Red Block Logic	N/A
2(1) HCSC Restraint (PS85-61A,B)	107 psig turbine first stage pressure
1(12) High Water Level in West Scrum Discharge Tank (1.S-85-451.)	≤ 25 gal.
1(12) High Water Level in East Scrum Discharge Tank (1.S-85-451.)	≤ 25 gal.

NOTES FOR TABLE 3.2.C

1. The minimum number of operable channels for each trip function is detailed for the startup and run positions of the reactor mode selector switch. The SRM, IRM, and APRM (startup mode), blocks need not be operable in "run" mode, and the APRM (flow biased) rod blocks need not be operable in "startup" mode.

With the number of OPERABLE channels less than required by the minimum OPERABLE channels per trip function requirement, place at least one inoperable channel in the tripped condition within one hour.

2. W is the recirculation loop flow in percent of design. Trip level setting is in percent of rated power (3293 MWt).

A ratio of FRP/CMFLPD ≤ 1.0 is permitted at reduced power. See specification 2.1 for APRM control rod block setpoint.

3. IRM downscale is bypassed when it is on its lowest range.
4. SRM's A and C downscale functions are bypassed when IRM's A, C, E, and G are above range 2. SRM's B and D downscale function is bypassed when IRM's B, D, F, and H are above range 2.

SRM detector not in startup position is bypassed when the count rate is ≥ 100 CPS or the above condition is satisfied.

5. During repair or calibration of equipment, not more than one SRM or RBM channel nor more than two APRM or IRM channels may be bypassed. Bypassed channels are not counted as operable channels to meet the minimum operable channel requirements. Refer to section 3.10.B for SRM requirements during core alterations.
6. IRM channels A, E, C, G all in range 8 or above bypasses SRM channels A and C functions.

IRM channels B, F, D, H all in range 8 or above bypasses SRM channels B and D functions.

7. The following operational restraints apply to the RIM only.

- a. Both RBM channels are bypassed when reactor power is $\leq 30\%$ and when a peripheral control rod is selected.
- b. The RIM need not be operable in the "startup" position of the reactor mode selector switch.
- c. Two RIM channels are provided and only one of these may be bypassed from the console. An RIM channel may be out of service for testing and/or maintenance provided this condition does not last longer than 24 hours in any thirty day period.
- d. If minimum conditions for Table 3.2.C are not met, administrative controls, shall be immediately imposed to prevent control rod withdrawal.

TABLE 3.7.A
PRIMARY CONTAINMENT ISOLATION VALVES

Group	Valve Identification	Number of Power Operated Valves		Maximum Operating Time (sec.)	Normal Position	Action on Initiating Signal
		Inboard	Outboard			
1	Main steamline isolation valves (PCV-1-14, 26, 37, & 51; 1-15, 27, 38, & 52)	4	4	3 < T < 5	0	GC
1	Main steamline drain isolation valves PCV-1-55 & 1-56	1	1	15	0	GC
1	Reactor Water sample line isolation valves	1	1	5	C	SC
2	RIRS shutdown cooling supply isolation valves FCV-74-48 & 47	1	1	40	C	SC
2	RIRS - LPCI to reactor FCV-74-53, 67		2	30	C	SC
2	Reactor vessel head spray isolation valves PCV-74-77, 78	1	1	30	C	SC
2	RIRS flush and drain vent to suppression chamber FCV-74-102, 103, 119, & 120		4	20	C	SC
2	Suppression Chamber Drain PCV-74-57, 58		2	15	C	SC
2	Drywell equipment drain discharge isolation valves PCV-77-15A, & 15B		2	15	0	GC
2	Drywell floor drain discharge isolation valves PCV-77-2A & 2B		2	15	0	GC

TABLE 3.7.B
TESTABLE PENETRATIONS WITH DOUBLE O-RING SEALS

X-1A	Equipment Hatch
X-1B	" "
X-4	DW Head Access Hatch
X-6	CRD Removal Hatch
X-35A	T.I.P. Drives
X-35B	" "
X-35C	" "
X-35D	" "
X-35E	" "
X-35F	" "
X-35G	" "
X-47	Power Operations Test
X-200A	Supp. Chamber Access Hatch
X-200B	" " " "
X-213A	Suppression Chamber Drain
X-223	Supp. Chamber Access Hatch
	DW Flange-Top Head
	Shear Lug Inspection Cover #1
	" " " Hatch #2
	" " " " #3
	" " " " #4
	" " " " #5
	" " " " #6
	" " " " #7
	" " " " #8

- g. All reportable events.
- h. All recognized indications of an unanticipated deficiency in some aspect of design or operation of structures, systems, or components that could affect nuclear safety.
- i. Reports and meeting minutes of the FORC.

