Docket No. 50-416 December 13, 1993

Mr. C. Randy Hutchinson
Vice President, Operations GGNS
Entergy Operations, Inc.
Post Office Box 756
Port Gibson, Mississippi 39150

Dear Mr. Hutchinson:

SUBJECT: ISSUANCE OF AMENDMENT NO. 109 TO FACILITY OPERATING LICENSE NO. NPF-29 - GRAND GULF NUCLEAR STATION, UNIT 1 (TAC NO. M86488)

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 109 to Facility Operating License No. NPF-29 for the Grand Gulf Nuclear Station, Unit 1. This amendment revises the Technical Specifications in response to your application dated May 20, 1993.

The amendment removes unnecessary operability requirements for the intermediate range monitors (IRMs) and the average power range monitors (APRMs) during plant shutdown operations.

A copy of our related Safety Evaluation is also enclosed. A Notice of Issuance will be included in the Commission's next biweekly Federal Register notice.

Sincerely,

ORIGINAL SINGED BY:
Paul W. O'Connor, Senior Project Manager
Project Directorate IV-1
Division of Reactor Projects III/IV/V
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 109 to NPF-29
2. Safety Evaluation

cc w/enclosures:
See next page

DISTRIBUTION

Docket File	NRC/Local PDR	PD4-1 Reading	P. O'Connor	
E. Adensam	OPA(2G5)	OC/LFMB (4503)	J. Roe (13A2)	
P. Noonan (2)	OGC (15B18)	D. Hagan (3206)	T. Gody, Jr. (13E21)	
G. Hill (2)	C. Grimes (11E22)	D. Pickett (13H15)	D. Verrelli, RII	
ACRS (10)	R. Hall (13E21)	W. Beckner	R. Schaaf	

#53-183

OFC	LA:PD4-1	PE:PD4-1	PM:PD4-1	SRXB	OTSB	OGC	D:PD4-1
NAME	PNoonan	RSchaaf:pk	PO'Connor	RJones	CGrimes	S HOM	WBeckner
DATE	11/9/93	11/10/93	11/10/93	11/19/93	12/1/93	12/9/93	12/13/93
COPY	YES/NO	YES/NO	YES/NO	YES/NO	YES/NO	YES/NO	YES/NO

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#93-183

OFC	LA:PD4-1	PE:PD4-1	PM:PD4-1	SRXB	OTSB	OGC	D:PD4-1
NAME	PNoonan	RSchaaf:pk	PO'Connor	RJones	CGrimes	S Hom	WBeckner
DATE	11/9/93	11/10/93	11/10/93	11/19/93	12/1/93	12/9/93	12/13/93
COPY	YES/NO	YES/NO	YES/NO	YES/NO	YES/NO	YES/NO	YES/NO

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

December 13, 1993

Docket No. 50-416

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Paul W. O'Connor

Paul W. O'Connor, Senior Project Manager
Project Directorate IV-1
Division of Reactor Projects III/IV/V
Office of Nuclear Reactor Regulation

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1. Amendment No. 109 to NPF-29
2. Safety Evaluation

cc w/enclosures:
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

ENTERGY OPERATIONS, INC.

SYSTEM ENERGY RESOURCES, INC.

SOUTH MISSISSIPPI ELECTRIC POWER ASSOCIATION

MISSISSIPPI POWER AND LIGHT COMPANY

DOCKET NO. 50-416

GRAND GULF NUCLEAR STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 109
License No. NPF-29

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Entergy Operations, Inc. (the licensee) dated May 20, 1993, 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. NPF-29 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 109, are hereby incorporated into this license. Entergy Operations, Inc. shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

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

FOR THE NUCLEAR REGULATORY COMMISSION

William D. Beckner, Director
Project Directorate IV-1
Division of Reactor Projects - III/IV/V
Office of Nuclear Reactor Regulation

Attachment:
Changes to the
Technical Specifications

Date of Issuance: December 13, 1993

ATTACHMENT TO LICENSE AMENDMENT NO. 109

FACILITY OPERATING LICENSE NO. NPF-29

DOCKET NO. 50-416

Replace the following pages of the Appendix A Technical Specifications with the attached pages. The revised pages are identified by amendment number and contain vertical lines indicating the area of change. The corresponding overleaf pages are also provided to maintain document completeness.

