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

August 31, 2015

Vice President, Operations
Entergy Operations, Inc.
Grand Gulf Nuclear Station
P.O. Box 756
Port Gibson, MS 39150

SUBJECT: GRAND GULF NUCLEAR STATION, UNIT 1 - ISSUANCE OF AMENDMENT RE: REQUEST FOR CHANGING FIVE TECHNICAL SPECIFICATIONS ALLOWABLE VALUES (TAC NO. MF4693)

Dear Sir or Madam:

The U.S. Nuclear Regulatory Commission has issued the enclosed Amendment No. 207 to Facility Operating License No. NPF-29 for the Grand Gulf Nuclear Station, Unit 1 (GGNS). This amendment consists of changes to the technical specifications (TSs) in response to your application dated August 1, 2014, as supplemented by letters dated March 3 and June 30, 2015.

The amendment revises five non-conservative Technical Specification Allowable Values in the GGNS TSs. The values changed are:

- Automatic Depressurization System Initiation Timer (TS Table 3.3.5.1-1)
- System A and B Containment Spray Timers (TS Table 3.3.6.3-1)
- Division 1 and 2 Degraded 4.16 KV Bus Voltage (TS Table 3.3.8.1-1)
- Division 3 Degraded 4.16 kiloVolt (KV) Bus Voltage (TS Table 3.3.8.1-1)
- Division 3 Degraded 4.16 KV Bus Voltage Time Delay-LOCA (Loss of Coolant Accident) (TS Table 3.3.8.1-1)

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

Sincerely,

Alan Wang

Alan B. Wang, Project Manager
Plant Licensing IV-2 and Decommissioning
Transition Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-416

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

cc: Distribution via Listserv

ENTERGY OPERATIONS, INC.

SYSTEM ENERGY RESOURCES, INC.

SOUTH MISSISSIPPI ELECTRIC POWER ASSOCIATION

ENTERGY MISSISSIPPI, INC.

DOCKET NO. 50-416

GRAND GULF NUCLEAR STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 207
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 August 1, 2014, as supplemented by letters dated March 3, and June 30, 2015, 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) <u>Technical Specifications</u>

   The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 207 are hereby incorporated in the 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 and shall be implemented within 90 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Meena K. Khanna, Chief
Plant Licensing IV-2 and Decommissioning
Transition Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Facility Operating
License No. NPF-29 and the
Technical Specifications

Date of Issuance: August 31, 2015

ATTACHMENT TO LICENSE AMENDMENT NO. 207

FACILITY OPERATING LICENSE NO. NPF-29

DOCKET NO. 50-416

Replace the following pages of the Facility Operating License No. NPF-29 and the Appendix A, Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Facility Operating License

Remove	Insert
-4-	-4-

Technical Specifications

Remove	Insert
3.3-42	3.3-42
3.3-43	3.3-43
3.3-66	3.3-66
3.3-79	3.3-79

(b) SERI is required to notify the NRC in writing prior to any change in (i) the terms or conditions of any new or existing sale or lease agreements executed as part of the above authorized financial transactions, (ii) the GGNS Unit 1 operating agreement, (iii) the existing property insurance coverage for GGNS Unit 1 that would materially alter the representations and conditions set forth in the Staff's Safety Evaluation Report dated December 19, 1988 attached to Amendment No. 54. In addition, SERI is required to notify the NRC of any action by a lessor or other successor in interest to SERI that may have an effect on the operation of the facility.

C. The license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

Entergy Operations, Inc. is authorized to operate the facility at reactor core power levels not in excess of 4408 megawatts thermal (100 percent power) in accordance with the conditions specified herein.

(2) Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 207 are hereby incorporated into this license. Entergy Operations, Inc. shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

During Cycle 19, GGNS will conduct monitoring of the Oscillation Power Range Monitor (OPRM). During this time, the OPRM Upscale function (Function 2.f of Technical Specification Table 3.3.1.1-1) will be disabled and operated in an "indicate only" mode and technical specification requirements will not apply to this function. During such time, Backup Stability Protection measures will be implemented via GGNS procedures to provide an alternate method to detect and suppress reactor core thermal hydraulic instability oscillations. Once monitoring has been successfully completed, the OPRM Upscale function will be enabled and technical specification requirements will be applied to the function; no further operating with this function in an "indicate only" mode will be conducted.