8. AUDITS

Audits of unit activities shall be performed under the cognizance of the NSRS. These audits shall encompass.

- a. The conformance of unit operation to provisions contained within the Technical Specifications and applicable license conditions at least once per 12 months.
- b. The performance, training and qualifications of the entire unit staff at least once per 12 months.
- c. The results of actions taken to correct deficiencies occurring in unit equipment, structures, systems or method of operation that affect nuclear safety at least once per 6 months.
- d. The performance of activities required by the Operational Quality Assurance Program to meet the criteria of Appendix "3", 10 CFR 50, at least once per 24 months.
- e. The Site Radiological Emergency Plan and implementing procedures at least once per 12 months.
- f. The Plant Physical Security Plan and implementing procedures at least once per 24 months.
- g. Any other area of unit operation considered appropriate by the NSRS or the Manager of Power.
- h. The Facility Fire Protection Program and implementing procedures at least once per 24 months.
- i. An independent fire protection and loss prevention program inspection and audit shall be performed annually utilizing either qualified offsite licensee personnel or an outside fire protection firm.
- j. An inspection and audit of the fire protection and loss prevention program shall be performed by an outside qualified fire consultant at intervals no greater than 3 years.



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. 94
License No. DPR-52

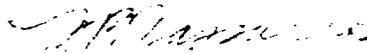
1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Tennessee Valley Authority (the licensee) dated December 17, 1982, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules 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. 94, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION



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

Attachment:
Changes to the Technical
Specifications

Date of Issuance: June 11, 1984

ATTACHMENT TO LICENSE AMENDMENT NO. 94

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.
6, 73, 74, 334
2. The marginal lines on these pages denote the areas being changed.

1.0 DEFINITIONS (Cont'd)

V. Instrumentation

1. Instrument Calibration - An instrument calibration means the adjustment of an instrument signal output so that it corresponds, within acceptable range, and accuracy, to a known value(s) of the parameter which the instrument monitors.
2. Channel - A channel is an arrangement of a sensor(s) and associated components used to evaluate plant variables and produce discrete outputs used in logic. A channel terminates and loses its identity where individual channel outputs are combined in logic.
3. Instrument Functional Test - An instrument functional test means the injection of a simulated signal into the instrument primary sensor to verify the proper instrument channel response, alarm and/or initiating action.
4. Instrument Check - An instrument check is qualitative determination of acceptable operability by observation of instrument behavior during operation. This determination shall include, where possible, comparison of the instrument with other independent instruments measuring the same variable.
5. Logic System Functional Test - A logic system functional test means a test of all relays and contacts of a logic circuit to insure all components are operable per design intent. Where practicable, action will go to completion; i.e., pumps will be started and valves operated.
6. Trip System - A trip system means an arrangement of instrument channel trip signals and auxiliary equipment required to initiate action to accomplish a protective trip function. A trip system may require one or more instrument channel trip signals related to one or more plant parameters in order to initiate trip system action. Initiation of protective action may require the tripping of a single trip system or the coincident tripping of two trip systems.
7. Protective Action - An action initiated by the protection system when a limit is reached. A protective action can be at a channel or system level.
8. Protective Function - A system protective action which results from the protective action of the channels monitoring a particular plant condition.
9. Simulated Automatic Actuation - Simulated automatic actuation means applying a simulated signal to the sensor to actuate the circuit in question.