REMOVE PAGES	INSERT PAGES
3/4 3-1	3/4 3-1
3/4 3-2	3/4 3-2
3/4 3-5	3/4 3-5
3/4 3-6	3/4 3-6
3/4 3-7	3/4 3-7
3/4 3-8	3/4 3-8
3/4 3-53	3/4 3-53
3/4 3-54	3/4 3-54
3/4 3-55	3/4 3-55
3/4 3-55a	3/4 3-55a
3/4 3-56	3/4 3-56
3/4 3-57	3/4 3-57
3/4 10-3	3/4 10-3
3/4 10-4	3/4 10-4

3/4.3 INSTRUMENTATION

3/4.3.1 REACTOR PROTECTION SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.1 As a minimum, the reactor protection system instrumentation channels shown in Table 3.3.1-1 shall be OPERABLE with the REACTOR PROTECTION SYSTEM RESPONSE TIME as shown in Table 3.3.1-2.

APPLICABILITY: As shown in Table 3.3.1-1.

ACTION:

a. With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip System requirement for one trip system, place the inoperable channel and/or that trip system in the tripped condition* within twelve hours.

b. With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip System requirement for both trip systems, place at least one trip system** in the tripped condition within one hour and take the ACTION required by Table 3.3.1-1.

SURVEILLANCE REQUIREMENTS

4.3.1.1 Each reactor protection system instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION operations for the OPERATIONAL CONDITIONS and at the frequencies shown in Table 4.3.1.1-1.

4.3.1.2 LOGIC SYSTEM FUNCTIONAL TESTS and simulated automatic operation of all channels shall be performed at least once per 18 months.

4.3.1.3 The REACTOR PROTECTION SYSTEM RESPONSE TIME of each reactor trip functional unit shown in Table 3.3.1-2 shall be demonstrated to be within its limit at least once per 18 months. Each test shall include at least one channel per trip system such that all channels are tested at least once every N times 18 months where N is the total number of redundant channels in a specific reactor trip system.

4.3.1.4 The provisions of Specification 4.0.4 are not applicable to the Channel Functional Test surveillance for the Intermediate Range Monitors for entry into the applicable OPERATIONAL CONDITIONS (as specified in Table 4.3.1.1-1) from OPERATIONAL CONDITION 1, provided the surveillances are performed within 12 hours after such entry.

---

*An inoperable channel need not be placed in the tripped condition where this would cause the Trip Function to occur. In these cases, the inoperable channel shall be restored to OPERABLE status within 6 hours or the ACTION required by Table 3.3.1-1 for that Trip Function shall be taken.

**The trip system need not be placed in the tripped condition if this would cause the Trip Function to occur. When a trip system can be placed in the tripped condition without causing the Trip Function to occur, place the trip system with the most inoperable channels in the tripped condition; if both systems have the same number of inoperable channels, place either trip system in the tripped condition.

TABLE 3.3.1-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	APPLICABLE OPERATIONAL CONDITIONS	MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM (a)	ACTION
1. Intermediate Range Monitors:			
a. Neutron Flux - High	2 5(b)(i)	3 3	1 3
b. Inoperative	2 5(i)	3 3	1 3
2. Average Power Range Monitor (b)(c):			
a. Neutron Flux - High, Setdown	2	3	1
b. Flow Biased Simulated Thermal Power - High	1	3	4
c. Neutron Flux - High	1	3	4
d. Inoperative	1, 2	3	1
3. Reactor Vessel Steam Dome Pressure - High	1, 2(d)	2	1
4. Reactor Vessel Water Level - Low, Level 3	1, 2	2	1
5. Reactor Vessel Water Level-High, Level 8	1(e)	2	4
6. Main Steam Line Isolation Valve - Closure	1(e)	4	4
7. Main Steam Line Radiation - High	1, 2(d)	2	5
8. Drywell Pressure - High	1, 2(f)	2	1

TABLE 3.3.1-1 (Continued)

REACTOR PROTECTION SYSTEM INSTRUMENTATION

TABLE NOTATIONS

(a) A channel may be placed in an inoperable status for up to 6 hours for required surveillance without placing the trip system in the tripped condition provided at least one OPERABLE channel in the same trip system is monitoring that parameter.