Table 3.3.5.1-1 (page 4 of 5)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
4. Automatic Depressurization System (ADS) Trip System A					
a. Reactor Vessel Water Level C Low Low Low, Level 1	1,2(d),3(d)	2	F	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ -152.5 inches
b. Drywell Pressure C High	1,2(d),3(d)	2	F	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≤ 1.44 psig
c. ADS Initiation Timer	1,2(d),3(d)	1	G	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≤ 115 seconds
d. Reactor Vessel Water Level C Low, Level 3 (Confirmatory)	1,2(d),3(d)	1	F	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 10.8 inches
e. LPCS Pump Discharge Pressure C High	1,2(d),3(d)	2	G	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 125 psig and ≤ 165 psig
f. LPCI Pump A Discharge Pressure C High	1,2(d),3(d)	2	G	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 115 psig and ≤ 135 psig
g. ADS Bypass Timer (High Drywell Pressure)	1,2(d),3(d)	2	G	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≤ 9.4 minutes
h. Manual Initiation	1,2(d),3(d)	2/system	G	SR 3.3.5.1.6	NA

(continued)

(d) With reactor steam dome pressure > 150 psig

Table 3.3.5.1-1 (page 5 of 5)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
5. ADS Trip System B					
a. Reactor Vessel Water Level C Low Low Low, Level 1	1,2(d),3(d)	2	F	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ -152.5 inches
b. Drywell Pressure C High	1,2(d),3(d)	2	F	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≤ 1.44 psig
c. ADS Initiation Timer	1,2(d),3(d)	1	G	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≤ 115 seconds
d. Reactor Vessel Water Level C Low, Level 3 (Confirmatory)	1,2(d),3(d)	1	F	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 10.8 inches
e. LPCI Pumps B & C Discharge Pressure C High	1,2(d),3(d)	2 per pump	G	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 115 psig and ≤ 135 psig
f. ADS Bypass Timer (High Drywell Pressure)	1,2(d),3(d)	2	G	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≤ 9.4 minutes
g. Manual Initiation	1,2(d),3(d)	2/system	G	SR 3.3.5.1.6	NA

(d) With reactor steam dome pressure > 150 psig

Table 3.3.6.3-1 (page 1 of 1)
RHR Containment Spray System Instrumentation

FUNCTION	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Drywell Pressure C High	2	B	SR 3.3.6.3.1 SR 3.3.6.3.2 SR 3.3.6.3.3 SR 3.3.6.3.5 SR 3.3.6.3.6	≤ 1.44 psig
2. Containment Pressure C High	1	C	SR 3.3.6.3.1 SR 3.3.6.3.2 SR 3.3.6.3.3 SR 3.3.6.3.5 SR 3.3.6.3.6	≤ 8.34 psig
3. Reactor Vessel Water Level C Low Low Low, Level 1	2	B	SR 3.3.6.3.1 SR 3.3.6.3.2 SR 3.3.6.3.3 SR 3.3.6.3.5 SR 3.3.6.3.6	≥ -152.5 inches
4. System A and System B Timers	1	C	SR 3.3.6.3.2 SR 3.3.6.3.4 SR 3.3.6.3.6	≥ 10.6 minutes and ≤ 11.1 minutes

