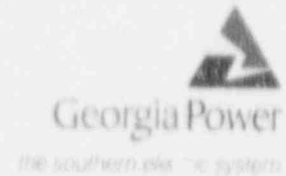


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February 28, 1992

ELV-03375  
001039

Docket Nos. 50-424  
50-425

TAC-M82724  
M82725

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

Gentlemen:

VOGTLE ELECTRIC GENERATING PLANT  
LICENSE CHANGE POWER UPRATING

In accordance with 10 CFR 50.90, Georgia Power Company (GPC) proposes to amend the Vogtle Electric Generating Plant (VEGP) Units 1 and 2 licenses NPF-68 and NPF-81. The proposed amendment changes the Technical Specifications by revising the definition of rated thermal power from 3411 megawatts thermal (Mwt) to 3565 Mwt. In order to operate at the higher power level it is also necessary to change the value of the statistical summation of errors assumed in the setpoint calculation for the overtemperature delta (OTDT) trip function and to revise the value of the power distribution reset function for OTDT.

The thermal hydraulic and nuclear aspects of the core were originally evaluated on the basis of a core thermal output of 3411 Mwt. Although the currently licensed core power level is 3411 Mwt, all safety systems including the containment and engineering safety features were designed for operation at a higher core power level of 3565 Mwt. The proposed change to the licensed power level will allow VEGP Units 1 and 2 to operate at the engineering safety features design power rating without any modifications. This has been confirmed by performing detailed evaluations and reanalyses of VEGP systems at the uprated core power rating level. Georgia Power Company has previously submitted reanalyses of most accidents and transients using the higher power level (GPC letter ELV-02166 dated November 29, 1990). The results of the reanalyses for the remainder of the accidents and transients are discussed in the nuclear steam supply system (NSSS) and balance of plant (BOP) licensing reports. These reports are included with this letter.

The uprating efforts were performed in accordance with the licensing bases that currently exist for the Vogtle units. These bases assure the same level of protection for the public health and safety at the uprated conditions as at the presently licensed power level. The analyses show that operation at the uprated power level can be achieved without changing any of the criteria that have

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U. S. Nuclear Regulatory Commission

ELV-03375

Page 2

previously been used as the bases for acceptable operation. Therefore, the margins of safety provided by the acceptance criteria used for the current licensed power level will not be changed by operating at the uprated power level.

The analyses that were necessary to support operation at uprated conditions were performed to allow the formation of as much operating margin as possible. The results of these analyses were used to support previous submittals to the NRC such as for the use of VANTAG-5 fuel and the reduction in the required amount of reactor coolant system flow. The input assumptions used in the analyses include conservative values for other parameters such as response times and initial reactor coolant system temperatures. While these conservative assumptions are indicated in the descriptions of the analyses that are attached to this letter, only the changes necessary for operating at the increased core power level are being requested.

Enclosure 1 provides a description of the proposed changes to the Technical Specifications and the reasons for the changes. Enclosure 2 provides an evaluation of operation at the uprated power level in accordance with the requirements of 10 CFR 50.92. Enclosure 3 provides the revised pages for insertion into the Technical Specifications. Enclosure 4 provides an environmental evaluation, and enclosure 5 contains the NSSS licensing report, and enclosure 6 contains the BOP licensing report.

In accordance with the long-term fuel management and power planning of GPC, approval of operation at the uprated power level is requested by March 1, 1993. This schedule will allow orderly implementation of the power increase prior to peak load demands anticipated in the summer of 1993.

In accordance with 10 CFR 50.91, the designated state official will be sent a copy of this letter and all enclosures.

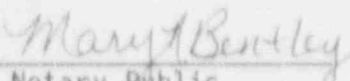
Mr. C. K. McCoy states that he is a vice president of Georgia Power Company and is authorized to execute this oath on behalf of Georgia Power Company and that, to the best of his knowledge and belief, the facts set forth in this letter and enclosures are true.

GEORGIA POWER COMPANY

By:

  
C. K. McCoy

Sworn to and subscribed before me this 28<sup>th</sup> day of February, 1992.