BLE 3.2.C
INSTRUMENTATION THAT INITIATES ROD BLOCKS

Amendment Nos. 88, 94

Minimum Operable Channels Per Trip Function (5)	Function	Trip Level Setting
4(1)	APRM Upscale (Flow Bias)	$\leq 0.66W + 42\%$ (2)
4(1)	APRM Upscale (Startup Mode) (8)	$\leq 12\%$
4(1)	APRM Downscale (9)	$\geq 3\%$
4(1)	APRM Inoperative	(10b)
2(7)	RBM Upscale (Flow Bias)	$\leq 0.66W + 40\%$ (2)(13)
2(7)	RBM Downscale (9)	$\geq 3\%$
2(7)	RBM Inoperative	(10c)
6(1)	IRM Upscale (8)	$\leq 108/125$ of full scale
6(1)	IRM Downscale (3) (8)	$\geq 5/125$ of full scale
6(1)	IRM Detector not in Startup Position (8)	(11)
6(1)	IRM Inoperative (8)	(10a)
3(1) (6)	SRM Upscale (8)	$\leq 1 \times 10^5$ counts/sec.
3(1) (6)	SRM Downscale (4) (8)	≥ 3 counts/sec.
3(1) (6)	SRM Detector not in Startup Position (4)(8)	(11)
3(1) (6)	SRM Inoperative (8)	(10a)
2(1)	Flow Bias Comparator	$\leq 10\%$ difference in recirculation flows
2(1)	Flow Bias Upscale	$\leq 115\%$ recirculation flow
1	Rod Block Logic	N/A
2(1)	RCSC Restraint (PS85-61A,B)	147 psig turbine first stage pressure
1(12)	Soram Discharge Tank Water Level High	≤ 25 gal.

NOTES FOR TABLE 3.2.C

1. The minimum number of operable channels for each trip function is detailed for the startup and run positions of the reactor mode selector switch. The SRM, IRM, and APRM (startup mode), blocks need not be operable in "run" mode, and the APRM (flow biased) rod blocks need not be operable in "startup" mode.

With the number of OPERABLE channels less than required by the minimum OPERABLE channels per trip function requirement, place at least one inoperable channel in the tripped condition within one hour.

2. W is the recirculation loop flow in percent of design. Trip level setting is in percent of rated power (3293 MWt).

A ratio of FRP/CMFLPD ≤ 1.0 is permitted at reduced power. See specification 2.1 for APRM control rod block setpoint.

3. IRM downscale is bypassed when it is on its lowest range.
4. SRM's A and C downscale functions are bypassed when IRM's A, C, E, and G are above range 2. SRM's B and D downscale function is bypassed when IRM's B, D, F, and H are above range 2.

SRM detector not in startup position is bypassed when the count rate is ≥ 100 CPS or the above condition is satisfied.

5. During repair or calibration of equipment, not more than one SRM or RBM channel nor more than two APRM or IRM channels may be bypassed. Bypassed channels are not counted as operable channels to meet the minimum operable channel requirements. Refer to section 3.10.B for SRM requirements during core alterations.
6. IRM channels A, E, C, G all in range 8 or above bypasses SRM channels A and C functions.

IRM channels B, F, D, H all in range 8 or above bypasses SRM channels B and D functions.

7. The following operational restraints apply to the RBM only.

- a. Both RBM channels are bypassed when reactor power is $\leq 30\%$ and when a peripheral control rod is selected.
- b. The RBM need not be operable in the "startup" position of the reactor mode selector switch.
- c. Two RBM channels are provided and only one of these may be bypassed from the console. An RBM channel may be out of service for testing and/or maintenance provided this condition does not last longer than 24 hours in any thirty day period.
- d. If minimum conditions for Table 3.2.C are not met, administrative controls, shall be immediately imposed to prevent control rod withdrawal.

*Correction Letter
of 6/26/84*

- g. All reportable events.
- h. All recognized indications of an unanticipated deficiency in some aspect of design or operation of structures, systems, or components that could affect nuclear safety.
- i. Reports and meeting minutes of the PORC.

8. AUDITS

Audits of unit activities shall be performed under the cognizance of the NSRS. These audits shall encompass.

- a. The conformance of unit operation to provisions contained within the Technical Specifications and applicable license conditions at least once per 12 months.
- b. The performance, training and qualifications of the entire unit staff at least once per 12 months.
- c. The results of actions taken to correct deficiencies occurring in unit equipment, structures, systems or method of operation that affect nuclear safety at least once per 6 months.
- d. The performance of activities required by the Operational Quality Assurance Program to meet the criteria of Appendix "B", 10 CFR 50, at least once per 24 months.
- e. The Site Radiological Emergency Plan and implementing procedures at least once per 12 months.
- f. The Plant Physical Security Plan and implementing procedures at least once per 24 months.
- g. Any other area of unit operation considered appropriate by the NSRS or the Manager of Power.
- h. The Facility Fire Protection Program and implementing procedures at least once per 24 months.
- i. An independent fire protection and loss prevention program inspection and audit shall be performed annually utilizing either qualified offsite licensee personnel or an outside fire protection firm.
- j. An inspection and audit of the fire protection and loss prevention program shall be performed by an outside qualified fire consultant at intervals no greater than 3 years.



