## LICENSE AUTHORITY JULE 8,09385

## DO NOT REMOVE Posted Amdt.113

tODPR-52

Docket Nos. 50-259/260/296

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

Dear Mr. Parris:

The Commission has issued the enclosed Amendment Nos. 118, 113 and 89 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 November 19, 1984 (TVA BFNP TS-204).

The amendments change the Technical Specifications to delete requirements associated with the condenser low vacuum scram function.

A copy of the Safety Evaluation is also enclosed.

Sincerely,

Original signed by Richard J. Clark

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

Enclosures:					
	No. 118 to				
	No. DPR-33				
	No. 113 to				
License	No. DPR-52				
3. Amendment					
	No. DPR-68				
4. Safety Eva	aluation				
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Local PDR	WLong	TBarnhart	(12)	RDiggs	
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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. Meyers, 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

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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. 118 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 November 19, 1984, 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.
- 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) <u>Technical Specifications</u>

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

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

FOR THE NUCLEAR REGULATORY COMMISSION

Massalle

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

Attachment: Changes to the Technical Specifications

Date of Issuance: July 8, 1985

## ATTACHMENT TO LICENSE AMENDMENT NO. 118

## FACILITY OPERATING LICENSE NO. DPR-33

## DOCKET NO. 50-259

Revise Appendix A as follows:

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

2. The marginal lines on these pages denote the area being changed.

#### SAFETY LIMIT

#### LIMITING SAFETY SYSTEM SETTING

#### 1.1 FUEL CLADDING INTEGRITY

### B. Power Transient

To ensure that the Safety Limits established in Specification 1.1.A are not exceeded, each required scram shall be initiated by its expected scram signal. The Safety Limit shall be assumed to be exceeded when scram is accomplished by means other than the expected scram signal.

#### C. Reactor Vessel Water Level

Whenever there is irradiated fuel in the reactor vessel, the water level shall not be less than 17.7 in. above the top of the normal active fuel zone.

Amendment No. 118

2.1 FUEL CLADDING INTEGRITY

#### B. Power Transient Trip Settings

	Scram and isola-	≥	538 in.
۰.	tion (PCIS groups	•	above
	2,3,6) reactor low		vessel
	water level		zero

- 2. Scram-turbine ≤ 10 perstop valve cent valve closure closure
- 3. Scram-turbine ≥ 550 psig control valve fast closura or turbine trip

#### 4. (Deleted)

- 5. Scram-main . S 10 persteam line cent valve isolation closure
- Main steam isola- ≥825 psi; tion valve closure --nuclear system low pressure

#### C. Water Level Trip Settings

1.	Core spray and LPCI actuation reactor low water level	≥ 378 in. above vesseI zero
<sup>•</sup> 2.	HPCI and RCIC actuationreac- tor low water level	≥ 470 in. above vessel zero
3.	Main steam isola- tion valve closurereactor low water level	≥ 378 in.' above vessel zero

2.1 BASES

7. (DELETED)

## G. 5 H. <u>Main Steaz Line Isc.stion on Low Pressure and Main Steaz Line</u>

The low pressure isolation of the main steam lines at 825 paig was provided to protect against rapid reactor depressurization and the resulting rapid cooldown of the vessel. Advantage is taken of the scram feature that occurs when the main steam line isolation valves are closed, to provide for reactor shutdown so that high power operation at low reactor pressure does not occur, thus providing protection for the fuel cladding integrity eafety limit. Operation of the reactor at pressures lower than 825 paig requires that the reactor mode switch be in the STARTUP position, where protection of the fuel cladding integrity safety limit is provided by the IRM and APRM high neutron flux scrams. Thus, the combination of main steam line low pressure isolation and isolation valve closure acram assures the availability of neutron flux acram protection over the entire range of applicability of the fuel cladding integrity safety limit. In addition, the isolation valve closure ecram anticipates the pressure and flux transients that occur during normal or inadvertant isolation valve closure. With the scraws set at 10 percent of valve closure, nautron flux does not increase.