  
Notary Public

MY COMMISSION EXPIRES MAY 6, 1995

xc: (See next page)

U. S. Nuclear Regulatory Commission  
ELV-03375  
Page 3

Enclosures:

1. Basis for Proposed Changes
2. 10 CFR 50.92 Evaluation
3. Instructions for Incorporation
4. Environmental Evaluation
5. NSSS Licensing Report
6. BOP Licensing Report

c(w): Georgia Power Company  
Mr. W. B. Shipman  
Mr. M. Sheibani  
NORMS

U. S. Nuclear Regulatory Commission  
Mr. S. D. Ebnetter, Regional Administrator  
Mr. D. S. Hood, Licensing Project Manager, NRR  
Mr. B. R. Bonser, Senior Resident Inspector, Vogtle

State of Georgia  
Mr. J. D. Tanner, Commissioner, Department of Natural Resources

# Vogtle Electric Generating Plant Unit 1 and Unit 2

License Amendment Request for  
Power Upgrading



Georgia Power

*the southern electric system*

## ENCLOSURE 1

### VOGTLE ELECTRIC GENERATING PLANT LICENSE CHANGE POWER UPGRATING

#### BASIS FOR PROPOSED CHANGE

##### Proposed Change

This proposed change will revise the value used for the definition of rated thermal power in the definitions section of the Technical Specifications from "3411 MWt" to "3565 MWt." The second sentence of the second paragraph of bases section 3/4.7.1.1 will be revised to read as follows: "The total relieving capacity for all valves on all of the steam lines is 18,607,220 lbs/h which is 117 percent of the total secondary steam flow of  $15.92 \times 10^6$  lbs/h at 100% RATED THERMAL POWER." Additionally, bases sections 3/4.6.1.4, 3/4.6.1.5 and 3/4.6.1.6 will be revised to indicate that the maximum peak containment pressure was calculated to occur as a result of a loss of coolant accident with an assumed initial containment pressure of 3 psig instead of 0.3 psig and a peak calculated pressure of 36.5 psig instead of 41.9 psig.

Operation with the revised definition of rated thermal power will also require a revision to the overtemperature delta temperature (OTDT) reactor trip function. The value of Z for the OTDT function as given in table 2.2-1 will change from 7.04% of span to 8.8% of span. Note 1 to Technical Specification table 2.2-1 currently states "For each percent that the magnitude of  $q_t - q_b$  exceeds + 11.0%, the  $\Delta T$  Trip Setpoint shall be automatically reduced by 1.97% of its value at RATED THERMAL POWER." For operation at the uprated power level the values of 11.0% and 1.97% in note 1 will be revised to 10.0% and 2.7% respectively. Also, note 2 of table 2.2-1 states that the maximum trip setpoint shall not exceed the computed setpoint by more than 3.1% of  $\Delta T$  span. This percentage of  $\Delta T$  span is being changed from 3.1% to 1.5%.

##### Basis

Analyses have been completed for the Vogtle Electric Generating Plant (VEGP) Units 1 and 2 that demonstrate that operation at a power level of 3565 MWt is acceptable. This is the engineered safety features design power level which is currently stated in subsection 1.1.4 of the VEGP Final Safety Analysis Report (FSAR).

The accident and transient analyses that were required to support the transition to VANTAGE-5 fuel were performed at the uprated conditions and submitted to the NRC in November of 1990 (letter ELV-02165). Since that time Westinghouse has revised the calculation of the Z value and the power distribution reset function for OTDT specified in Technical Specification table 2.2-1. The change in the calculation of the Z value and the reset function results in a revision to the values in table 2.2-1, but does not require any revision to the previously submitted analyses.

The analyses were performed using the current limitations of the Technical Specifications; therefore, no other Technical Specifications changes are required to allow operation at the revised value of rated thermal power. The proposed revision to table 2.2-1 assures that the safety analyses remain valid at uprated power conditions.

