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May 19, 1988

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

PLANT VOGTLE - UNIT 1
NRC DOCKET 50-424
OPERATING LICENSE NPF-68
REQUEST TO REVISE TECHNICAL SPECIFICATION 3.2.2
HEAT FLUX HOT CHANNEL FACTOR - FQ(z)

Gentlemen:

In accordance with the provisions of 10 CFR 50.90 as required by 10 CFR 50.59(c)(1), Georgia Power Company (GPC) hereby proposes to amend the Vogtle Electric Generating Plant Unit 1 Technical Specifications, Appendix A to Operating License NPF-68.

The proposed amendment reduces the heat flux hot channel factor FQ(z) to 2.25 at 100% power in the Technical Specifications. This proposed amendment is in response to the NRC request contained in a letter dated March 10, 1988.

Enclosure 1 provides a detailed description of the proposed change and the basis for the change request.

Enclosure 2 details the basis for our determination that the proposed change does not involve significant hazards considerations.

Enclosure 3 provides instructions for incorporating the proposed change into the Technical Specifications. The proposed revised pages follow Enclosure 3.

Payment of the required filing fee is enclosed.

In accordance with 10 CFR 50.91, Mr. J. L. Ledbetter of the Environmental Protection Division of the Georgia Department of Natural Resources will be sent a copy of this letter and all applicable enclosures.

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Mr. R. P. McDonald states that he is an Executive Vice President of Georgia Power Company and is authorized to execute this oath on behalf of Georgia Power Company, and that to the best of his knowledge and belief, the facts set forth in this letter and enclosures are true.

GEORGIA POWER COMPANY

By: 

R. P. McDonald

Sworn to and subscribed before me this 19th day of May 1988.



Notary Public

Notary Public, Fusion County, GA
My Commission Expires Feb. 23, 1991

TAR/lm

Enclosures:

1. Basis for Proposed Change
2. 10 CFR 50.92 Evaluation
3. Instructions for Incorporation
4. Check for \$150.00 filing fee

c: Georgia Power Company
Mr. P. D. Rice
Mr. G. Bockhold, Jr.
GO-NORMS

U. S. Nuclear Regulatory Commission
Dr. J. N. Grace, Regional Administrator
Mr. J. B. Hopkins, Licensing Project Manager, NRR (2 copies)
Mr. J. F. Rogge, Senior Resident Inspector-Operations, Vogtle

ENCLOSURE 1

PLANT VOGTLE - UNIT 1
NRC DOCKET 50-424
OPERATING LICENSE NPF-68
REQUEST TO REVISE TECHNICAL SPECIFICATION 3.2.2
BASIS FOR PROPOSED CHANGE

PROPOSED CHANGE

Revise Specification 3.2.2 to reduce $FQ(z)$ to 2.25 at THERMAL POWER levels greater than 50% of RATED THERMAL POWER and to 4.50 at THERMAL POWER levels less than or equal to 50% of RATED THERMAL POWER. Concurrently, revise the bases to Specification 3.2.1 (i.e., reduce the $FQ(z)$ upper bound envelope to 2.25 times the normalized axial peaking factor).

BASIS

Specification 3.2.2 currently requires the heat flux hot channel factor $FQ(z)$ to be limited to 2.30 at 100% power. A new limit for $FQ(z)$ of 2.25 is proposed. The current large break LOCA analysis for Plant Vogtle assumes a Containment Spray System (CSS) flowrate of 6400 GPM. The new $FQ(z)$ limit accounts for an actual CSS flowrate of 6569 GPM as determined using plant startup data and assures that Plant Vogtle is in compliance with the provisions of 10 CFR 50.46.

