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Proprietary Information  
Withhold per 10 CFR 2.390



A SOUTHERN COMPANY

SEP 01 2015

Docket Nos.: 50-321

NL-15-1535

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D. C. 20555-0001

Edwin I. Hatch Nuclear Plant – Unit 1  
License Amendment Request Concerning Safety Limit  
Minimum Critical Power Ratio

- References:
1. GNF Additional Information Regarding the Requested Changes to the Technical Specification SLMCPR, Proprietary Version, GNF-002N9964-R1-P, dated August 2015
  2. GNF Additional Information Regarding the Requested Changes to the Technical Specification SLMCPR, Non-Proprietary Version, GNF-002N9964-R1-NP, dated August 2015

Ladies and Gentlemen:

Pursuant to 10 CFR 50.90, Southern Nuclear Operating Company (SNC), hereby proposes to amend the Edwin I. Hatch Nuclear Power Plant (HNP) Unit 1 Facility Operating License (FOL), DPR-57, by incorporating the attached proposed change in the Technical Specifications (TS). This proposed change provides revised values for the Safety Limit Minimum Critical Power Ratios (SLMCPRs) for both single and dual recirculation loop operation.

Attachment 1 to this letter contains the application for amendment, the determination of no significant hazards consideration, and the environmental impact assessment. Attachment 2 provides the marked-up version of the current TS page. Attachment 3 contains the re-typed TS page. Enclosure 1 is a summary of the technical bases for the SLMCPR values and is considered proprietary information by Global Nuclear Fuels - Americas, LLC (GNF). In accordance with 10 CFR 2.390(b)(1), an affidavit attesting to the proprietary nature of the enclosed information and requesting withholding from public disclosure is included with Enclosure 1. Enclosure 2 is the same GNF information with the proprietary portions removed, and is provided for public disclosure.

SNC requests approval of the proposed license amendment by February 8, 2016, with the amendment being implemented within 45 days thereafter to coincide with start-up from our refueling outage.

This letter contains no NRC commitments. If you have any questions, please contact Ken McElroy at (205) 992-7369.

State of Georgia  
Mr. J. H. Turner, Director – Environmental Protection Division

**Edwin I. Hatch Nuclear Plant – Unit 1  
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**Attachment 1**

**Description and Assessment**

### **Description of the Proposed Change**

Pursuant to 10 CFR 50.90, Southern Nuclear Operating Company (SNC), proposes to amend the Edwin I. Hatch Nuclear Power Plant (HNP) Unit 1 Technical Specifications (TS) Section 2.1.1.2, Safety Limit Minimum Critical Power Ratio (SLMCPR). The proposed changes to the Technical Specifications are as follows:

Page 2.0-1, Specification 2.1.1.2 – Replace the listed SLMCPR values of 1.07 for two recirculation loop operation (TLO) and 1.09 for single recirculation loop operation (SLO) with new values of 1.09 and 1.12, respectively.

### **Reason for the Proposed Change**

The current SLMCPR values for TLO and SLO contained in the HNP Unit 1 Technical Specifications (1.07 and 1.09, respectively) are not applicable for the upcoming operating cycle due to a change in reload fuel design. Based upon the fuel and core loading, the cycle-specific SLMCPR values were determined to be 1.09 for TLO and 1.12 for SLO.

### **Safety Assessment of Proposed Change**

The purpose of the SLMCPR is to assure that the specified acceptable fuel design limit for fuel rod overheating is not violated during normal operation or design-basis anticipated operational occurrences (transients). Since the parameters that result in fuel rod overheating are not directly observable during reactor operation, the thermal and hydraulic conditions that result in the onset of transition boiling have been used to mark the beginning of the region in which fuel cladding damage could occur. Although it is recognized that the onset of transition boiling would not result in damage to BWR fuel rod cladding, the critical power at which boiling transition is calculated to occur has been adopted as a convenient and conservative limit. However, uncertainties in monitoring the core operating state and in the procedures used to calculate the critical power result in an uncertainty in the value of the critical power. Therefore, the SLMCPR is defined as the critical power ratio in the limiting fuel assembly (with margin) such that, if the limit is not violated, 99.9% of the fuel rods will not be susceptible to boiling transition during normal operation or the most limiting postulated design-basis transient event.

The revised SLMCPR for HNP Unit 1 was determined using cycle-specific fuel and core parameters, with NRC-approved methods of evaluation, as discussed in Enclosure 1 (GNF Additional Information Regarding the Requested Changes to the Technical Specification SLMCPR) and Enclosure 2 (a non-proprietary version of GNF's proprietary document). Analysis of the limiting transients provides the allowed operating conditions in terms of MCPR during the fuel cycle such that if a design-basis transient event were to occur, the MCPR would not be less than the SLMCPR. The SLMCPR value for SLO is greater than the TLO value to account for the increased core flow and random effective TIP reading uncertainties.

No plant hardware or operational changes are required with this proposed change.