Table 3.3.8.1-1 (page 1 of 1)
Loss of Power Instrumentation

FUNCTION	REQUIRED CHANNELS PER DIVISION	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Divisions 1 and 2 C 4.16 kV Emergency Bus Undervoltage			
a. Loss of Voltage C 4.16 kV basis	4	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.3	≥ 2621 V and ≤ 2912 V
b. Loss of Voltage C Time Delay	2	SR 3.3.8.1.2 SR 3.3.8.1.3	≥ 0.4 seconds and ≤ 1.0 seconds
c. Degraded Voltage C 4.16 kV basis	4	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.3	≥ 3764.25 V and ≤ 3837.6 V
d. Degraded Voltage C Time Delay	2	SR 3.3.8.1.2 SR 3.3.8.1.3	≥ 8.5 seconds and ≤ 9.5 seconds
2. Division 3 C 4.16 kV Emergency Bus Undervoltage			
a. Loss of Voltage C 4.16 kV basis	4	SR 3.3.8.1.2 SR 3.3.8.1.3	≥ 2984 V and ≤ 3106 V
b. Loss of Voltage C Time Delay	2	SR 3.3.8.1.2 SR 3.3.8.1.3	≥ 2.0 seconds and ≤ 2.5 seconds
c. Degraded Voltage C 4.16 kV basis	4	SR 3.3.8.1.2 SR 3.3.8.1.3	≥ 3605 V and ≤ 3763.5 V
d. Degraded Voltage C Time Delay, No LOCA	2	SR 3.3.8.1.2 SR 3.3.8.1.3	≥ 4.5 minutes and ≤ 5.5 minutes
e. Degraded Voltage C Time Delay, LOCA	4	SR 3.3.8.1.2 SR 3.3.8.1.3	≥ 3.85 seconds and ≤ 4.4 seconds

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 207 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 application dated August 1, 2014 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML14216A383), as supplemented by letters dated March 3 and June 30, 2015 (ADAMS Accession Nos. ML15063A279 and ML15181A152, respectively), Entergy Operations, Inc. (Entergy, the licensee), requested changes to the technical specifications (TSs) for Grand Gulf Nuclear Station, Unit 1 (GGNS). The supplemental letters dated March 3 and June 30, 2015, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on November 25, 2014 (79 FR 70214).

The proposed changes would revise five non-conservative TS Allowable Values (AVs). The AVs being changed are:

- Automatic Depressurization System (ADS) Initiation Timer (TS Table 3.3.5.1-1)
- System A and B Containment Spray Timers (TS Table 3.3.6.3-1)
- Division 1 and 2 Degraded 4.16 kiloVolt (KV) Bus Voltage (TS Table 3.3.8.1-1)
- Division 3 Degraded 4.16 KV Bus Voltage (TS Table 3.3.8.1-1)
- Division 3 Degraded 4.16 KV Bus Voltage Time Delay-LOCA (Loss of Coolant Accident) (TS Table 3.3.8.1-1)

2.0 REGULATORY EVALUATION

The US Nuclear Regulatory Commission (NRC) staff used the following regulatory bases and guidance documents for the evaluation of this license amendment request (LAR):

- Title 10 of the *Code of Federal Regulations* (10 CFR) 50.36, "Technical specifications," requires that TSs include limiting conditions for operation (LCOs) for any structure, system, or component which operating experience or probabilistic risk assessment has

shown to be significant to public health and safety. Section 50.36 also requires that TS Surveillance Requirements (SRs) be related to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the LCO will be met.

- Appendix A to 10 CFR 50, General Design Criteria 13, "Instrumentation and control," requires that "[i]nstrumentation shall be provided to monitor variables and systems over their anticipated ranges for normal operation, for anticipated operational occurrences, and for accident conditions as appropriate to ensure adequate safety, including those variables and systems that can affect the fission process, the integrity of the reactor core, the reactor coolant pressure boundary, and the containment and its associated systems. Appropriate controls shall be provided to maintain these variables and systems within prescribed operating ranges."

- Regulatory Guide (RG) 1.105, "Setpoints for Safety-Related Instrumentation," Revision 3, dated December 1999 (ADAMS Accession No. ML993560062) describes a method that the NRC staff finds acceptable for use in complying with the NRC's regulations for ensuring that setpoints for safety-related instrumentation are initially within, and will remain within, the TS limits. RG 1.105 endorses Part I of Instrument Society of America (ISA) Standard 67.04-1994, "Setpoints for Nuclear Safety-Related Instrumentation," subject to NRC staff clarifications. The staff used this guide to establish the adequacy of the licensee's setpoint calculation methodologies and the related plant surveillance procedures.

- Regulatory Issue Summary (RIS) 2006-17, "NRC Regulatory Issue Summary 2006-17 NRC Staff Position on the Requirements of 10 CFR 50.36, "Technical Specifications," Regarding Limiting Safety System Settings During Periodic Testing and Calibration of Instrument Channels," dated August 24, 2006 (ADAMS Accession No. ML051810077), discusses the requirements of 10 CFR 50.36 related to Limiting Safety System Settings (LSSS) and provides an approach acceptable to the NRC to address LSSS issues. The LSSSs are settings for automatic protective devices related to those variables having significant safety functions.