## ENCLOSURE 1 (CONTINUED)

### LICENSE CHANGE POWER UPGRATING

#### BASIS FOR PROPOSED CHANGE

Operation at the revised power level results in a slight change in the value of steam flow at rated thermal power. This change is being reflected in the revision to Technical Specification bases section 3/4.7.1.1.

In order to verify containment integrity at uprated conditions, the peak containment pressure was recalculated at uprated conditions. The results of these analyses are described in enclosures 5 and 6. These analyses assumed initial conditions that are enveloped by current Technical Specification requirements. The results of the analyses indicate that the loss of coolant accident results in the highest calculated containment pressure. Therefore, bases sections 3/4.6.1.4, 3/4.6.1.5 and 3/4.6.1.6 are being revised to be consistent with the new analysis results.

The analyses to support operation at the uprated condition were performed in accordance with the licensing basis that currently exists for VEGP. This assures the same level of protection for the public health and safety at the uprated conditions as required at the currently licensed power level. These analyses are described in enclosures 5 and 6; enclosure 2 provides an evaluation of significant hazards in accordance with 10 CFR 50.92.

These revisions to the Technical Specifications will allow an increase of about 4.5 percent in power production from VEGP without any modifications to the plant and no appreciable increase in risk or environmental impact.

## ENCLOSURE 2

### VOGTLE ELECTRIC GENERATING PLANT LICENSE CHANGE POWER UPRATING

#### 10 CFR 50.92 EVALUATION

Pursuant to 10 CFR 50.92, each application for an amendment to an operating license must be reviewed to determine if the proposed change involves a significant hazard. The proposed Technical Specifications changes have been reviewed and deemed not to involve significant hazards. The basis for this determination is presented below.

#### Background

Georgia Power Company (GPC) has completed a long-term program of analyses and evaluations designed to demonstrate that the Vogtle Electric Generating Plant (VEGP) Units 1 and 2 can safely operate at the engineered safety features design core power level of 3565 MWt. Only changes to definition 1.27 and table 2.2-1 of the Technical Specifications were identified as necessary for operation at the increased power level. These changes are to the definition of rated thermal power and to the power distribution reset function and Z value for the overtemperature delta temperature (OTDT) setpoint.

The Z term which can be used to evaluate acceptable plant operation beyond the allowable value has increased from 7.04% of span to 8.8% of span. The Z term represents the statistical summation of errors assumed in the setpoint calculation, excluding those associated with sensor and rack allowances. This value is used only to determine a threshold for reportable events in accordance with equation 2.2-1 from Technical Specification 2.2.1 (b)(1).

The OTDT reactor trip provides core protection to prevent departure from nucleate boiling (DNB) for combinations of pressurizer pressure, reactor power, reactor coolant system (RCS) temperature, and axial power distribution. The setpoint automatically varies in accordance with the equation in note 1 of Technical Specifications table 2.2-1 based on changes in RCS temperature, pressurizer pressure, and axial power distribution. The axial power distribution portion of this equation is represented by the term  $f_1(\Delta I)$  which is a function of the indicated difference between the top and bottom excor detector currents of the power range neutron ion chambers. This function automatically reduces the OTDT reactor trip setpoint by a specified amount for each percent in excess of a "dead band" operating range where no reduction is applied. In addition, the allowable value for the OTDT setpoint is established to allow for setpoint drift between surveillance intervals. This adjustment assures that the combination of OTDT setpoint and power distribution is conservatively enveloped by the safety analyses.

In order to address an issue related to the methodology used to generate the OTDT setpoint, it is necessary for the Vogtle units to modify the value of Z, the allowable value, the axial offset "dead band" positive limit, and the specified amount of setpoint reduction for the OTDT reactor trip. These values appear in functional unit 7 and in notes 1 and 2 of table 2.2-1 of the Technical Specifications.