ENCLOSURE 2

PLANT VOGTLE - UNIT 1
NRC DOCKET 50-424
OPERATING LICENSE NPF-68
REQUEST TO REVISE TECHNICAL SPECIFICATION 3.2.2
10 CFR 50.92 EVALUATION

Pursuant to 10 CFR 50.92, Georgia Power Company has evaluated the attached proposed amendment to the VEGP Unit 1 Technical Specifications and has determined that operation of the facility in accordance with the proposed amendment would not involve significant hazards considerations. The basis for the determination is as follows:

PROPOSED CHANGE

Revise Specification 3.2.2 to reduce $FQ(z)$ to 2.25 at THERMAL POWER levels greater than 50% of RATED THERMAL POWER and to 4.50 at THERMAL POWER levels less than or equal to 50% of RATED THERMAL POWER. Concurrently, revise the value of $FQ(z)$ contained in the bases to Specification 3.2.1 (e.g., reduce the $FQ(z)$ upper bound envelope to 2.25 times the normalized axial peaking factor).

BACKGROUND

The limit on $FQ(z)$ (hereinafter FQ) ensures that: (1) the design limits on peak local power density and minimum DNBR are not exceeded and (2) in the event of a LOCA the peak fuel clad temperature will not exceed the 2200°F ECCS acceptance criteria of 10CFR50.46. Specification 3.2.2 provides limits on FQ as a function of power level and core height and assures that the above criteria are met following the occurrence of any postulated ANS Condition II, III or IV event described in Chapter 15 of the FSAR. The bases to Specification 3.2.1 refer to the FQ upper bound envelope and as a result are revised by this proposed amendment to assure consistency with Specification 3.2.2.

The current large break LOCA analysis for Plant Vogtle was performed in April 1983 and assumed a Containment Spray System (CSS) flowrate of 6400 GPM. This proposed amendment reduces FQ to 2.25 to account for an actual CSS flow rate of 6569 GPM which was determined based on plant startup data. Since higher CSS flowrates result in a reduction in computed containment backpressure, and lower containment backpressure is a penalty for large break ECCS analyses, the current analysis reported in the Vogtle Final Safety Analysis Report (FSAR) is impacted in the non-conservative direction.

The large break LOCA analysis, which currently forms the licensing basis for Plant Vogtle Unit 1, has very little margin to the 2200°F peak clad

ENCLOSURE 2 (Continued)

10 CFR 50.92 EVALUATION

temperature (PCT) limit specified in 10 CFR 50.46(b)(1). The limiting case, not considering the subject increase in CSS flowrate, has a PCT of 2172°F at an overall peaking factor FQ of 2.30 for the limiting discharge coefficient of 0.6, as computed using the 1981 version of the large break Westinghouse Emergency Core Cooling System (ECCS) Evaluation Model. The effect of containment purging as reported in chapter 6.2.1.5 of the FSAR increases the PCT by 10°F. A safety evaluation performed by Westinghouse which considered the effect of thimble tube modeling and chamfered fuel pellets resulted in an 8°F increase in the PCT. Therefore, the overall PCT that serves as the current licensing basis, for the limiting case, is 2190°F. Based on conservative sensitivity studies, the increase of 169 gpm in the CSS flowrate would result in a PCT penalty of approximately 25°F and an overall PCT of 2215°F which is slightly above the 2200°F criterion specified in 10 CFR 50.46(b)(1).

To provide assurance that the intent of 10 CFR 50.46 is met, GPC agreed as part of a request for exemption to 10 CFR 50.46 to administratively control FQ to a value of 2.25. This decrease in FQ results in a reduction in the calculated PCT and would result in compliance with the 2200°F criteria for Unit 1 full power operation with an actual CSS flowrate of 6569 gpm. Subsequently, the NRC determined that an exemption to 10 CFR 50.46 is not necessary and requested GPC to submit this proposed amendment for a change of FQ to 2.25 in the Technical Specifications.