3.0 TECHNICAL EVALUATION

3.1 Background

While updating the setpoint calculations for the functions identified in the LAR, the licensee determined the current TS AVs identified in the LAR were non-conservative. The licensee provided the revised setpoint calculations in the LAR. In an email dated January 11, 2015 (ADAMS Accession No. ML15013A343), the NRC staff requested additional information (RAI) about the setpoint methodology used to ensure that the methodology applied was consistent with NRC regulations. The licensee provided its response in a submittal dated March 3, 2015 (ADAMS Accession No. ML15063A279). Additionally, as summarized below, Entergy provided the reasons for why the AVs were determined to be non-conservative:

- ADS Initiation Timer and System A and B Containment Spray Timers – When the AVs were originally derived by General Electric (GE), they assumed a 2 percent

reference accuracy (RA). Entergy then authorized the replacement of obsolete FTR model relays that have a 2 percent RA (normal environment) with ETR model relays that have a 5 percent RA (normal environment). While performing the replacement, Entergy did not address the RA difference and the impact on the associated setpoint calculations JC-Q1B21-K114, "Instrument Uncertainty and Setpoint Determination for the System IB21-ADS System Initiation Time Delay," or JC-Q1E12-K093, "Instrument Uncertainty and Setpoint Determination for System E12 Containment Spray Actuation Timer." The revised calculations conservatively assume a 5 percent repeatability/accuracy for the ETR relays, specifically.

- o ADS Initiation Timer - Calculation JC-Q1B21-K114 was revised to incorporate the correct repeatability/accuracy and resulted in a conservative AV of 115 seconds being proposed for the ADS initiation timer.

- o System A and B Containment Spray Timers - Calculation JC-Q1E12-K093 was revised to incorporate the correct repeatability/accuracy and resulted in a conservative lower AV of 10.6 minutes being proposed for the containment spray timers.

- Division 1 and 2 Degraded 4.16 KV Bus Voltage – Calculation JC-Q1R21-90024-1, "Division 1 and 2 Degraded Voltage Setpoint Validation," did not include an allowance for loop uncertainty between the 3744 volt (V) lower analytic limit and the lower AV, currently specified in TS Table 3.3.8.1-1, for the 4160 Volts alternating current (VAC) Division 1 and 2 degraded voltage setpoint. Based on the revised calculation, a conservative AV of 3764.25 VAC is being proposed for the Division 1 and 2 Degraded 4.16 KV Bus Voltage.

- Division 3 Degraded 4.16 KV Bus Voltage – In calculation JC-Q1P81-90024, "Division III Degraded Bus Voltage Setpoint Validation (T/S 3.3.8.1)," the 3558.8 VAC lower AV currently specified for the Division 3 degraded voltage setpoint, is slightly non-conservative. Based on the revised calculation, a conservative lower AV of 3605 VAC is being proposed for the Division 3 Degraded 4.16 KV Bus Voltage.

- Division 3 Degraded 4.16 KV Bus Voltage Time Delay – LOCA [loss-of-coolant accident] – In calculation JC-Q1P81-90024, "Division III Degraded Bus Voltage Setpoint Validation (T/S 3.3.8.1)," the 3.6 second lower AV, currently specified for the Division 3 degraded voltage setpoint time delay, is slightly non-conservative. Based on the revised calculation, a conservative lower AV of 3.68 seconds is being proposed for the Division 3 Degraded 4.16 KV Bus Voltage time delay.

Entergy provided GGNS calculation JS-09, Revision 1 (JS-09), "Methodology for the Generation of Instrument Loop Uncertainty & Setpoint Calculations," for NRC staff review. This calculation was used to determine the loop uncertainties and setpoints for this amendment request. The licensee noted that the methodology used for these calculations was the GE Topical Report NEDC-31336-P-A, "General Electric Instrument Setpoint Methodology," dated September 1996 (Proprietary information, not publicly available). By letter dated November 6, 1995, this topical

report was approved by the NRC staff for calculation of setpoints. In this method, the independent, random, and normally distributed variables/uncertainties were combined by the square root of the sum of the squares (SRSS) to determine the total loop uncertainty (TLU), which the licensee used to calculate the new AV. In the sections below, the uncertainties considered to calculate the TLU for each of the five AV changes is discussed.