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. 67
License No. DPR-68

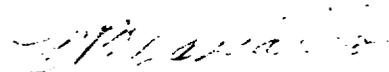
1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Tennessee Valley Authority (the licensee) dated December 17, 1982, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules 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. 67, 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 issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



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

Attachment:
Changes to the Technical
Specifications

Date of Issuance: June 11, 1984

ATTACHMENT TO LICENSE AMENDMENT NO. 67

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.
6, 76, 77, 268, 364
2. The marginal lines on these pages denote the areas being changed.

3. Core Maximum Fraction of Limiting Power Density (CMFLPD) - The highest ratio, for all fuel types in the core, of the maximum fuel rod power density (kW/ft) for a given fuel type to the limiting fuel rod power density (kW/ft) for that fuel type.
4. Average Planar Linear Heat Generation Rate (ALPHGR) - The Average Planar Heat Generation Rate is applicable to a specific planar height and is equal to the sum of the linear heat generation rates for all the fuel rods in the specified bundle at the specified height divided by the number of fuel rods in the fuel bundle.

V. Instrumentation

1. Instrument Calibration - An instrument calibration means the adjustment of an instrument signal output so that it corresponds, within acceptable range, and accuracy, to a known value(s) of the parameter which the instrument monitors.
2. Channel - A channel is an arrangement of sensor(s) and associated components used to evaluate plant variables and produce discrete outputs used in logic. A channel terminates and loses its identity where individual channel outputs are combined in logic.
3. Instrument Functional Test - An instrument functional test means the injection of a simulated signal into the instrument primary sensor to verify the proper instrument channel response, alarm and/or initiating action.
4. Instrument Check - An instrument check is qualitative determination of acceptable operability by observation of instrument behavior during operation. This determination shall include, where possible, comparison of the instrument with other independent instruments measuring the same variable.
5. Logic System Functional Test - A logic system functional test means a test of all relays and contacts of a logic circuit to insure all components are operable per design intent. Where practicable, action will go to completion; i.e., pumps will be started and valves operated.
6. Trip System - A trip system means an arrangement of instrument channel trip signals and auxiliary equipment required to initiate action to accomplish

TABLE 3.2.C
INSTRUMENTATION THAT INITIATES ROD BLOCKS

Minimum Operable
Channels Per
Trip Function (5)

	Function	Trip Level Setting
4(1)	APRM Upscale (Flow Bias)	$\leq 0.66W + 42\%$ (2)
4(1)	APRM Upscale (Startup Mode) (8)	$\leq 12\%$
4(1)	APRM Downscale (9)	$\geq 3\%$
4(1)	APRM Inoperative	(10b)
2(7)	RBM Upscale (Flow Bias)	$\leq 0.66W + 40\%$ (2)(13)
2(7)	RBM Downscale (9)	$\geq 3\%$
2(7)	RBM Inoperative	(10c)
6(1)	IRM Upscale (8)	$\leq 108/125$ of full scale
6(1)	IRM Downscale (3) (8)	$\geq 5/125$ of full scale
6(1)	IRM Detector not in Startup Position (8)	(11)
6(1)	IRM Inoperative (8)	(10a)
3(1) (6)	SRM Upscale (8)	$\leq 1 \times 10^5$ counts/sec.
3(1) (6)	SRM Downscale (4) (8)	≥ 3 counts/sec.
3(1) (6)	SRM Detector not in Startup Position (4)(8)	(11)
3(1) (6)	SRM Inoperative (8)	(10a)
2(1)	Flow Bias Comparator	$\leq 10\%$ difference in recirculation flows
2(1)	Flow Bias Upscale	$\leq 115\%$ recirculation flow
1	Rod Block Logic	N/A
2(1)	RCSC Restraint (PS85-61A,B)	147 psig turbine first stage pressure
1(12)	Scram Discharge Tank Water Level High	≤ 25 gal.

