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Southern Nuclear Operating Company

*the southern electric system*

J. D. Woodard  
 Vice President  
 Plant Project

September 18, 1992

Docket No. 50-348

Mr. S. D. Ebnetter  
 U. S. Nuclear Regulatory Commission  
 Region II - Suite 2900  
 101 Marietta Street, NW  
 Atlanta, Georgia 30323

Joseph M. Farley, Unit 1  
Request for Regional Waiver of Compliance

Gentlemen:

A flux map performed on September 16, 1992, revealed that heat flux hot channel factor,  $F_0(Z)$ , had exceeded the limits contained in Technical Specification 3.2.2. by approximately 12%. As a result, power was reduced to 88% per the technical specification action statement. Similarly, the Power Range Neutron Flux - High Trip Setpoints were also reduced.

The action statement also requires that the reactor be shutdown to at least hot standby within 72 hours in order to reduce the Overpower  $\Delta T$  Trip Setpoints. The action statement further requires identification and correction of the cause of the out of limit condition before thermal power can be increased. As a result a regional waiver of compliance is requested to allow substitution of the figure enclosed in Attachment 2 for Figure 3.2-2 of the technical specifications. The figure in Attachment 2 has been previously approved for use with the Unit 1 Vantage 5 reload. The Vantage 5 analysis is bounding with respect to the LOPAR fuel currently in Farley Unit 1, Cycle 11. Therefore, there is no safety concern to granting this request. A response is requested by 4:00 pm CDT on September 18, 1992, in order to preclude shutting down Unit 1 unnecessarily on September 19, 1992, at 5:10 pm.

A review of the Vantage 5 analysis has been conducted to ensure that use of the revised Figure 3.2-2 with the current LOPAR core will not result in exceeding any limits currently applicable to the LOPAR core.

The Plant Operations Review Committee has reviewed and approved this submittal.

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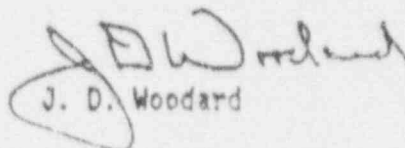
U. S. Nuclear Regulatory Commission

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If there are any questions, please advise.

Respectfully submitted,

SOUTHERN NUCLEAR OPERATING COMPANY



J. D. Woodard

REM:map d.vp

Attachment

cc: Mr. S. T. Hoffman  
Mr. G. F. Maxwell  
Mr. Carole Samuelsen

ATTACHMENT 1

Temporary Waiver Justification

ATTACHMENT 1

1. Requirements for which a Waiver Is Requested

A waiver is requested to allow substitution of the figure in Attachment 2 for technical specification Figure 3.2-2.

2. Circumstance Requiring Prompt Action

On September 16, 1992, while performing an  $F_{27}$  surveillance on Unit 1 of Joseph M. Farley Nuclear Plant, it was determined that the technical specification limit for the total peaking factor ( $F_0$ ) for 2 rods within assembly N-10 was exceeded at the single measured point at the top elevation of 12.0 ft. At an elevation of 12.0 ft., an  $F_0$  of approximately 1.1 was calculated. The current technical specification limit at 12.0 ft. is 1.0. All other axial points in this assembly were within the technical specification limits. As a result, power was reduced to 88% per the technical specification action statement. Similarly, the Power Range Neutron Flux - High Trip Setpoints were also reduced.

3. Compensatory Actions

Based on the discussion provided under the Significant Hazards Consideration (Section 6), no restrictions to operations are required. Power may be returned to 100%.

4. Safety Significance and Potential Consequences

There is no increase in probability or consequences of any accident previously evaluated. Since it has been demonstrated that small break LOCA analytical margin exists (Section 6), the 10 CFR 50.46 acceptance criteria continue to be met.

5. Duration of the Request

A waiver is requested to allow substitution of Figure 3.2-2 until the start of the refueling outage (presently scheduled for September 26, 1992).

## 6. Significant Hazards Consideration

The  $F_0$  at the 12.0 ft. elevation impacts only the small break LOCA analysis. The following LOCA related analyses are not adversely affected by an increased  $F_0$  at the 12.0 ft. elevation: reactor vessel and loop LOCA blowdown forces, hot leg switchover to preclude boron precipitation, rod ejection mass and energy release, post LOCA long term core cooling, and large break LOCA. These analyses are not affected since the increased  $F_0$  at the 12.0 ft. elevation does not change the safeguards systems actuations or assumptions used in the analysis of the events and since the increased  $F_0$  at 12.0 ft. does not create conditions more limiting than those assumed in the analysis of these LOCA events.