(b) The "shorting links" shall be removed from the RPS circuitry prior to and during the time any control rod is withdrawn* per Specification 3.9.2 and shutdown margin demonstrations performed per Specification 3.10.3.

(c) An APRM channel is inoperable if there are less than 2 LPRM inputs per level or less than 14 LPRM inputs to an APRM channel.

(d) This function is not required to be OPERABLE when the reactor pressure vessel head is unbolted or removed per Specification 3.10.1.

(e) This function shall be automatically bypassed when the reactor mode switch is not in the Run position.

(f) This function is not required to be OPERABLE when DRYWELL INTEGRITY is not required.

(g) With any control rod withdrawn. Not applicable to control rods removed per Specification 3.9.10.1 or 3.9.10.2.

(h) This function shall be automatically bypassed when operating below the appropriate turbine first stage pressure setpoint of:

(1) $\leq$ 26.9%** of the value of turbine first-stage pressure at valves wide open (VWO) steam flow when operating with rated feedwater temperature of greater than or equal to 420°F, or

(2) $\leq$ 22.5%** of the value of turbine first-stage pressure at VWO steam flow when operating with rated feedwater temperature between 370°F and 420°F.

(i) With any control rod withdrawn from a core cell containing one or more fuel assemblies.

* Not required for control rods removed per Specification 3.9.10.1 or 3.9.10.2.

** Allowable setpoint values of turbine first-stage pressure equivalent to THERMAL POWER less than 40% of RATED THERMAL POWER.

TABLE 3.3.1-2

REACTOR PROTECTION SYSTEM RESPONSE TIMES

FUNCTIONAL UNIT	RESPONSE TIME (Seconds)
1. Intermediate Range Monitors:	
a. Neutron Flux - High	NA
b. Inoperative	NA
2. Average Power Range Monitor*:	
a. Neutron Flux - High, Setdown	NA
b. Flow Biased Simulated Thermal Power - High	$\leq$ 0.09**
c. Neutron Flux - High	$\leq$ 0.09
d. Inoperative	NA
3. Reactor Vessel Steam Dome Pressure - High	$\leq$ 0.35
4. Reactor Vessel Water Level - Low, Level 3	$\geq$ 1.05
5. Reactor Vessel Water Level - High, Level 8	$\leq$ 1.05
6. Main Steam Line Isolation Valve - Closure	$\leq$ 0.06
7. Main Steam Line Radiation - High	NA
8. Drywell Pressure - High	NA
9. Scram Discharge Volume Water Level - High	NA
10. Turbine Stop Valve - Closure	$\leq$ 0.10
11. Turbine Control Valve Fast Closure, Valve Trip System Oil Pressure - Low	$\leq$ 0.10#
12. Reactor Mode Switch Shutdown Position	NA
13. Manual Scram	NA

*Neutron detectors are exempt from response time testing. Response time shall be measured from the detector output or from the input of the first electronic component in the channel.

**Not including simulated thermal power time constant.

#Measured from start of turbine control valve fast closure.