NOTES FOR TABLE 3.2.C

1. The minimum number of operable channels for each trip function is detailed for the startup and run positions of the reactor mode selector switch. The SRM, IRM, and APRM (startup mode), blocks need not be operable in "run" mode, and the APRM (flow biased) rod blocks need not be operable in "startup" mode.

With the number of OPERABLE channels less than required by the minimum OPERABLE channels per trip function requirement, place at least one inoperable channel in the tripped condition within one hour.

2. W is the recirculation loop flow in percent of design. Trip level setting is in percent of rated power (3293 MWt).

A ratio of FRP/CMFLPD ≤ 1.0 is permitted at reduced power. See specification 2.1 for APRM control rod block setpoint.

3. IRM downscale is bypassed when it is on its lowest range.
4. SRM's A and C downscale functions are bypassed when IRM's A, C, E, and G are above range 2. SRM's B and D downscale function is bypassed when IRM's B, D, F, and H are above range 2.

SRM detector not in startup position is bypassed when the count rate is ≥ 100 CPS or the above condition is satisfied.

5. During repair or calibration of equipment, not more than one SRM or RBM channel nor more than two APRM or IRM channels may be bypassed. Bypassed channels are not counted as operable channels to meet the minimum operable channel requirements. Refer to section 3.10.B for SRM requirements during core alterations.
6. IRM channels A, E, C, G all in range 8 or above bypasses SRM channels A and C functions.

IRM channels B, F, D, H all in range 8 or above bypasses SRM channels B and D functions.

7. The following operational restraints apply to the RIM only.

- a. Both RBM channels are bypassed when reactor power is $\leq 30\%$ and when a peripheral control rod is selected.
- b. The RIM need not be operable in the "startup" position of the reactor mode selector switch.
- c. Two RBM channels are provided and only one of these may be bypassed from the console. An RIM channel may be out of service for testing and/or maintenance provided this condition does not last longer than 24 hours in any thirty day period.
- d. If minimum conditions for Table 3.2.C are not met, administrative controls, shall be immediately imposed to prevent control rod withdrawal.

TABLE 3.7.B

TESTABLE PENETRATIONS WITH DOUBLE O-RING SEALS

X-1A	Equipment Hatch
X-1B	" "
X-4	DW Head Access Hatch
X-6	CRD Removal Hatch
X-35A	T.I.P. Drives
X-35B	" "
X-35C	" "
X-35D	" "
X-35E	" "
X-35F	" "
X-35G	" "
X-47	Power Operations Test
X-200A	Supp. Chamber Access Hatch
X-200B	" " " "
X-213A	Suppression Chamber Drain
X-223	Supp. Chamber Access Hatch
	DW Flange-Top Head
	Shear Lug Inspection Cover #1
	" " " Hatch #2
	" " " " #3
	" " " " #4
	" " " " #5
	" " " " #6
	" " " " #7
	" " " " #8

- g. All reportable events.
- h. All recognized indications of an unanticipated deficiency in some aspect of design or operation of structures, systems, or components that could affect nuclear safety.
- i. Reports and meeting minutes of the PORC.

8. AUDITS

Audits of unit activities shall be performed under the cognizance of the NSRB. These audits shall encompass.

- a. The conformance of unit operation to provisions contained within the Technical Specifications and applicable license conditions at least once per 12 months.
- b. The performance, training and qualifications of the entire unit staff at least once per 12 months.
- c. The results of actions taken to correct deficiencies occurring in unit equipment, structures, systems or method of operation that affect nuclear safety at least once per 6 months.
- d. The performance of activities required by the Operational Quality Assurance Program to meet the criteria of Appendix "B", 10 CFR 50, at least once per 24 months.
- e. The Site Radiological Emergency Plan and implementing procedures at least once per 12 months.
- f. The Plant Physical Security Plan and implementing procedures at least once per 24 months.
- g. Any other area of unit operation considered appropriate by the NSRB or the Manager of Power.
- h. The Facility Fire Protection Program and implementing procedures at least once per 24 months.
- i. An independent fire protection and loss prevention program inspection and audit shall be performed annually utilizing either qualified offsite licensee personnel or an outside fire protection firm.
- j. An inspection and audit of the fire protection and loss prevention program shall be performed by an outside qualified fire consultant at intervals no greater than 3 years.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
SUPPORTING AMENDMENT NO. 100 TO FACILITY OPERATING LICENSE NO. DPR-33
AMENDMENT NO. 94 TO FACILITY OPERATING LICENSE NO. DPR-52
AMENDMENT NO. 67 TO FACILITY OPERATING LICENSE NO. DPR-68
TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2 AND 3
DOCKET NOS. 50-259, 50-260 AND 50-296