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Amendment No. 118 ·

TABLE 3.1.AREACTOR PROTECTION SYSTEM (SCRAM) INSTRUMENTATION REQUIREMENTS

Min. No. of Operable Inst. Channels Per Trip System (1)(23)	Trip Function	Trip Level Setting	<u>Modes 1</u> Shut- down	<u>n which Fun</u> Operable Refuel(7)	ction Must Be Startup/ Hot Standby	Run	Action(1)
4	Main Steam Line Isolation Valve Closure	≤ <sub>10%</sub> Valve Closure		X(3)(6)	X(3)(6)	X(6)	1.A or 1.C
2	Turbine Control Valve Fast Clos- ure or Turbine Trip	<u>&gt;</u> 550 psig	,,			X(4)	1.A or 1.D
4	Turbine Stop Valve Closure	≤10% Valve Closure				X(4)	1.A or 1.D
2	Turbine First Stage Pressure Permissive	not <sup>≥</sup> 154 psig		X(18)	X(18)	X(18)	(19)
2	Main Steam Line High Radiation (14)	3 X Normal Full Power Background (20)		X(9)	X(9)	<b>X(9)</b>	1.A or 1.C

Amendment No. 118

# TABLE 4.1.A REACTOR PROTECTION STSTEM (SCRAH) INSTRUMENTATION PUNCTIONAL TESTS MENIJER FUNCTIONAL TEST PREQUENCIES FOR SAFETT INSTR. AND CONTROL CIRCUITS

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2		TI	BLE 4.1.A	
mien diien t	REACTOR PROTECTION NEWLIGH FUNCTIONAL TES	CTCTIM /com	ULE 4.I.A (AH) INSTRUMENTATION FUNCTIONAL TE (S FOR SAFETY INSTR. AND CONTROL C	STS IRCUITS
		Group (2	1 <u>Punctional Test</u>	Minimum Frequency (3)
•		. Α	Place Hode Switch in Shutdown	Each Refueling Outage
110	IRH	٨	Trip Channel and Alarm '	Every 3 Houths
	High Flux	C	Trip Channel and Alarm (4)	Once Per Week During Refuelin and Before Each Startup
	Inoperative	C	Trip Channel and Alarm (4)	Ouce Per Week During Refuelin and Before Each Startup
37	High Flux (15% scram) High Flux (Flow Biased) Bigh Flux (Fixed Trip)	C	Trip Output Relays (4)	Before Each Startup and Week1
		B B	Trip Output Relays (4) Trip Output Relays (4)	When Required to be Operable Once/Week Dace/Week
	Inoperative	.8	Trip Output Relays (4)	
•	Downscale	8	Trip Output Relays (4)	Oace/Week
	Flow Bias	B	(6)	Once/Week
	Righ Reactor Pressure	٨	Trip Channel and Alarm	(6)
	High Dryvell Pressure	A	Trip Channel and Alara	Ouce/Houth (1) Ouce/Houth (1)
	<b>Beactor Low Water Level</b> High Water Level in Scram Discharge Tank		Trip Channel and Alarm	. Once/Houth (1)
	Float Switches (LS-85-45C-F)	A	Trip Channel and Alarm	Once/Month
ł	High Water Level in Scram Discharge Tank Electronic Level Switches (LS-85-45A, B, G, H)	В	Trip Channel and Alarm (7)	Once/Month
	Main Steam Line High Radiation	B	Trip Channel and Alarm (4)	Once/3 months (8)

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## TABLE 4.1.B REACTOR PROTECTION SYSTEM (SCRAN) INSTRUMENT CALIBRATION MININUM CALIBRATION PREQUENCIES FOR REACTOR PROTECTION INSTRUMENT CHANNELS

Instrument Channel	Group (1)	Calibration	Minimum Frequency (2)
IRM High Plux	C	Comparison to APRM on Control- led startups (6)	Note (4)
APRM High Flux			•
Output Signal Plow Bias Signal	B B	Heat Balance Calibrate Flow Blüs Signal (7)	Once every 7 days Once/operating cycle
LPRN Signal	B	TIP System Traverse (8)	·Every 1000 Effective Full Power Hours
Righ Reactor Pressure	A	Standard Pressure Source	Every 3 Months
High Drywell Pressure	A	" Standard Pressure Source	Every 3 Months
Reactor Low Water Level	A	Pressure Standard	Every 3 Months
High Water Level in Scram Discharge Volum Float Switches	it	· · · · ·	
(LS-85-45C-F)	٨	Calibrated Water Column (5)	Note (5)
Bigh Water Level in Scram Discharge Volum Electronic Level Switches (LS-85-45-A, B, G, H)	B	Calibrated Water Column	Once/Operating Cycle (9)
Main Steam Line Isolation Valve Closure	A	Note (5)	Note (5)
Main Steam Line High Radiation	в	Standard Current Source (3)	Every 3 Months
Turbine First Stage Pressure Permissive (PT-1-81A and B, PT-1-91A and B)	B	Standard Pressure Source	Once/Operating Cycle (9)
Turbine Cont. Valve Fast Closure or Turbine Trip	A	Standard Pressure Source	Once/Operating Cycle
Turbine Stop Valve Closure	A	Note (5)	Note (5)

modes. In the power range the APRM system provides required protection. Ref. Section 7.5.7 FSAR. Thus, the IRM System is not required in the Run mode. The APRM's and the IRM's provide adequate coverage in the startup and intermediate range.

