



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 51 TO FACILITY OPERATING LICENSE NPF-68
AND AMENDMENT NO. 30 TO FACILITY OPERATING LICENSE NPF-81

GEORGIA POWER COMPANY, ET AL.

VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2

DOCKET NOS. 50-424 AND 50-425

1.0 INTRODUCTION

By letter dated November 12, 1991, as supplemented April 21, 1992, Georgia Power Company, et al. (the licensee) proposed license amendments to change the minimum required thermal design flow (TDF) specified in the Technical Specifications (TSs) for Vogtle Electric Generating Plant (Vogtle or the facility), Units 1 and 2. Specifically, the footnote in TS Table 2.2.1 for "Loop Design Flow" would be changed to reduce the specified flow from 95,700 gpm to 93,600 gpm. Similarly, in TS 3.2.5.c, the "Reactor Coolant System (RCS) Flow" specified in the limiting condition for operation (LCO) and associated TS Bases 3/4.2.5 would be revised from 393,136 gpm to 384,509 gpm (including flow uncertainty). The licensee's application also included related changes which would apply only prior to completion of the third refueling outage for Vogtle Unit 2. However, since that refueling outage has now been completed, these proposed changes are no longer needed and are not included in these amendments. The April 21, 1992 letter provided additional information which did not change the initial proposed no significant hazards consideration determination.

2.0 BACKGROUND

During the third refueling outage for Vogtle Unit 1 in late 1991, the licensee removed the resistance temperature detector (RTD) bypass system used to measure the hot leg temperature and replaced it with direct immersion RTDs. During this outage, the licensee also began a transition in fuel type by replacing one third of Unit 1's core with Westinghouse's VANTAGE-5 fuel using a low leakage fuel loading pattern. The same changes were made to Unit 2 during its third refueling outage which was recently completed. These changes were accomplished in accordance with Amendments 43 through 46 for Unit 1, and Amendments 23 through 25 for Unit 2. The low leakage fuel loading pattern has resulted in increased hot leg streaming which causes an erroneous reduction in the RCS flow rate measured via the calorimetric heat balance. To compensate for this problem and ensure that the RCS flow rate TS limit can be met, the licensee has proposed the above TS changes which reduce the allowable loop and RCS flow rate.

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3.0 EVALUATION

In support of these proposed TS amendments, the licensee and Westinghouse have examined each safety analysis that uses TDF as an input parameter. Each analysis was either reanalyzed with a reduced RCS TDF of 374,400 gpm to determine the effect of the flow reduction, or evaluated to determine that the impact of the flow reduction was insignificant. These analyses and evaluations assumed a power level of 3565 MWt, which provides results that are conservative with respect to the power level of 3411 MWt authorized by the current operating licenses.

As noted in Section 2 of this evaluation, the licensee had previously submitted a program to NRC for implementation of VANTAGE-5 fuel which has been approved by the NRC. The analyses in that program were for a reduced loop TDF of 93,600 gpm (374,400 gpm for four loops) and a power level of 3565 MWt. This included accident analyses for large and small break LOCAs, steam generator tube rupture, and a large spectrum of non-LOCA events dependant on fuel-related parameters.

Also, as part of an earlier program to relocate the lower steam generator instrument taps that are used to determine narrow-range level, the licensee had previously analyzed several non-LOCA events that are dependent on steam generator level based upon the reduced TDF. These analyses were submitted in the licensee's application of May 29, 1990, and were approved by the NRC upon issuance of Amendments 34 (Unit 1) and 14 (Unit 2) on August 30, 1990. These analyses included:

FSAR Section 15.2.6	Loss of Nonemergency AC Power to Plant Auxiliaries
FSAR Section 15.2.7	Loss of Normal Feedwater Flow
FSAR Section 15.2.8	Feedwater System Pipe Break

In its application of November 12, 1991, the licensee identified four additional events or evaluations which had not been addressed with the lower TDF in previously approved steam generator level tap relocation and VANTAGE-5 programs. The revised evaluations are based upon the lower TDF. The four issues are:

- 1) Inadvertent Opening of a Steam Generator Relief or Safety Valve Event (FSAR Section 15.1.4) - To address this issue, the licensee referenced a reanalysis of the event assuming the lower TDF included as part of a power uprate submittal dated February 28, 1992. Additional details of the reanalysis were provided in the licensee's letter of April 21, 1992. The analysis was performed using approved Westinghouse computer codes LOFTRAN and THINC-IV, and the approved Westinghouse W-3 departure from nucleate boiling (DNB) correlation (The W-3 correlation is based upon a minimum DNB ratio (DNBR) limit of 1.30). The licensee indicated that the reanalysis accounted for all DNBR penalties (e.g., mixed core penalty) and was performed for both types of fuel presently in the Vogtle cores (Westinghouse's 17 x 17 low parasitic and VANTAGE-5). The licensee reported that the minimum DNBR remained above the 1.30 limit.

The licensee's reanalysis used approved methodologies and appropriate assumptions, and provided acceptable results. The staff finds the analysis acceptable.

- 2) Main Steamline Break Event (FSAR Section 15.1.5) - To address this issue the licensee referenced a reanalysis of the event assuming the lower TDF included in the February 28, 1992 power uprate submittal, as supplemented by information in the April 21, 1992, letter. The methodologies used in this reanalysis are the same as used for Item (1) above, except that a DNBR limit criterion of 1.45 was applied to account for the calculation of primary system pressure to drop below 1000 psia. The licensee reported that the minimum DNBR for this event, considering DNBR penalties, remained above the 1.45 criterion.

The licensee's reanalysis used approved methodologies and appropriate assumptions, and provided acceptable results. The staff finds the analysis acceptable.

- 3) Main Steamline Break Information Used for Superheat Study for Vogtle Units 1 and 2 (WCAP-11285) - This issue relates to the environmental qualification envelope for equipment located outside containment. The licensee's studies of this issue were originally performed for the currently licensed power level and were subsequently updated in the licensee's power uprate submittal. The licensee finds that TDF has a negligible impact on the environmental consequences to equipment located outside containment. The staff agrees with the licensee's conclusion and finds the lower TDF acceptable with respect to the environmental qualification of equipment, based upon the current authorized power level. The staff has not reviewed the licensee's conclusion with respect to proposed power level increases.

- 4) Containment Design Evaluation (FSAR Section 6.2.1.1 and 6.2.1.4) - The licensee addressed this item involving Steamline Break and Loss of Coolant Accident containment conditions by referencing containment analyses reported in the February 28, 1992, power uprate submittal. The referenced analyses were performed by Westinghouse using its COCO computer code. COCO is a containment analysis code that has been previously approved by the NRC.

The licensee's analyses used approved methodologies and appropriate assumptions, and provided acceptable results. The staff finds the analyses acceptable.

The licensee has examined the effect of the reduction in allowable RCS flow on trip setpoints and has determined that no changes are required to the current settings.

Based on the information presented above, the licensee has concluded, and the staff agrees, that reduction in TDF and the LCO RCS flow value do not involve a significant increase in the probability or consequences of an accident previously evaluated. Moreover, the proposed lower TDF value does not cause

any acceptance criteria for safety analyses, or the environmental envelopment for equipment qualification, to be exceeded. The staff therefore finds the proposed change to be acceptable for operation at the current authorized power level of 3411 Mwt.

4.0 STATE CONSULTATION

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

5.0 ENVIRONMENTAL CONSIDERATION

These amendments change a requirement with respect to the installation or use of facility components located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve 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 exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (56 FR 61263 dated December 2, 1991). 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 these amendments.

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) 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.

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Dated: May 28, 1992