TABLE 4.3.1.1-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
1. Intermediate Range Monitors:				
a. Neutron Flux - High	S/U,S,[b] S	S/U, W W	R R	2 5[c]
b. Inoperative	NA	W	NA	2, 5[c]
2. Average Power Range Monitor:[f]				
a. Neutron Flux - High, Setdown	S/U,S,[b]	S/U, W	SA	2
b. Flow Biased Simulated Thermal Power - High	S,	Q	W[d][e], SA, R[i]	1
c. Neutron Flux - High	S	Q	W[d], SA	1
d. Inoperative	NA	Q	NA	1, 2
3. Reactor Vessel Steam Dome Pressure - High	S	Q	R[g]	1, 2[j]
4. Reactor Vessel Water Level - Low, Level 3	S	Q	R[g]	1, 2
5. Reactor Vessel Water Level - High, Level 8	S	Q	R[g]	1
6. Main Steam Line Isolation Valve - Closure	NA	Q	R	1
7. Main Steam Line Radiation - High	S	Q	R	1, 2[j]
8. Drywell Pressure - High	S	Q	R[g]	1, 2[k]

TABLE 4.3.1.1-1 (Continued)

REACTOR PROTECTION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
9. Scram Discharge Volume Water Level - High				
a. Transmitter/Trip Unit	S	Q	R(g)	1, 2, 5(1)
b. Float Switch	NA	Q	R	1, 2, 5(1)
10. Turbine Stop Valve - Closure	S	Q	R(g)	1
11. Turbine Control Valve Fast Closure Valve Trip System Oil Pressure - Low	S	Q	R(g)	1
12. Reactor Mode Switch Shutdown Position	NA	R	NA	1, 2, 3, 4, 5
13. Manual Scram	NA	W	NA	1, 2, 3, 4, 5

(a) Neutron detectors may be excluded from CHANNEL CALIBRATION.
(b) The IRM and SRM channels shall be determined to overlap for at least 1/2 decade during each startup after entering OPERATIONAL CONDITION 2 and the IRM and APRM channels shall be determined to overlap for at least 1/2 decade during each controlled shutdown, if not performed within the previous 7 days.
(c) With any control rod withdrawn from a core cell containing one or more fuel assemblies.
(d) This calibration shall consist of the adjustment of the APRM channel to conform to the power values calculated by a heat balance during OPERATIONAL CONDITION 1 when THERMAL POWER 25% of RATED THERMAL POWER. Adjust the APRM channel if the absolute difference is greater than 2% of RATED THERMAL POWER.
(e) This calibration shall consist of the adjustment of the APRM flow biased channel to conform to a calibrated flow signal.
(f) The LPRMs shall be calibrated at least once per 1000 MWD/T using the TIP system.
(g) Calibrate trip unit at least once per 92 days.
(h) Deleted.
(i) This calibration shall consist of verifying the 6 ± 1 second simulated thermal power time constant.
(j) Not applicable when the reactor pressure vessel head is unbolted or removed per Specification 3.10.1.
(k) Not applicable when DRYWELL INTEGRITY is not required.
(l) Applicable with any control rod withdrawn. Not applicable to control rods removed per Specification 3.9.10.1 or 3.9.10.2.

TABLE 3.3.6-1

CONTROL ROD BLOCK INSTRUMENTATION

TRIP FUNCTION	MINIMUM OPERABLE CHANNELS PER TRIP FUNCTION	APPLICABLE OPERATIONAL CONDITIONS	ACTION
1. ROD PATTERN CONTROL SYSTEM			
a. Low Power Setpoint	2	1, 2	60
b. High Power Setpoint	2	1#	60
2. Deleted			
3. SOURCE RANGE MONITORS			
a. Detector not full in[a]	4	2##	61
	2**	5	62
b. Upscale[b]	4	2##	61
	2**	5	62
c. Inoperative[b]	4	2##	61
	2**	5	62
d. Downscale[c]	4	2##	61
	2**	5	62
4. Deleted			
5. SCRAM DISCHARGE VOLUME			
a. Water Level-High	2	1, 2, 5*	64
6. REACTOR COOLANT SYSTEM RECIRCULATION FLOW			
a. Upscale	3	1	64
7. REACTOR MODE SWITCH SHUTDOWN POSITION	2	3, 4	63

TABLE 3.3.6-1 (Continued)

CONTROL ROD BLOCK INSTRUMENTATION

ACTION

ACTION 60 - Declare the RPCS inoperable and take the ACTION required by Specification 3.1.4.2.