### **Determination Of No Significant Hazards Considerations**

Pursuant to 10 CFR 50.92, SNC has reviewed the proposed change and concludes that the change does not involve a significant hazards consideration since the proposed change satisfies the criteria in 10 CFR 50.92(c). These criteria require that operation of the facility in accordance with the proposed amendment will not: (1) involve a significant increase in the probability or consequences of an accident previously evaluated, (2) create the possibility of a new or different kind of accident from any accident previously evaluated, or (3) involve a significant reduction in the margin of safety. The discussion below addresses each of these criteria and demonstrates that the proposed amendment does not constitute a significant hazard.

The proposed change does not involve a significant hazards consideration because:

1. The operation of HNP Unit 1 in accordance with the proposed amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated.

The Safety Limit Minimum Critical Power Ratio (SLMCPR) ensures that, 99.9% of the fuel rods in the core will not be susceptible to boiling transition during normal operation or the most limiting postulated design-basis transient event. The new SLMCPR values preserve the existing margin to the onset of transition boiling; therefore, the probability of fuel damage is not increased as a result of this proposed change. The determination of the revised HNP Unit 1 SLMCPRs has been performed using NRC-approved methods of evaluation. These plant-specific calculations are performed each operating cycle and may require changes for future cycles. The revised SLMCPR values do not change the method of operating the plant; therefore, they have no effect on the probability of an accident initiating event or transient.

Based on the above, SNC has concluded that the proposed change will not result in a significant increase in the probability or consequences of an accident previously evaluated.

2. The operation of HNP Unit 1 in accordance with the proposed amendment will not create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed changes result only from a specific analysis for the HNP Unit 1 core reload design. These changes do not involve any new or different methods for operating the facility. No new initiating events or transients result from these changes.

Based on the above, SNC has concluded that the proposed change will not create the possibility of a new or different kind of accident from those previously evaluated.

3. The operation of HNP Unit 1 in accordance with the proposed amendment will not involve a significant reduction in the margin of safety.

The new SLMCPRs have been calculated using NRC-approved methods of evaluation with plant and cycle-specific input values for the fuel and core design for the upcoming cycle of operation. The SLMCPR values ensure that 99.9% of the fuel rods in the core will not be susceptible to boiling transition during normal operation or the most limiting postulated design-basis transient event. The operating MCPR limit is set appropriately above the safety limit value to ensure adequate margin when the cycle-specific transients are evaluated. Accordingly, the margin of safety is maintained with the revised values.

As a result, SNC has determined that the proposed change will not result in a significant reduction in the margin of safety.

On the basis of the above, SNC has determined that operation of the facility in accordance with the proposed change does not involve a significant hazards consideration as defined in 10 CFR 50.92(c), in that it: (1) does not involve a significant increase in the probability or consequences of an accident previously evaluated; (2) does not create the possibility of a new or different kind of accident from any accident previously evaluated; and (3) does not involve a significant reduction in the margin of safety.

## **ENVIRONMENTAL IMPACT**

The proposed Technical Specification changes were reviewed against the criteria of 10 CFR 51.22 for environmental considerations. The proposed changes do not involve a significant hazards consideration, a significant increase in the amounts of effluents that may be released offsite, or a significant increase in individual or cumulative occupational radiation exposure. Based on the foregoing, SNC concludes the proposed Technical Specifications meet the criteria in 10 CFR 51.22(c)(9) for a categorical exclusion from the requirements for an Environmental Impact Statement.

**Edwin I. Hatch Nuclear Plant – Unit 1  
License Amendment Request Concerning Safety Limit  
Minimum Critical Power Ratio**

**Attachment 2**

**Marked Technical Specification Page**

## 2.0 SAFETY LIMITS (SLs)

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### 2.1 SLs

#### 2.1.1 Reactor Core SLs

2.1.1.1 With the reactor steam dome pressure < 685 psig or core flow < 10% rated core flow:

THERMAL POWER shall be  $\leq$  24% RTP.

2.1.1.2 With the reactor steam dome pressure  $\geq$  685 psig and core flow  $\geq$  10% rated core flow:

1.09

MCPR shall be  $\geq$  1.07 for two recirculation loop operation or  $\geq$  1.09 for single recirculation loop operation.

1.12

2.1.1.3 Reactor vessel water level shall be greater than the top of active irradiated fuel.

#### 2.1.2 Reactor Coolant System (RCS) Pressure SL

Reactor steam dome pressure shall be  $\leq$  1325 psig.

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### 2.2 SL Violations

With any SL violation, the following actions shall be completed within 2 hours:

2.2.1 Restore compliance with all SLs; and

2.2.2 Insert all insertable control rods.

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**Edwin I. Hatch Nuclear Plant – Unit 1  
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**Attachment 3**

**Clean Typed Technical Specification Page**

## 2.0 SAFETY LIMITS (SLs)

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### 2.1 SLs

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THERMAL POWER shall be  $\leq$  24% RTP.

2.1.1.2 With the reactor steam dome pressure  $\geq$  685 psig and core flow  $\geq$  10% rated core flow:

MCPR shall be  $\geq$  1.09 for two recirculation loop operation or  $\geq$  1.12 for single recirculation loop operation.

2.1.1.3 Reactor vessel water level shall be greater than the top of active irradiated fuel.

#### 2.1.2 Reactor Coolant System (RCS) Pressure SL

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