1.0 Introduction

By letter dated December 17, 1982, (TVA BFNP TS 176 Supplement 2) the Tennessee Valley Authority (the licensee or TVA) requested amendments to Facility Operating License Nos. DPR-33, DPR-52 and DPR-68 for the Browns Ferry Nuclear Plant Units 1, 2 and 3. The licensee stated that the requested changes would update certain specifications, and clarify others.

2.0 Evaluation

Definition Change

The licensee has requested that the definition for "channel" in Section 1.0.V, be revised. The new definition would clarify the fact that a channel may have more than one associated sensor. This change is acceptable based on the fact that it provides clarification which precludes confusion when interpreting other sections of the technical specifications, and that, by itself, it neither adds, deletes, or modifies any technical specification requirements (Units 1, 2, 3).

Changes to Table 3.2.C "Instrumentation That Initiates Rod Blocks

The licensee has requested changes to Table 3.2.C to specify rod block instrumentation operability in terms consistent with the revised definition of channel. These changes will facilitate understanding of the specifications and will not result in any operational changes affecting safety. They are therefore, acceptable. The table has also been changed to revise the associated action statement to require that in event the limiting condition for operation cannot be met at least one inoperable channel is to be tripped within one hour. The existing action statement applies to trip systems and is unclear in meaning, as the number of trip systems indicated in the table is inconsistent with the number indicated in the action statement. This change will result in more conservative protection and is therefore acceptable (Units 1, 2, 3).

The licensee has requested that a note to the table be modified to state that both RBM channels are bypassed when a peripheral control rod is selected. This statement is consistent with the FSAR (Section 7.5.8.2.3) and should be included in the note. Peripheral rods do not present a rod withdrawal safety concern. Based on the above this change is acceptable (Units 1, 2, & 3).

(Note: Another change to Table 3.2.C, concerning rod block monitor channel inoperability was requested in another letter dated September 14, 1982 and will be evaluated in a separate evaluation.)

Changes to Table 3.7.A "Primary Containment Isolation Valves"

- A. The licensee has requested that Table 3.7.A be revised to indicate that steam line drain valves FCV-1-55, 56 are normally open and go closed on an initiating signal. The table presently states that these valves are normally closed and stay closed. Operational requirements demand that these valves be open for extended periods during power operation. By redesignating these valves as normally open, they will be required to be tested more frequently thus providing increased assurance that they will close upon receipt of an initiating signal.

(Specification 4.7.D requires such valves to be quarterly tested if normally open and once-per-fuel-cycle if normally closed.) Based on the increased frequency of testing, the staff has determined that this change would have no significant effect on safety (Unit 1).

- B. The licensee has requested addition of a footnote relating to the reactor water sample line isolation valves. This request will be evaluated in a separate safety evaluation applicable to requests contained in a November 5, 1982 letter from TVA (Unit 1).
- C. The licensee has requested correction of valve number identifications for suppression chamber drain valves. This change will be addressed in an evaluation of a September 14, 1982 letter from TVA.

Change to Table 3.7.B "Testable Penetrations with Double O-Ring Seals"

The licensee has requested that suppression chamber access hatch X-223 be added to Table 3.7.B. This change would update the table to reflect the installation of this new hatch and is therefore acceptable (Units 1 & 3).

Changes to Section 6.0 Administrative Controls

TVA has requested changes to the NSRB audit frequency specifications for the Site Radiological Emergency Plan and Plant Physical Security Plan. The change to the Plant Physical Security Plan will be addressed in our evaluation of TVA's letter of November 5, 1982.

The change to the Site Radiological Emergency Plan Section 6.2.A.8.e would increase the specified audit frequency from at least one per 24 months to at least once per 12 months. A 12 month frequency is required by 10 CFR 50.54(t). This change is therefore acceptable (Units 1, 2, 3).

3.0 Environmental Considerations

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 §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.

4.0 Conclusion

We have concluded, based on the considerations discussed above, that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) such activities will be conducted in compliance with the Commission's regulations, and the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: W. O. Long

Dated: June 11, 1984