ACTION 61 - With the number of OPERABLE Channels:

a. One less than required by the Minimum OPERABLE Channels per Trip Function requirement, restore the inoperable channel to OPERABLE status within 7 days or place the inoperable channel in the tripped condition within the next hour.

b. Two or more 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.

ACTION 62 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement, place the inoperable channel in the tripped condition within one hour.

ACTION 63 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement, initiate a rod block.

ACTION 64 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement, place the inoperable channel in the tripped condition within 12 hours.

NOTES

* With more than one control rod withdrawn. Not applicable to control rods removed per Specification 3.9.10.1 or 3.9.10.2.

** OPERABLE channels must be associated with SRMs required OPERABLE per Specification 3.9.2.

\# With THERMAL POWER greater than the Low Power Setpoint.

\#\# Whenever the related function is not bypassed as specified in notes (a) through (c).

(a) This function shall be automatically bypassed if detector count rate is > 100 cps or the IRM channels are on range 3 or higher.

(b) This function shall be automatically bypassed when the associated IRM channels are on range 8 or higher.

(c) This function shall be automatically bypassed when the IRM channels are on range 3 or higher.

(d) Deleted

TABLE 3.3.6-2

CONTROL ROD BLOCK INSTRUMENTATION SETPOINTS

TRIP FUNCTION	TRIP SETPOINT	ALLOWABLE VALUE
1. ROD PATTERN CONTROL SYSTEM		
a. Low Power Setpoint	20 + 15, -0% of RATED THERMAL POWER	20 + 15, -0% of RATED THERMAL POWER
b. High Power Setpoint	≤70% of RATED THERMAL POWER	≤70% of RATED THERMAL POWER
2. Deleted		
3. SOURCE RANGE MONITORS		
a. Detector not full in	NA	NA
b. Upscale		≤ 1×10^5 cps≤ 1.5×10^5 cps.
c. Inoperative	NA	NA
d. Downscale	≥ 0.7 cps	≥ 0.5 cps
4. Deleted		
5. SCRAM DISCHARGE VOLUME		
a. Water Level-High	≤ 32 inches	≤ 33.5 inches
6. REACTOR COOLANT SYSTEM RECIRCULATION FLOW		
a. Upscale	≤ 111% of rated flow	≤ 114% of rated flow
7. REACTOR MODE SWITCH SHUTDOWN POSITION		NANA

TABLE 4.3.6-1 (Continued)

CONTROL ROD BLOCK INSTRUMENTATION SURVEILLANCE REQUIREMENTS

NOTES:

a. Neutron detectors may be excluded from CHANNEL CALIBRATION.

b. Within 7 days prior to startup.

c. [Deleted]

d. [Deleted]

e. [Deleted]

f. [Deleted]

g. [Deleted]

h. [Deleted]

* With any control rod withdrawn. Not applicable to control rods removed per Specification 3.9.10.1 or 3.9.10.2.

** With THERMAL POWER greater than the Low Power Setpoint.

Whenever the related function is not bypassed as specified in Table 3.4.6-1 notes (a) through (c).

TABLE 4.3.6-1

CONTROL ROD BLOCK INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION[a]	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
1. ROD PATTERN CONTROL SYSTEM				
a. Low Power Setpoint	NA	S/U[b], Q	Q	1, 2
b. High Power Setpoint	NA	S/U[b], Q	Q	1**
2. Deleted				
3. SOURCE RANGE MONITORS				
a. Detector not full in	NA	S/U,W	NA	2##, 5
b. Upscale	NA	S/U,W	Q	2##, 5
c. Inoperative	NA	S/U,W	NA	2##, 5
d. Downscale	NA	S/U,W	Q	2##, 5
4. Deleted				
5. SCRAM DISCHARGE VOLUME				
a. Water Level-High	NA	Q	R	1, 2, 5*
6. REACTOR COOLANT SYSTEM RECIRCULATION FLOW				
a. Upscale	NA	Q	Q	1
7. REACTOR MODE SWITCH SHUTDOWN POSITION	NA	R	NA	3, 4