The GE Setpoint Methodology is designed to result in a 95 percent probability of providing a channel trip before the process variable reaches the analytical limit, considering drift and assuming a one-sided normal distribution. The GE Setpoint Methodology utilizes single-sided distributions in the development of trip setpoints and AVs. During the review of the LAR, the NRC staff noted that the term 1.645/n (n normally 2), which is part of the GE setpoint methodology, was not included in 3 of the 4 impacted calculations. Having this term omitted results in a more conservative AV. In the RAI response, GGNS stated that they would be updating all of the calculations to revise the TS AVs that are referenced. In a letter dated June 30, 2015 (ADAMS Accession No. ML15181A152), GGNS agreed to also add a statement that will identify the term that was omitted and explain that leaving out the term results in a more conservative allowable value, to the following calculations:

- Calculation JC-Q1E12- K093, "Instrument Uncertainty and Setpoint Determination for System E12 Containment Spray Actuation Timer"
- Calculation JC-Q1R21-90024-1, "Division 1 & 2 Degraded Voltage Setpoint Validation"
- Calculation JC-Q1P81-90024, "Division III Degraded Bus Voltage Setpoint Validation (T/S 3.3.8.1)"

3.2 <u>Proposed TS Changes</u>

1) ADS (Automatic Depressurization System) Initiation Timer (TS Table 3.3.5.1-1, "Emergency Core Cooling System Instrumentation [ECCS]" (Items 4.c and 5.c))

   This AV is being changed from ≤117 seconds to ≤115 seconds.

2) System A and B Containment Spray Timers (TS Table 3.3.6.3-1, "RHR [Residual Heat Removal] Containment Spray System Instrumentation" (Item 4))

   This AV is being changed from ≥10.26 minutes and ≤11.44 minutes to ≥10.6 minutes and ≤11.1 minutes.

3) Division 1 and 2 Degraded 4.16 KV Bus Voltage (TS Table 3.3.8.1-1, "Loss of Power Instrumentation" (Item 1c))

   This AV is being changed from ≥3744 V to ≥3764.25 V.

4) Division 3 Degraded 4.16 KV Bus Voltage (TS Table 3.3.8.1-1(Item 2c))

   This AV is being changed from ≥3558.5 V to ≥3605 V.

5) Division 3 Degraded 4.16 KV Bus Voltage Time Delay-LOCA (TS Table 3.3.8.1-1 (Item 2.e))

This AV is being changed from ≥3.6 seconds to ≥3.68 seconds.

3.3 ADS Initiation Timer

In the LAR, Entergy proposed to revise the AV contained in GGNS TS 3.3.5.1, "Emergency Core Cooling System [ECCS] Instrumentation," Table 3.3.5.1-1, Items 4.c and 5.c, for the ADS Initiation Timer. The licensee is revising this value to correct the accuracy term used in the loop uncertainty.

The ADS system uses select safety/relief valves to depressurize the reactor vessel in the event of a LOCA to allow the low pressure ECCSs to activate if the high pressure ECCSs cannot maintain reactor water level. The ADS Initiation Timer delays initiation of the ADS to allow the operator to terminate the ADS action if the initiations of the high pressure ECCSs and acceptable reactor water level have been confirmed.

Attachment 4 of the LAR provides the calculation for instrument uncertainties and setpoint determination. This calculation was based on the GGNS methodology documented in JS-09. In addition, the RAI response provided vendor data for the FTR and ETR model relays necessary for the calculation of instrument uncertainty and the calculation of the new AV.

The NRC staff reviewed the revised setpoint calculation and confirmed that the input data for all uncertainties were appropriately identified and carried throughout the calculation of the new AV. The licensee determined a new AV of ≤ 115 seconds. The new value is more conservative than the previous value of ≤ 117 seconds for the ADS initiation timer.

Based on its evaluation of the information provided, the NRC staff concludes that the licensee appropriately applied its setpoint methodology to calculate the new AV, using the corrected accuracy term. In addition, the staff found that the licensee's methodology appropriately used the criteria in RG 1.105 and meets the intent of RIS 2006-17. Therefore, the proposed TS change satisfies the requirements of 10 CFR 50.36.

