UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 72 TO FACILITY OPERATING LICENSE NPF-68

AND AMENDMENT NO. 51 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 December 30, 1993, Georgia Power Company, et al. (the licensee) proposed license amendments to change the Technical Specifications (TS) for Vogtle Electric Generating Plant (Vogtle), Units 1 and 2. TS 3.5.2.d requires with one The proposed changes would add the following footnote to TS 3.5.2.d: "The allowable outage time for each RHR pump may be extended to 7 days for the purpose of converting the pump motor assembly to a coupled design. This exception may only be used one time per pump and is not valid after December 31, 1994."

The licensee plans to make modifications to the residual heat removal (RHR) pumps that will enhance their maintainability, reliability, and performance and reduce exposure to radiation for maintenance workers. The modifications consist primarily of the installation of a coupling that will allow the pumps and motors to be disconnected. At the same time, modifications will be made that will improve pump performance and allow the pumps to be operated at reduced flow. These changes will improve reliability and are necessary to allow operation at reduced flow which reduces risk of pump cavitation during operation with the reactor coolant system (RCS) partially drained. One of the Unit 2 RHR pumps has already been modified. The modifications for the remaining three pumps can be accomplished in 7 days for each pump. A significant reduction in exposure to radiation can be achieved for the modification if it is made while the reactor is in operation because use of the RHR pump during shutdown increases the exposure rate in the vicinity of the pumps during periods shortly after plant shutdown. In addition, one of the primary functions of the RHR system is heat removal during plant shutdown so it is desirable to have both trains available during that time. Therefore, it is proposed to make this modification while the plant is in Mode 1. This will require a one time extension of the allowable outage time from 3 to 7 days. The modifications will be made on one pump at a time.

2.0 EVALUATION

The current design of the RHR pump and motor utilizes a single shaft. A modification is planned that will add a coupling to the shaft to allow the pump and motor to be disconnected. The modification will also include changes to the impeller that will improve thrust bearing life and allow the pumps to

be operated at reduced flow. These modifications will improve pump performance, vibration levels, availability and maintainability, and they will result in reduced radiation exposure during maintenance. The ability to operate the pumps at reduced flow during operation with the RCS partially drained has been recognized by the NRC as an improvement in safety. Performance of the modifications at power will allow them to be made when the RHR system is not needed to perform its shutdown cooling function and will allow them to be performed under conditions that result in reduced exposure of personnel to radiation. The one time extension of the allowable outage time from 3 to 7 days represents an insignificant effect on the contribution of the RHR system to safety which is balanced against the increased pump reliability and reduced exposure to radiation that is achieved by performing the modifications while the plant is in operation.

One of the Unit 2 pumps has already been modified. The requested time of 7 days is based on the experience gained from the completion of that modification. The alternative for completion of these modifications while in Mode 1 is to perform one during each outage which would result in a delay in the completion of all of the pumps for at least two operating cycles.

The large break loss of coolant accident (LBLOCA) is a design basis accident that is not considered likely to occur during the lifetime of plant operation. It is used as a design basis to assure conservatism. The safety function of the RHR pumps is to provide a low pressure, high volume water source for reflooding the core following a large break that results in a rapid depressurization. Following a small break LOCA, the RHR pumps may be required to provide suction pressure to the safety injection system during sump recirculation and for long term decay heat removal. The loss of coolant accident analyses only takes credit for one train of RHR. The TS require that both trains of RHR be operable in Mode 1. One train is allowed to be inoperable for a period of 3 days. The proposed change will provide for a one time extension of the allowable outage time from 3 to 7 days which will allow the modifications to be completed in 1994. The alternative is to make the modifications during plant shutdown. However, that is during the time of peak radiation exposure rates from the RHR pumps due to their use during plant shutdown. A dose savings of 40 man-rem per pump is expected by making the modification at power rather than during a shutdown.

During the time each train is made inoperable for the modifications to be installed, the redundant train will remain operable and be available to perform the safety function assumed by the safety analysis. The effects of having an RHR pump out of service for 7 instead of 3 days was evaluated. The evaluation was based on the core damage frequency (CDF) from the Vogtle Individual Plant Examination (IPE). The CDF reported in the IPE is 4.9E-05/RY and used a historically based RHR pump outage time of 1.5 days per year. Use of the current allowable outage time of 3 days for each RHR pump results in a CDF of 5.07E-05/RY. Use of a 7-day allowable outage time raises the CDF to 5.34E-05/RY. The effect will be even less significant for Unit 2, since only one pump needs the modification. The change results in a one time increase in CDF of 2.7E-06 above that which the current TS allow, which is not considered to be significant. Therefore, the licensee has concluded that the increase in

pump reliability and the reduction in exposure to radiation during the implementation of the modification justify the performance of the modification during Mode 1 operation.

The safety function of the RHR will continue to be provided by the redundant train and, since the possibility of a design basis LBLOCA is small, an allowable outage time of 7 consecutive days does not result in a significant increase in the CDF compared to the current allowable outage time of 3 days. In Mode 1, the RHR pumps are in standby; however, at least one pump is required to be in operation when the plant is shut down. Therefore, performing the modifications in Mode 1 will allow both trains to be available for decay heat removal while the plant is shut down.

3.0 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.

4.0 ENVIRONMENTAL CONSIDERATION

The amendments change requirements with respect to installation or use of a facility component 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 radiation 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 (59 FR 10007 dated March 2, 1994). 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 the amendments.

5.0 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.

Principal Contributor: C. E. Carpenter

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