## ENCLOSURE 2 (CONTINUED)

### LICENSE CHANGE POWER UPRATING

#### 10 CFR 50.92 EVALUATION

Definition 1.27 of the VEGP Technical Specifications currently limits the maximum power output of the reactor core to 3411 MWt. This is defined as rated thermal power (RTP) and is utilized extensively throughout the Technical Specifications to define applicability, as a limit value, action statement condition, or surveillance requirement. The primary goal of the uprating program involves changing the definition of RTP to 3565 MWt, which will allow operation of the reactor core at the higher power level.

#### Analysis

The change in the value of Z accounts for a slight increase in the calculated summation of instrument errors. Its use assures that the threshold for reporting instrument drift is consistent with the safety analysis.

In order to support uprated power, the positive limit of the difference between the percent rated thermal power in the top and bottom halves of the core ( $q_t - q_b$ ) will change from 11.0% to 10.0%. For each percent that  $q_t - q_b$  exceeds this limit, the OTDT trip setpoint will be reduced by a revised value of 2.7%, as compared to the previous value of 1.97%. Based on these revised parameters, the allowable value between the maximum OTDT reactor trip setpoint and the computed setpoint will change to 1.5% from 3.1%.

The safety analyses which rely on the OTDT reactor trip for mitigation of the transient do not take credit for the Z value or the setpoint reduction adjustment of note 1 on Technical Specifications table 2.2-1. This item assures that the OTDT setpoint is set conservatively relative to the safety analyses. A reduction in the allowable variance is bounded by the previous setpoint calculation and does not affect the OTDT setpoint assumed in the safety analyses. Therefore, it has been determined that utilization of these revised values is consistent with the assumptions for the OTDT reactor trip function assumed in the safety analyses to support reactor operation at 3565 MWt, and the analyses continue to meet the applicable acceptance criteria.

The margin to the OTDT reactor trip setpoint for steady-state full power operation has also been evaluated. This evaluation concluded that there will be no additional penalty for the revised function, and the current margins for OTDT reactor trip and turbine runback remain valid.

The nuclear steam supply system (NSSS) and balance of plant (BOP) systems and components were reviewed to determine the impact of uprating. The review verified that the safety, functional, and structural criteria as defined in the FSAR are met using the uprated conditions. The review included the aspects of design and operation that are potentially affected by operating at uprated conditions. It was performed in accordance with the licensing criteria and



## ENCLOSURE 2 (CONTINUED)

### LICENSE CHANGE POWER UPRATING

#### 10 CFR 50.92 EVALUATION

standards that currently apply to VEGP. Equipment design was evaluated against the current design requirements. In most cases requirements for operating at uprated conditions were already enveloped by the original design. In some cases it was necessary to perform additional analyses. These analyses are discussed in enclosures 5 and 6. In every case it has been determined that VEGP is capable of safe and reliable operation at uprated conditions without any modifications.

A thorough review of the accident analyses in the VEGP FSAR has been performed to determine those events sensitive to an increase in RTP. As a result, each of those events so identified have been reanalyzed or evaluated to determine that the various acceptance criteria are still met, assuming an increase in reactor core power. This assessment has been documented in two phases. First, to address those events that were sensitive to the VANTAGE-5 fuel transition program and the related reactor fuel characteristics, all supporting assessments were performed at an uprated reactor core power level of 3565 MWt. Steam generator tube plugging and other assumptions were also made to generate operational flexibility. That portion of the uprating evaluation has been completed and submitted to the NRC by letter ELV-02166 dated November 29, 1990, in support of the VANTAGE-5 fuel program. The remainder of the uprating evaluation consists of the analyses and evaluations presented in enclosures 5 and 6 that are not directly fuel related. Similarly, these evaluations account for uprated power, reduced T-hot, steam generator tube plugging, and the same assumptions for operational flexibility. In all cases, for both the VANTAGE-5 program and this uprating evaluation, the acceptance criteria for all transients were met, and therefore the margin of safety is maintained.

#### Results

Based on the information presented above, the following conclusions can be reached with respect to 10 CFR 50.92 for the increase in RTP.