3.4 System A and B Containment Spray Timers

In the LAR, Entergy proposed to revise the AVs in GGNS TS 3.3.6.3, "RHR Containment Spray System Instrumentation," contained in Table 3.3.6.3-1, Item 4, for the System A and System B Timers. The licensee is revising this value to correct the accuracy term used in the loop uncertainty.

Containment Spray is an operating mode of the residual heat removal (RHR) system wherein water discharged from the RHR pumps is directed through heat exchangers to spray headers located near the top of the containment. This spray passes down through the containment atmosphere condensing steam, removing energy from the atmosphere to limit containment pressure rise resulting from a LOCA or high energy line break (HELB) inside containment, and promoting removal of iodine from the containment atmosphere.

Containment Spray "A" is initiated by low-pressure core spray initiation (high drywell pressure or low water level) after about a 10 minute time delay to permit the residual heat removal (RHR) system to operate in low-pressure coolant injection (LPCI) mode to recover core water level in the event of a LOCA. Containment Spray "B" is initiated by a LOCA detection (high drywell pressure or low water level in the reactor) coincident with high containment pressure after about a 10 minute time delay followed by a short time delay of less than 5 seconds.

Attachment 5 of the LAR provides the calculation for instrument uncertainties and setpoint determination. This calculation was based on the GGNS methodology documented in JS-09. In addition, the licensee's RAI response provided vendor data for the ETR model relays necessary for the calculation of instrument uncertainty and calculation of the new AV.

The NRC staff confirmed that the input data for all uncertainties identified in the AV calculation were appropriately identified and carried throughout the calculation. The licensee calculated the following values: upper AV of ≤ 11.1 min and lower AV of ≥ 10.6 min. These new values are more conservative than the previous values of ≤ 11.44 min for the upper AV and ≥ 10.26 min for the lower AV.

Based on its evaluation of the information provided, the NRC staff concludes the licensee appropriately applied its setpoint methodology to calculate the new AV using the corrected accuracy term. In addition, the staff found that the licensee's methodology appropriately used the criteria in RG 1.105 and meets the intent of RIS 2006-17. Therefore, the proposed TS change satisfies the requirements of 10 CFR 50.36.

3.5 Division 1 and 2 Degraded 4.16 KV Bus Voltage

In the LAR, Entergy proposed to revise the lower AV in GGNS TS 3.3.8.1, "Loss of Power (LOP) Instrumentation," Table 3.3.8.1-1, Item 1.c, for the Divisions 1 and 2, 4.16 KV Emergency Bus Undervoltage Degraded Voltage – 4.16 KV Basis. The current AV calculation did not include an allowance for loop uncertainty. Therefore, the licensee revised the calculation of the AV to include the loop uncertainty.

As identified in the LAR, the second level of bus undervoltage is defined as degraded bus conditions, as signified by the sensing of the components monitoring the 4160 V buses. This second level bus undervoltage function protects equipment/motors from any adverse effects of sustained degraded voltage, and prevents spurious separation of offsite power sources from Class 1E loads, due to normal power transients (e.g., starting large motors) or from short duration power system disturbances. Voltage sensing is performed by potential transformers located within the 4160 V switchgear for each division. Each potential transformer has a 4200 V/120 V ratio.

Attachment 6 of the LAR provides the calculation for instrument uncertainties and setpoint determination. This calculation was based on the GGNS methodology documented in JS-09. In addition, the licensee's RAI response provided the vendor data necessary for the calculation of instrument uncertainty and the calculation of the new AV.

The NRC staff confirmed that the input data for all uncertainties identified in the AV calculation were appropriately identified and carried throughout the calculation. The allowance for loop uncertainty was incorporated into the new AV calculation resulting in a new AV of ≥ 3764.25 V.

Based on its evaluation of the information provided, the NRC staff concludes the licensee appropriately applied its setpoint methodology to calculate the new AV, including the loop uncertainty. In addition, the staff found that the licensee's methodology appropriately used the criteria in RG 1.105 and meets the intent of RIS 2006-17. Therefore, the proposed TS change satisfies the requirements of 10 CFR 50.36.