SPECIAL TEST EXCEPTIONS

3/4.10.3 SHUTDOWN MARGIN DEMONSTRATIONS

LIMITING CONDITION FOR OPERATION

3.10.3 The provisions of Specification 3.9.1, Specification 3.9.3 and Table 1.2 may be suspended to permit the reactor mode switch to be in the Startup position and to allow more than one control rod to be withdrawn for shutdown margin demonstration, provided that at least the following requirements are satisfied.

a. The source range monitors are OPERABLE per Specification 3.9.2 with the RPS circuitry "shorting links" removed.

b. The rod pattern control system is OPERABLE per Specification 3.1.4.2, or conformance with the shutdown margin demonstration procedure is verified by a second licensed operator or other technically qualified member of the unit technical staff.

c. The "continuous withdrawal" control shall not be used during out-of- sequence movement of the control rods.

d. No other CORE ALTERATIONS are in progress.

e. The Average Power Range Monitors are OPERABLE per the requirements of Specification 3.3.1 for OPERATIONAL CONDITION 2.

APPLICABILITY: OPERATIONAL CONDITION 5, during shutdown margin demonstrations.

ACTION:

With the requirements of the above specification not satisfied, immediately place the reactor mode switch in the Shutdown or Refuel position.

SURVEILLANCE REQUIREMENTS

4.10.3 Within 30 minutes prior to and at least once per 12 hours during the performance of a shutdown margin demonstration, verify that;

a. The source range monitors are OPERABLE per Specification 3.9.2 with the RPS circuitry "shorting links" removed.

b. The rod pattern control system OPERABLE, or a second licensed operator or other technically qualified member of the unit technical staff is present and verifies compliance with the shutdown demonstration procedures, and

c. No other CORE ALTERATIONS are in progress.

3/4.10.4 RECIRCULATION LOOPS

LIMITING CONDITION FOR OPERATION

3.10.4 The requirements of Specifications 3.4.1.1 and 3.4.1.3 that recirculation loops be in operation may be suspended for up to 24 hours for the performance of:

a. PHYSICS TESTS, provided that THERMAL POWER does not exceed 5% of RATED THERMAL POWER, or

b. The Startup Test Program.

APPLICABILITY: OPERATIONAL CONDITIONS 1 and 2, during PHYSICS TESTS and the Startup Test Program.

ACTION:

a. With the above specified time limit exceeded, insert all control rods.

b. With the above specified THERMAL POWER limit exceeded during PHYSICS TESTS, immediately place the reactor mode switch in the Shutdown position.

SURVEILLANCE REQUIREMENTS

4.10.4.1 The time during which the above specified requirement has been suspended shall be verified to be less than 24 hours at least once per hour during PHYSICS TESTS and the Startup Test Program.

4.10.4.2 THERMAL POWER shall be determined to be less than 5% of RATED THERMAL POWER at least once per hour during PHYSICS TESTS.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 109 TO FACILITY OPERATING LICENSE NO. NPF-29

ENTERGY OPERATIONS, INC., ET AL.

GRAND GULF NUCLEAR STATION, UNIT 1

DOCKET NO. 50-416

1.0 INTRODUCTION

By letter dated May 20, 1993, Entergy Operations, Inc. (the licensee), requested an amendment to Facility Operating License No. NPF-29 for the Grand Gulf Nuclear Station, Unit 1. The proposed amendment would revise the Technical Specifications (TSs) by removing certain instrumentation operability requirements from the reactor protection system (RPS) and control rod block system specifications (TS Sections 3/4.3.1 and 3/4.3.6, respectively) and adding an associated requirement to a special test exception specification regarding shutdown margin demonstrations (TS Section 3.10.3).

Specifically, the licensee's proposed changes would: (1) delete operability requirements for the intermediate range monitors (IRMs) and average power range monitors (APRMs) in Operational Conditions (OPCONs) 3, 4 (IRMs only), and 5 from the RPS specification, with the exception that the IRMs would be required to be OPERABLE in OPCON 5 when any control rod is withdrawn from a core cell containing one or more fuel assemblies; (2) delete the operability requirements for the IRMs and APRMs from the control rod block system specification; and (3) revise the specification for the Shutdown Margin Demonstration Special Test Exception (TS Section 3.10.3) to require the APRMs to be OPERABLE per the RPS specification requirements for OPCON 2.