The high reactor pressure, high drywell pressure, reactor low water level and acram discharge volume high level acrams are required for Startup and Run modes of plant operation. They are, therefore, required to be operational for these modes of reactor operation.

The requirement to have the scram functions as indicated in Table 3.1.1 operable in the Refuel mode is to assure that shifting to the Refuel mode during reactor prover operation does not diminish the need for the reactor protection system.

Because of the AFRM downscals limit of  $\geq$  3% when in the Run mode and high level limit of <15% when in the Startup Mode, the transition between the Startup and Run Modes must be made with the AFRM instrumentation indicating between 3% and 15% of rated power or a control rod scram will occur. In addition, the IRM system must be indicating below the High Flux setting (120/12% of scale) or a scram will occur when in the Startup Hode. For normal operating conditions, these limits provide assurance of overlap between the IRM system and AFRM system so that there are no "gaps" in the power level indications (i.e., the power level is continuously monitored "rom beginning of startup to full power and from full power to shutdown). when power is being reduced, if a transfer to the Startup mode is made and the IRM's have not been fully inserted (a maloperational but not impossible condition) a control rod block immediately occurs so that reactivity insertion by control rod withdraval cannot occur.

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## Amendment No. 118



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. 113 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 November 19, 1984, 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.
- 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) <u>Technical Specifications</u>

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 113, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

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FOR THE NUCLEAR REGULATORY COMMISSION

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

Attachment: Changes to the Technical Specifications

Date of Issuance: July 8, 1985

- 2 -

## ATTACHMENT TO LICENSE AMENDMENT NO. 113

## 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.

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	24
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2. The marginal lines on these pages denote the area being changed.

#### SAFETY LIMIT

#### LIMITING SAFETY SYSTEM SETTING

#### 1.1 FUEL CLADDING INTEGRITY

### B. Power Transient

To ensure that the Safety Limits established in Specification 1.1.A are not exceeded, each required scram shall be initiated by its expected scram signal. The Safety Limit shall be assumed to be exceeded when scram is accomplished by means other than the expected scram signal. 2.1 FUEL CLADDING INTEGRITY

## B. Power Transient Trip Settings

- 1. Scram and isola- ≥ 538 in. tion (PCIS groups above 2,3,6) reactor low vessel water level zero
- 2. Scram--turbine ≤ 10 perstop valve cent valve closure closure
- 3, Scram--turbine ≥ 550 psig control valve fast closura or turbine trip

4. (Deleted)

- 5. Scram--main ≤ 10 persteam line cent valve isolation ... closure
- 6. Main steam isola- ≥825 psig tion valve closure --nuclear system low pressure

#### C. Water Level Trip Settings

1.	Core spray and LPCI actuation reactor low water level	≥ 378 in. above vessel zero
2.	HPCI and RCIC actuationreac- tor low water level	≥ 470 in. above vessel zero
· 3.	Main steam isola- tion valve closurereactor low water level	≥ 378 in. above vessel zero

## C. Reactor Vessel Water Level

Whenever there is irradiated fuel in the reactor vessel, the water level shall not be less than 17.7 in. above the top of the normal active fuel zone.

Amendment No. 113

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## G. & H. Main Steam Line Iscantion on Low Pressure and Main Steam Line Isolation Scran

The low pressure isolation of the main steam lines at 825 paig was provided to protect against rapid reactor depressurization and the repulting rapid cooldown of the vessel. Advantage is taken of the ocran feature that occurs when the main steam line isolation valves are closed, to provide for reactor shutdown so that high power operation at low reactor pressure does not occur, thus providing protection for the fuel cladding integrity safety limit. Operation of the reactor at pressures lover than 825 peig requires that the reactor mode switch be in the STARTUP position, where protection of the fuel cladding integrity safety limit is provided by the IRM and APRM high neutron flux ocrans. Thus, the combination of main steam line low pressure isolation and isolation valve closure scram assures the availability of neutron flux scram protection over the entire range of applicability of the fuel cladding integrity safety limit. In addition, the isolation valve closure ecram anticipates the pressure and flux transients that occur during normal or inadvartant isolation valve closure. With the scram set at 10 percent of valve closure, soutron flux does not increase.