The recently approved small break LOCA analysis of record covering the transition from LOPAR fuel to a full core of Vantage 5 fuel was performed for Farley Units 1 and 2 using the NRC approved NOTRUMP Evaluation Model. The analysis modeled Vantage 5 fuel, an  $F_0$  of 2.5, an enthalpy rise factor ( $F_{\Delta H}$ ) of 1.70, and a core power level of 2775 MWt and it was demonstrated that the limits of 10 CFR 50.46 are met. (Farley Unit 2 is currently licensed and operating with this analysis of record.) The current LOPAR licensing basis analysis for Farley Unit 1, Cycle 11, assumed an  $F_0$  of 2.32 and an  $F_{\Delta H}$  of 1.55 at a core power level of 2652 MWt. The  $F_0$  of 2.32 and  $F_{\Delta H}$  of 1.55 have remained the same for all LOPAR analyses, including those covered by the Vantage 5 reload transition safety report. Since the major change in the thermal hydraulic input parameters due to the smaller optimized Vantage 5 fuel rod is a slight increase in core pressure drop, the small break ECCS results with Vantage 5 fuel with the associated higher power level and peaking factors would bound a full core analysis of LOPAR fuel at lower power level and core peaking factors. The NOTRUMP Evaluation Model used to calculate the small break LOCA has only one core flow channel and the core flow rate is relatively low during the small break LOCA event, so enough time is available to maintain flow equilibrium between vantage 5 and LOPAR fuel assemblies in a mixed core. Therefore, the Vantage 5 fuel small break LOCA analysis with increased power level and peaking factors will bound both a mixed core of Vantage 5 fuel and LOPAR fuel (Vantage 5 Reload Transition Safety Report for Joseph M. Farley Nuclear Plant - Units 1 and 2, May 1991) and also will bound a complete core of LOPAR fuel with lower power level and core peaking factors which is currently in Cycle 11 of Farley Unit 1. Therefore, it can be concluded that the current Vantage 5 analysis with increased peaking factors and power level is bounding with respect to the LOPAR fuel currently in Farley Unit 1, Cycle 11.

A conservative, top skewed power shape was selected for the small break LOCA analysis for Vantage 5 fuel. For Vantage 5 analysis, the  $K(Z)$  curve which bounds the small break analysis has an  $F_0$  limit of 2.33 at 12.0 ft. Applying to the LOPAR  $F_0$ , the  $F_0$  limit is calculated to be 2.16 at 12.0 ft. During Cycle 11 operation the heat flux hot channel factor,  $F_0(Z)$ , has been calculated to be approximately 1.1 at 12.0 ft. which exceeded the Technical Specification limit. Since the recently approved small break LOCA analysis of record shows significant  $F_0$  margin to this value, an approximate  $F_0$  of 1.1 at 12.0 ft. could not result in the acceptance criteria of 10 CFR 50.46 being exceeded. Thus operation at full licensed power with the revised Figure 3.2-2 is justified. Cycle 12 for Unit 1 will be covered by the approved Vantage 5 analysis.

Therefore approval of this waiver will not involve a significant increase in the probability or consequences of an accident previously evaluated. The currently approved NOTRUMP analysis for Vantage 5 is bounding with respect to the LOPAR fuel currently in Unit 1.

Approval of this waiver will not create the possibility of a new or different kind of accident from any accident previously evaluated. No physical changes are being made to the plant and the plant will be operated within the bounds of an analysis approved for use in the next cycle and currently in use on Unit 2.

Approval of this waiver will not involve a significant reduction in a margin of safety since the plant will continue to be operated within the bounds of an analysis approved for use in the next cycle and currently in use on Unit 2.

7. Environmental Consequences

Substitution of the revised Figure 3.2-2 will not involve any significant change in the types of effluents that may be released offsite and no significant increase in the individual or cumulative occupational radiation exposure. Therefore, this waiver of compliance does not involve any irreversible environmental consequences.