The requested changes are consistent with NUREG-1434, Revision 0, "Standard Technical Specifications, General Electric Plants, BWR/6" (STS), with the exception of a difference in the operability requirements for the APRMs. The improved STS require the APRMs to be operable in OPCON 5 when any control rod is withdrawn from a core cell containing one or more fuel assemblies, while the licensee's proposed change would only require OPCON 5 operability of the APRMs during a shutdown margin demonstration. This is consistent with a change which was approved by the staff for the Limerick Generating Station TSs in a safety evaluation dated July 30, 1990.

2.0 EVALUATION

The IRMs are designed to monitor neutron flux levels at local core locations and provide protection against localized criticality events caused by control rod withdrawal errors. The IRMs monitor neutron flux levels from the upper

portion of the source range monitor (SRM) range to the lower portion of the APRM range and provide control rod block and RPS scram functions.

The APRMs monitor core power from about 1% of full reactor power to 125% of full reactor power. The APRMs represent a core average power level while the IRMs and SRMs indicate local power levels. In OPCONs 2, 3, and 5 the APRMs operate in the setdown mode to provide control rod block and RPS scram functions at 12% and 15% core average power, respectively.

The control rod blocks provided by these instruments in OPCONs 1 (APRMs only) and 2 are intended to actuate to prevent IRM or APRM scrams by preventing further positive reactivity addition. Accordingly, these control rod blocks act as backups to the IRM and APRM scrams and are not credited in any design basis transient analyses for OPCONs 1 and 2. Defense-in-depth in these operational conditions is provided by rod pattern control system rod blocks (TS 3.3.6), procedural controls on rod withdrawal sequences, core reload analyses performed each cycle, and RPS scrams. Therefore, the control rod blocks provided by the IRMs and APRMs in OPCONs 1 and 2 may be removed from the TSs.

The design basis transient of concern in OPCONs 3, 4, and 5 for the reactor protection and control rod block systems is an uncontrolled control rod withdrawal from the core while the reactor is subcritical. As discussed below, the IRMs and APRMs are not credited in the analysis of this design basis transient.

In OPCONs 3 and 4, with the reactor mode switch in the shutdown position, a control rod withdrawal block is applied to all control rods. This function prevents criticality by preventing inadvertent control rod withdrawal. Operability of the reactor mode switch shutdown position control rod block is required by TS 3.3.6 in OPCONs 3 and 4.

The reactor mode switch may be placed in the refuel position while in OPCONs 3 and 4 to allow withdrawal of a single control rod, provided that the mode switch refuel position one-rod-out interlock is operable. The refuel position one-rod-out interlock prevents the selection of a second control rod for movement when any other control rod is not fully inserted. The core is designed to remain subcritical with the highest worth control rod withdrawn. Operability of the mode switch refuel position one-rod-out interlock is required by TS 3.9.1 in OPCONs 3 and 4 with the mode switch in the refuel position.

The reactor mode switch shutdown position control rod block and the reactor mode switch refuel position one-rod-out interlock ensure that the reactor will remain subcritical in OPCONs 3 and 4. The RPS and control rod block functions of the IRMs and APRMs are not credited for prevention or mitigation of this or any other design basis transient while in OPCONs 3 and 4; therefore, the RPS and control rod block functions provided by the IRMs and APRMs are not required in OPCONs 3 and 4 and may be removed from the TSs.

In OPCON 5 with the reactor mode switch in the refuel position, refueling equipment interlocks and the mode switch refuel position one-rod-out interlock restrict the operation of the refueling equipment or the withdrawal of control rods to reinforce unit procedures in preventing the reactor from achieving criticality during refueling. Explicit safety analyses in the Updated Final Safety Analysis Report (UFSAR) demonstrate that the refueling interlocks and adequate shutdown margin (SDM) provide the primary means of preventing unacceptable reactivity excursions in OPCON 5; therefore, the RPS and control rod block functions provided by the IRMs and APRMs are not required in OPCON 5 and may be removed from the TSs.