3.6 Division 3 Degraded 4.16 KV Bus Voltage

In the LAR, Entergy proposed to revise the lower AV in GGNS TS 3.3.8.1, "Loss of Power (LOP) Instrumentation," Table 3.3.8.1-1, Item 2.c, for the Division 3, 4.16 KV Emergency Bus Undervoltage Degraded Voltage – 4.16 KV Basis. The licensee is correcting a conservative AV that resulted from using incorrect terms in the uncertainty calculation.

As identified in the LAR, the second level of bus undervoltage is defined as degraded bus conditions, as signified by the sensing of the components monitoring the 4160 V buses. This second level bus undervoltage function protects equipment/motors from any adverse effects of sustained degraded voltage, and prevents spurious separation of offsite power sources from Class 1E loads, due to normal power transients (e.g., starting large motors) or from short duration power system disturbances. Voltage sensing is performed by potential transformers located within the 4160 V switchgear for each division. Each potential transformer has a 4200 V/120 V ratio.

Attachment 7 of the LAR provides calculation for instrument uncertainties and setpoint determination. This calculation was based on the GGNS methodology documented in JS-09.

The NRC staff confirmed that the input data for all uncertainties identified in the AV calculation were appropriately identified and carried throughout the calculation. Once the corrected uncertainties were incorporated, the AV was adjusted from ≥ 3558.8 V to ≥ 3605 V, which provides a more conservative value.

Based on its evaluation of the information provided, the NRC staff concludes the licensee appropriately used its setpoint methodology to calculate the new AV, using the corrected uncertainty terms. In addition, the staff found that the licensee's methodology appropriately used the criteria in RG 1.105 and meets the intent of RIS 2006-17. Therefore, the proposed TS change satisfies the requirements of 10 CFR 50.36.

3.7 Division 3 Degraded 4.16 KV Bus Voltage Time Delay - LOCA

In the LAR, Entergy proposed to revise the lower AV in GGNS TS 3.3.8.1, "Loss of Power (LOP) Instrumentation," Table 3.3.8.1-1, Item 2.e, for the Division 3, 4.16 KV Emergency Bus Undervoltage Degraded Voltage – Time Delay, LOCA. The licensee is correcting a conservative AV that resulted from using incorrect terms in the uncertainty calculation.

Attachment 7 of the LAR provides a calculation for instrument uncertainties and setpoint determination. This calculation was based on the GGNS methodology documented in JS-09. The NRC staff confirmed that the input data for all uncertainties identified in the AV calculation were appropriately identified and carried throughout the calculation. The corrected uncertainties were incorporated into the new AV calculation, resulting in a new AV of ≥ 3.68 seconds from the previous value of ≥ 3.6 seconds. The new AV resulted in a more conservative value.

Based on its evaluation of the information provided, the NRC staff concludes the licensee appropriately used its setpoint methodology to calculate the new AV using the corrected uncertainty terms. In addition, the staff found that the licensee's methodology appropriately used the criteria in RG 1.105 and meets the intent of RIS 2006-17. Therefore, the proposed TS change satisfies the requirements of 10 CFR 50.36.

3.8 Technical Conclusion

The NRC staff reviewed the licensee's application related to the modification of the 5 non-conservative allowable values in the TSs. The NRC staff concludes that the licensee adequately addressed the corrected uncertainty terms within the allowable value calculations, establishing appropriate new allowable values for these functions, to meet the requirements of 10 CFR 50.36. Furthermore, the NRC staff concludes that the systems will continue to meet the requirements of Appendix A to 10 CFR 50, Criterion 13, as well as the guidance within RG 1.105 and RIS 2006-17.

4.0 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.

5.0 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 published in the *Federal Register* on November 25, 2014 (79 FR 70214). 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 amendment.

6.0 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) there is reasonable assurance that such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: D. Warner
A. Wang

Date: August 31, 2015

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

Sincerely,

/RA/

Alan B. Wang, Project Manager
Plant Licensing IV-2 and Decommissioning
Transition Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-416

Enclosures:
1. Amendment No. 207 to NPF-29
2. Safety Evaluation

cc w/enclosures: Distribution via Listserv

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NAME	AWang	PBlechman	RElliott	JThorp
DATE	8/7/15	8/5/15	8/7/15	7/1/15
OFFICE	OGC – NLO	NRR/DORL/LPL4-2/BC	NRR/DORL/LPL4-2/PM	
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