Amendment No. 113

		(0		ASTRONENTAL	ION REQUIREMEN	rs	
Min. No.							
of							
Operable							
Inst.			Modes 1	n shiah thu			
Channels			INGES 1	Operation	ction Must Be		
Per Trip			Shut-	Operable	•		
<u>System (1)(23)</u>	Trip Function	Trip Level Setting	down	Refuel(7)	Startup/ Hot Standby	Run	Action(1)
<b>4</b>	Main Steam Line Isolation Valve Closure	≤10% Valve Closure		X(3)(6) レ	X(3)(6)	X(6)	1.A or 1.C
2	Turbine Control Valve Fast Clos- ure or Turbine Trip	<u>&gt;</u> 550 psig	,,			X(4)	1.A or 1.D
4	Turbine Stop Valve Closure	≤107 Valve Closure				X(4)	1.A or 1.D
2	Turbine First Stage Pressure Permissive	not ≥154 psig		X(18)	X(18)	X(18)	(19)
	Main Steam Line High Radiation (14)	3 X Normal Full Power Background (20)		X(9)	<b>X(9)</b>	X(9)	1.A or 1.C
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TABLE 3.1.AREACTOR PROTECTION SYSTEM (SCRAM) INSTRUMENTATION REQUIREMENTS

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Amendment No. 113

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## TABLE 4.1.A REACTOR PROTECTION SYSTEM (SCRAM) INSTRUMENTATION PUNCTIONAL TESTS NEWLIGH FUNCTIONAL TEST FREQUENCIES FOR SAFETY INSTR. AND CONTROL CIRCUITS

173		Grave (1)	Functional Test	Hinimum Frequency ())	
	Node Switch in Shutdown	*	Place Hode Switch in Shutdown	Each Refueling Outage	
	Menual Scram	A	Trip Channel and Alarm	Every J Noathe	
	Ind Flux	c	Trip Channel and Alarm (4)	Ouce Per Veak During Refuelin	
ਸ	Inoperative	С	Trip Channel and Alarm (4)	and Before Each Startup Ouce Per Veek During Refuelin and Before Each Startup	
	APEH High Flux (15% scram)	с	Trip Output Relays (4)		
	High Flux (Flow Biased) Bigh Flux (Fixed Trip)	B B	Trip Output Relays (4) Trip Output Belays (4)	Before Each Startup and Weekl When Required to be Operable Once/Weck Once/Week	
	Inoperative	a	Trly Output Relays (4)	Once/Veek	
	Dovascale	3	Trip Output Relays (4)	Oace/Veek	
	Flow Blas	8	(6)	(6)	
	Migh Reactor Pressure	A	Trip Channel and Alarm	Dace/Month (1)	
	Migh Dryvell Pressure	<b>A</b>	Trip Channel and 'larm	Oace/Nonth (1)	
	Reactor Low Water Level	A ,	Trip Channel and Alaru	Once/Nonth (1)	
1	<b>High Vater Level in Scram Discharge Tank</b> Float Switches	A	Trip Channel and Alarm	Once/month	
	Differential Pressure Switches		Trip Channel and Alarm	Once/monti <sub>(</sub> 7)	
				:	

Main Steam Line High Radiation

Trip Channel and Alarm

B

Once/3 months (8)

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#### TABLE 4.1.B Reactor protection system (Scran) instrument calibration Mininum Calibration prequencies for reactor protection instrument channels