It is desirable, however, to maintain the ability to scram a withdrawn control rod in the unlikely event of an inadvertent criticality in OPCON 5. Therefore, in OPCON 5, when a control rod is withdrawn from a fueled cell, the IRMs will continue to be required to be operable to provide monitoring for and protection against unexpected reactivity excursions. The source range monitors are also available in OPCON 5 to provide monitoring for and, when the "shorting links" are removed per TS 3.9.2, protection against unexpected reactivity excursions.

The TSs require that adequate SDM be demonstrated prior to or during the first startup after each refueling (TS 3.1.1, "SHUTDOWN MARGIN"). Performing the SDM demonstration prior to startup requires that the test be performed in OPCON 5, in accordance with Special Test Exception TS 3.10.3. In OPCON 5, the reactor mode switch is required to be in the shutdown or refuel position, where the applicable control rod blocks or refueling interlocks ensure that the reactor will not become critical as discussed above. The SDM demonstration requires the reactor mode switch to be in the startup or hot standby position, since more than one control rod must be withdrawn for the purpose of demonstrating adequate SDM.

Because multiple control rods will be withdrawn, additional requirements must be stipulated to ensure that adequate protection against potential reactivity excursions is available. Prevention and mitigation of unacceptable reactivity excursions during control rod withdrawal is provided by the rod pattern control system, the SRMs, which are required by TS 3.10.3 to be operable, and the RPS inputs from the IRMs, which are required to be operable in OPCON 5 any time a control rod is withdrawn from a fueled cell.

Prior to this requested change, protection was also provided by the requirement that the RPS inputs from the APRMs be operable in OPCON 5. To maintain this level of protection, TS 3.10.3 will be modified to require that the RPS inputs from the APRMs be operable during SDM demonstrations. For most operation at low power levels, the APRMs will provide a backup to the IRM scram because of the relative scram setpoints. No specific safety analyses take direct credit for the APRMs in this operational condition. The staff finds that addition of the APRM operability requirement to the SDM TS provides a level of protection consistent with the protection previously provided by the OPCON 5 RPS operability requirement for the APRMs. Therefore, the proposed addition to the SDM TS is acceptable.

The staff reviewed the UFSAR Chapter 7 system descriptions and the Chapter 15 accident analyses sequences and determined that the functions the licensee has requested to remove from the TSs are not credited in any design basis transient analysis. The subject functions of the IRM and APRM systems are not credited in mitigation of any design basis transient. Therefore, the subject requirements are not required to be maintained in the TSs and may be deleted.

The staff notes that the control rods and control rod scram accumulators (TSs 3/4.1.3.1 and 3/4.1.3.3 respectively) are not required to be operable in OPCONs 3 or 4 or in OPCON 5 for fully inserted control rods. The function of the RPS is to initiate signals to actuate the control rod scram system to rapidly insert control rods into the core. Because the actuated equipment (i.e, control rods and control rod scram accumulators) is not required to be operable in OPCONs 3, 4, or 5 (for fully inserted control rods), the staff finds that deletion of the operability requirements for the actuating equipment (i.e., RPS scram signals from the IRMs and APRMs) does not significantly affect safe operation of the facility.

The staff finds that other TS requirements, plant procedures, and administrative controls exist which provide adequate defense-in-depth to preclude the need for these requirements to be maintained in the TSs. The proposed changes will insure that the IRMs continue to provide the capability to initiate signals to rapidly insert any control rod which is withdrawn from a fueled cell and that the APRMs will be available to provide backup protection during shutdown margin demonstrations. The staff finds that removal of these requirements from the TSs will not have a significant effect on safety and are, therefore, acceptable.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Mississippi State official was notified of the proposed issuance of the amendment. The State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves 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 amendment involves no significant hazards consideration, and there has been no public comment on such finding (58 FR 34077). Accordingly, the amendment meets 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 amendment.

5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

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Date: December 13, 1993