ANALYSIS

GPC has reviewed the proposed change with respect to the requirements of 10 CFR 50.92 and has determined that the change does not involve a significant hazards consideration. In support of this conclusion, the following analysis is provided:

1. The proposed change will not significantly increase the probability or consequences of an accident previously evaluated. The proposed reduction in FQ to 2.25 is to compensate for an actual CSS flowrate of 6569 GPM. The reduction in FQ does not result in a physical change to Plant Vogtle. The actual CSS flowrate does impact the large break LOCA ECCS analysis (as discussed below), but it has no impact on the probability of a LOCA occurrence. Hence, neither the reduction in FQ nor the actual CSS flowrate impact the probability of occurrence of any accident previously evaluated for Plant Vogtle.

ENCLOSURE 2 (Continued)

10 CFR 50.92 EVALUATION

Of the accident analyses documented in the Vogtle FSAR, the increased CSS flowrate significantly impacts only the large break LOCA ECCS analysis since a higher CSS flowrate produces a lower calculated containment backpressure which is a PCT penalty.

Results of generic calculations performed using the current NRC-approved Westinghouse ECCS Best-estimate Analysis of Reflood Transients (BART) Evaluation Model have shown significant reductions in calculated PCT when compared to the results obtained using earlier Westinghouse evaluation models such as the NRC-approved 1981 ECCS Evaluation Model (1981 Model) used in the licensing basis for Plant Vogtle Unit 1. These studies indicate that a reanalysis of the Plant Vogtle large break LOCA using BART would result in an increase in the margin to the limit of 2200°F PCT of approximately 100°F at the current licensed FQ of 2.30. Although these scoping analyses assumed the CSS flowrate value of 6400 gpm, the 169 gpm increase in actual flow would not increase the PCT by 100°F. Thus, increased margins to the 2200°F limit are available which are more than sufficient to accommodate the PCT increase due to a 169 gpm increase in the CSS flowrate. Since this proposed amendment reduces FQ to 2.25, there is additional assurance that Plant Vogtle will be in compliance with the criteria of 10 CFR 50.46. The proposed FQ would be expected to result in at least a 50°F reduction in PCT when reanalyzed with the 1981 Westinghouse Large Break Evaluation Model used for the original Vogtle Large Break LOCA calculation. Since the limits of 10 CFR 50.46 are met, the proposed change does not increase the consequences of the LOCA event.

The reduction in FQ will increase the margins of safety for the non-LOCA analyses, due to the reduction in peak local power density. The actual CSS flowrate of 6569 GPM has no significant impact on the non-LOCA analyses. As a result, the consequences of non-LOCA events are not increased.

2. The proposed change does not create the possibility of a new or different kind of accident than any accident previously evaluated. This reduction in FQ does not introduce a change to Plant Vogtle which challenges different safety related equipment from that already analyzed in of the Vogtle FSAR. As discussed in (1) above, the proposed reduction in FQ to 2.25 adequately

ENCLOSURE 2 (Continued)

10 CFR 50.92 EVALUATION

compensates for the actual CSS flowrate and assures that the criteria of 10 CFR 50.46 are met. The reduction in FQ provides greater margins to the limits on peak local power density and minimum DNBR for postulated non-LOCA events.

3. The proposed change does not significantly reduce a margin of safety. As discussed in (1) above, the proposed FQ reduction to 2.25 adequately compensates for the actual CSS flowrate and assures that the criteria of 10 CFR 50.46 are met. Hence, for LOCA events the margin of safety is not reduced. The reduction in FQ provides greater margins to the limits on peak local power density and minimum DNBR for the postulated non-LOCA events analyzed on chapter 15 of the FSAR.

CONCLUSION

Based on the preceding analysis, GPC has determined that the proposed change to the Technical Specifications will not significantly increase the probability or consequences of an accident previously evaluated, create the possibility of a new or different kind of accident from any accident previously evaluated, or involve a significant reduction in a margin of safety. GPC therefore concludes that the proposed change meets the requirements of 10 CFR 50.92(c) and does not involve significant hazards considerations.

REFERENCES

1. GPC letter to NRC dated January 29, 1988, Log SL-4065
2. GPC letter to NRC dated January 29, 1988, Log SL-4072
3. NRC letter to GPC dated March 10, 1988