Instrument Channel	Group (1)	Calibration	Minimum Frequency (2)
IRM Righ Plux	c	Comparison to APRM on Control- led startups (6)	Note (4)
APRM High Flux			
Output Signal Plow Bias Signal	<b>B</b> 3	Heat Balance Calibrate Flow Bias Signal (7)	Once every 7 days Once/operating cycle
LPRN Signal	3	TIP System Traverse (8)	Every 1000 Effective Full Power Hours
Eigh Reactor Pressure	A	Standard Pressure Source	Every 3 Honths
Higb Dry≠ell Pressur€	A	Standard Pressure Source	Every 3 Months
Reactor Low Water Level	A	Pressure Standard	Every 3 Months
Nigh Water Level in Scram Discharge Volume		··· · · ·	
Float Switches	A	Note (5)	Note (5)
Differential Pressure Switches	B	Calibrated Water Column	Once/Operating Cycle
Main Steam Line Isolation Valve Closure	A A	Note (5)	Note (5)
Main Steam Line High Radiation	B.	Standard Current Source (3)	Every 3 Months
Turbine First Stage Pressure Permissive	e A	Standard Pressure Source	Every 6 Months
Turbine Stop Valve Closure	A	Note (5)	Note (5)
Turbine Cont. Valve Fast Closure or Turbine Trip	٨	Standard Pressure Source	Once/operating cycle

#### . 3.1 MSES

modes. In the power range the APRM system provides required protection. Ref. Section 7.5.7 FSAR. Thus, the IRM System is not required in the Run mode. The APRM's and the IRM's provide adequate coverage in the startup and intermediate range.

The high reactor pressure, high drywell pressure, reactor low water level and acram discharge volume high level acrams are required for Startup and Run modes of plant operation. They are, therefore, required to be operational for these modes of reactor operation.

The requirement to have the scram functions as indicated in Table 3.1.1 operable in the Refuel mode is to assure that shifting to the Refuel mode during reactor power operation does not diminish the need for the reactor protection system.

Because of the APRM downscale limit of  $\geq$  31 when in the Run mode and high level limit of  $\leq$ 151 when in the Startup Mode, the transition between the Startup and Run Modes must be made with the APRM instrumentation indicating between 32 and 151 of rated power or a control rod scram will occur. In addition, the IRM system must be indicating below the High Flux setting (120/125 of scale) or a scram will occur when in the Startup Mode. For normal operating conditions, these limits provide assurance of overlap between the IRM system and APRM system so that there are no "gaps" in the power level indications (i.e., the power level is continuously monitored from beginning of startup to full power and from full power to shutdown). when power is being reduced, if a transfer to the Startup mode is made and the IRM's have not been fully inserted (a maloperational but not impossible condition) a control rod block immediately occurs so that reactivity insertion by control rod withdraval cannot occur.

#### Amendment No. 113



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. 89 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 November 19, 1984, 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.
- 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) <u>Technical Specifications</u>

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 89, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION

Masselo

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

Attachment: Changes to the Technical Specifications

Date of Issuance: July 8, 1985

- 2 -

## ATTACHMENT TO LICENSE AMENDMENT NO. 89

## FACILITY OPERATING LICENSE NO. DPR-68

## DOCKET NO. 50-296

Revise Appendix A as follows:

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

2. The marginal lines on these pages denote the area being changed.

### SAFETY LIMIT

## LIMITING SAFETY SYSTEM SETTING

## 1.1 FUEL CLADDING INTEGRITY

#### в. Power Transient

To ensure that the Safety Limits established in Specification are not exceeded. 1.1.A each required scram shall be initiated by its expected scram signal. The Safety Limit shall be assumed to be exceeded when scram is accomplished by means other than the expected scram signal.

#### C. Reactor Vessel Water Level

Whenever there is irradiated fuel in the reactor vessel. the water level shall not be less than 17.7 in. above the top of the normal active fuel zone.

## 2.1 FUEL CLADDING INTEGRITY

#### B. Power Transient Trip Settings

· 1.	Scram and isola-		538 in.
8.0	tion (PCIS groups	•	above
	2,3,6) reactor low		vessel
	water level		zero

- ≤ 10 per-2. Scram--turbine cent valve ~ stop valve closure closure
- 3. Scram--turbine ≥ 550 psig control valve fast closura or turbine trip

#### (Deleted)

- 5. Scram--main . ≤ 10 percent valve steam line isolation .. closure
- 6. Main steam isola-2825 psig tion valve closure --nuclear system low pressure

#### C. Water Level Trip Settings

low water level

1.	Core spray and LPCI actuation reactor low water level	<b>≥</b>	378 in. above vessel zero
2.	HPCI and RCIC actuationreac- tor low water level	2	470 <u>in</u> . above vessel zero
3.	Main steam isola- tion valve closurereactor	2	378 in. above vessel

zero

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oil pressure at the main turbine control valve actuator disc dump valves. This loss of pressure is sensed by pressure switches whose contacts form the one-out-of-two-twice logic input to the reactor protection system. This trip setting, a nominally 50% greater closure time and a different valve characteristic from that of the turbine stop valve, combine to produce transients very similar to that for the stop valve. Relevant transient analyses are discussed

in References 1 and 2. Is bypassed when turbine steam flow is below 30% of rated, as measured by the turbine first stage pressure.