1. The increase in RTP does not involve a significant increase in the probability or consequences of an accident previously evaluated because operation at higher RTP will not cause any design or analysis acceptance criteria to be exceeded. As a result, structural and functional integrity of the plant systems is maintained. Rated thermal power is an input assumption to the equipment design and accident analyses, but it is not itself an initiator for any transient. Therefore, the probability of occurrence is not affected.

The radiological consequences of operation at the uprated conditions have been assessed as part of the VANTAGE-5 fuel program. It was concluded that offsite dose predictions remain within the acceptance criteria for each of the transients affected. Therefore, the consequences of an accident previously evaluated are not increased.

## ENCLOSURE 2 (CONTINUED)

### LICENSE CHANGE POWER UPRATING

#### 10 CFR 50.92 EVALUATION

The revised OTDT reactor trip function does not involve a significant increase in the probability or consequences of an accident previously evaluated because operation with these revised values will not cause any design or analysis acceptance criteria to be exceeded. The structural and functional integrity of any plant system is unaffected. The OTDT reactor trip is part of the accident mitigation response and is not itself an initiator for any transient. Therefore, the probability of occurrence is not affected.

The changes to the OTDT reactor trip function do not affect the integrity of the fission product barriers utilized for mitigation of radiological dose consequences as a result of an accident. In addition, the offsite mass releases used as input to the dose calculations are unchanged from those previously assumed. Therefore, the offsite dose predictions remain within the acceptance criteria for each of the transients affected. Since it has been determined that the transient results are unaffected by these setpoint modifications, it is concluded that the consequences of an accident previously evaluated are not increased.

2. The increase in RTP does not create the possibility of a new or different kind of accident from any accident previously evaluated because no new operating configuration is being imposed that would create a new failure scenario, and no new failure modes are being created for any plant equipment. System and component design bases have been reviewed to determine that the different cyclic temperature transients resulting from uprating do not significantly affect the fatigue life of the equipment. Therefore, the types of accidents defined in the FSAR continue to represent the credible spectrum of events to determine safe plant operation.

The revised OTDT reactor trip function does not create the possibility of a new or different kind of accident from any accident previously evaluated because the setpoint adjustments do not affect accident initiation sequences. No new operating configuration is being imposed by the setpoint adjustments that would create a new failure scenario. In addition, no new failure modes are being created for any plant equipment. Therefore, the types of accidents defined in the FSAR continue to represent the credible spectrum of events to be analyzed which determine safe plant operation.

3. The increase in RTP does not involve a significant reduction in a margin of safety because RTP is one of the inherent assumptions that determines the safe operating range defined by the accident analyses, which are in turn protected by the Technical Specifications. The acceptance criteria for the accident analyses are conservative with respect to the operating conditions defined by the Technical Specifications. The work performed for the

## ENCLOSURE 2 (CONTINUED)

### LICENSE CHANGE POWER UPGRATING

#### 10 CFR 50.92 EVALUATION

VANTAGE-5 fuel program and the work presented in enclosures 5 and 6 confirms that the accident analyses criteria are met at the revised value of RTP. Therefore, the adequacy of the revised Technical Specifications to maintain the plant in a safe operating range is also confirmed, and the increase in RTP does not involve a significant reduction in a margin of safety.

The changes to the OTDT trip function do not involve a significant reduction in a margin of safety because the margin of safety associated with the OTDT reactor trip function, as verified by the results of the accident analyses, is within acceptable limits. The work performed for the VANTAGE-5 fuel program and power upgrading confirms that the accident analyses criteria are met. The required margin of safety regulated for each affected safety analysis is maintained. This conclusion is not changed by the OTDT setpoint modifications. The adequacy of the revised Technical Specifications values to maintain the plant in a safe operating range has been confirmed. Therefore, the changes to the OTDT reactor trip function do not involve a significant reduction in a margin of safety.

#### Conclusion

Based upon the preceding analysis, it has been determined that the proposed changes to the Technical Specifications to increase the value of RTP and to revise the OTDT reset function do not involve a significant increase in 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. Therefore, it is concluded that the proposed changes do not involve a significant hazard in accordance with 10 CFR 50.92.