F. (DELETED)

## G. & H. <u>Main Steam Line Isolation on Low Pressure and</u> <u>Main Steam Line Isolation Scram</u>

The low pressure isolation of the main steam lines at 850 psig was provided to protect against rapid reactor depressurization and the resulting rapid cooldown of the vessel. Advantage is taken of the scram feature that occurs when the main steam line isolation valves are closed, to provide for reactor shutdown so that high power operation at low reactor pressure does not occur, thus providing protection for the fuel cladding integrity safety limit. Operation of the reactor at pressures lower than 850 psig requires that the reactor mode switch be in the STARTUP

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	•	South (Schart) Insta	UNENTATION	REOUTBENCH	•	
dinimum Humber of Operable Instrument Channels Por <u>Frip System (1</u> 2		Trip Level Setting		Hodes in Whit Hust be (	Ch Function	
•	Hain Stens Line Isolation Valve Closure	5 10 percent valve closure			•	
2	Turbine Control Valve Past Closure or Turbine Trip	t ≥ 550 paig , ,			÷	
4	Turbine Stop Valve Closure	< 103 Valve Closure	:	·		X(4) 1.A or 1.
2	Turbine First Stage Pressure Permissive	not 2 154 psig		X(18)	X(18)	X(4) 1.A or 1.D X(18) (19)
2	Hain Steam Line High	JX Normal 5 11 5				

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TABLE 3.1.A (cont'd) REACTOR PROTECTION SYSTEM (SCRAM) INSTRUMENTATION REQUIREMENT

Hain Steam Line High DX Norm Radiation (14) Backgro

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JX Normal Full Power Background (20)

X(9) X(9) 1.A or 1.C

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X(9)

#### TADLE 4.1.A REACTOR PROTECTION SYSTEM (SCRAM) INSTRUMENTATION PUNCTIONAL TESTS HININUS FUNCTIONAL TEST FREQUENCIES FOR SAFETY INSTA, AND CONTROL CIRCUITS

Group (2) Functional Test Hinimum Frequency (3) Hode Switch in Shutdown A Place Hode Switch in Shutdown Each Mefueling Outage Manual Scram Trip Channel and Alarm Every J Honths IRH High Flux C Trip Channel and Alarm (4) Once Per Week During Refueling and Before Each Startup Inoperative C Trip Channel and Alarm (4) Once Per Heek During Refueling and Before Each Startup APRM High Flux (15% ocram) С Trip Output Relays (4) Before Each Startup and Weekly 1 1 When Required to be Operable High Flux (Flow Bissed) Trip Output Relays (4) Once/week high flun (Fixed Trip) Trlp Output Relays (4) Once/Heek Inoperative Trip Output Relays (4) Ľ Once/Hoek Downscale Trip Output Relays (4) Once/Heek Flow Blas [6] (6) High Reactor Pressure Trip Channel and Alarm Once/Honth [1] High Drywell Pressure Trip Channel and Alarm Onco/Honth (1) **Reactor Low Water Level** Trip Channel and Alarm Once/Honth [1] High Water Level in Scram Discharge Tank Float Switches (LS-85-45C-F) Trip Channel and Alarn ٨ Once/Month **Electronic** Level Sultches B Frip Channel and Alarm (7) 'Once/Nonth (LS-85-45A, B, G, H)

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## TABLE 4.1.8 REACTOR PROTECTION SYSTEM (SCRAM) INSTRUMENT CALIBRATION MINIMUM CALIBRATION FREQUENCIES FOR REACTOR PROTECTION INSTRUMENT CHANNELS

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Instrument Channel	Group (1)	Calibration	Minimum Frequency (2)
IRN High Flux	C	Comparison to APRN on Control- led <sup>startups</sup> _ (6)	Note (4)
APRN High Flux		·	•
Output Signal	В	Heat Balance	Once every 7 days
Flow Bias Signal	В	Calibrate Flow Bias Signal (7)	Once/operating cycle
LPRN Signal	B	TIP System Traverse (8)	Every 1000 Effective Full Power Hours
High Reactor Pressure	A	Standard Pressure Source	Every 3 Months
High Drywell Pressure	A	Standard Pressure Source	Every 3 Months
Reactor Low Water Level	A	Pressure Standard	Every 3 Nonths
High Water Level in Scram Discharge Voluse		<b>1 1</b> .	
Float Switches	٨	Calibratian Calibratian	· ·
(LS-85-45C-F) Electronic Level Switches	~	Calibrated Water Column (5)	Note (5)
(LS-85-45A, B, G, H)	В	Calibrated Water Column	Ques/Operating Cycle (9)

Main Steam Line Isolation Valve Closure	٨	Note (5)	
Nain Steam Line High Radiation	8		Note (5)
Turbine First Stage Pressure Permissive	-	Standard Current Source (3)	Every 3 Months
Jurbine Cont. Valve Fast Closure or Turbine Trip	Å	Standard Pressure Source Standard Pressure Source	Every 6 Months
Turbine Stop Valve Closure .	_	and incaule source	Once/operating cycle
•	· A	Note (5)	Note (5)

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which a scram would be required but not be able to perform its function adequately.

A source range monitor (SRM) system is also provided to supply additional neutron level information during startup but has no scram functions. Ref. Section 7.5.4 FSAR. Thus, the IRM is required in the Refuel and Startup modes. In the power range the APRM system provides required protection. Ref. Section 7.5.7 FSAR. Thus, the IRM System is not required in the Run mode. The APRM's and the IRM's provide adequate coverage in the startup and

The high reactor pressure, high drywell pressure, reactor low water level and scram discharge volume high level scrams are required for Startup and Run modes of plant operation. They are, therefore, required to be operational for these modes of reactor operation.

The requirement to have the scram functions as indicated in Table 3.1.1 operable in the Refuel mode is to assure that shifting to the Refuel mode during reactor power operation does not diminish the need for the reactor protection system.

Because of the APRN downscale limit of 2 3% when in the Run mode and high level limit of ≤ 15% when in the Startup Mode, the transition between the Startup and Run Modes must be made with the APRM instrumentation indicating between 3% and 15% of rated power or a control rod scram will occur. In addition, the IRM system must be indicating below the High Flux setting (120/125 of scale) or a scram will occur when in the Startup Node. For normal operating conditions, these limits provide assurance of overlap between the IRN system and APRN system so that there are no "gaps" in the power level indications (i.e., the power level is continuously monitored from beginning of startup to full power and from full power to shutdown). When power is being reduced, if a transfer to the Startup mode is made and the IRN's have not been fully inserted (a maloperational but not impossible condition) a control rod block immediately occurs so that reactivity insertion by control rod withdrawal cannot occur.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 118 TO FACILITY OPERATING LICENSE NO. DPR-33

AMENDMENT NO. 113 TO FACILITY OPERATING LICENSE NO. DPR-52

AMENDMENT NO. 89 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 November 19, 1984 (TVA #TS-204) 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 amendments would delete requirements associated with the condenser low vacuum scram function.

## 2.0 DISCUSSION AND EVALUATION

The basis for the turbine condenser low vacuum scram is to provide an anticipatory scram to reduce the pressure increase of the reactor vessel caused by a turbine trip on low condenser vacuum. At greater than 154 psig turbine first stage pressure, the turbine trip would also cause a scram. The low vacuum scram setpoint is selected to intiate a scram before the closure of the turbine stop valves is initiated. In the accident and transient analyses, (FSAR Chapter 14) no credit is taken for this anticipatory signal; therefore, there will be no decrease in safety margins caused by deletion of this scram. Additionally, the BWR Standard Technical Specifications contain no requirement for this scram.

The deletion is proposed to preclude plant derating during periods of high condenser back pressure. These conditions exist primarily during conditions of high river water temperatures. These conditions have previously caused unit deratings. These proposed revisions, therefore, will allow an increased power output during conditions of higher than normal condenser back pressure. Additionally, these proposed revisions will reduce surveillance testing requirements and decrease the probability of an inadvertent scram.

Because no credit is taken for the low condenser vacuum trip in the transient and accident analyses and because turbine trip will also cause reactor trip for first stage pressure greater than 154 psig, we find the proposed deletion of the low condenser vacuum scram to be acceptable.

## 3.0 ENVIRONMENTAL CONSIDERATIONS

The amendments involve a change in the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration and there has been no public comment on such finding. Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

## 4.0 CONCLUSION

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

Principal Contributor: W. Hodges

Dated: July 8, 1985