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May 13, 1991

ELV-01567
0354

Docket Nos. 50-424
50-425

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

Gentlemen:

VOGTLE ELECTRIC GENERATING PLANT
REQUEST TO REVISE TECHNICAL SPECIFICATION 3/4.5.3.2

In accordance with the provisions of 10 CFR 50.90 and 10 CFR 50.59, Georgia Power Company (GPC) hereby proposes to amend the Vogtle Electric Generating Plant (VEGP) Unit 1 and Unit 2 Technical Specifications, Appendix A to Operating Licenses NPF-68 and NPF-81.

Technical Specification (TS) 3/4.5.3.2, "ECCS Subsystems - Tavg Less Than 350°F, Safety Injection Pumps," currently requires the safety injection (SI) pumps to be inoperable in Modes 4, 5, and 6 with the reactor vessel head on. The proposed amendment would revise TS 3/4.5.3.2 to allow one SI pump to be available in Mode 5 with the reactor coolant system (RCS) loops not filled and Mode 6 with the reactor vessel head on and with the RCS loops not filled. The requirement that both SI pumps be inoperable in Mode 4 would not be changed. The proposed change is consistent with the guidance of Generic Letter 88-17, "Loss of Decay Heat Removal," in that an SI pump will be available to mitigate a loss of decay heat removal event without having to invoke the provisions of 10 CFR 50.54(x). The proposed change and its basis are described in Enclosure 1. Our evaluation pursuant to 10 CFR 50.92 showing that the proposed change does not involve significant hazards considerations is provided as Enclosure 2. Instructions for incorporation of the proposed change into the Technical Specifications and revised pages are provided as Enclosure 3.

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

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Georgia Power

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 10th day May, 1991.

Teresa Marino
Notary Public

MY COMMISSION EXPIRES JAN. 2, 1994

CKM/NJS/gmb

Enclosures:
1. Basis for Proposed Change
2. 10 CFR 50.92 Evaluation
3. Instructions for Incorporation

c(w): Georgia Power Company
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Mr. S. D. Ebneter, Regional Administrator
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Mr. B. R. Bonser, Senior Resident Inspector, Vogtle

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

ENCLOSURE 1

VOGTLE ELECTRIC GENERATING PLANT
REQUEST TO REVISE TECHNICAL SPECIFICATION 3/4.5.3.2

BASIS FOR PROPOSED CHANGE

PROPOSED CHANGE

The Vogtle Electric Generating Plant (VEGP) Unit 1 and Unit 2 Technical Specification (TS) 3/4.5.3.2 is proposed to be revised as follows:

1. Revise the Applicability so that one safety injection (SI) pump may be available in Mode 5 with the reactor coolant system (RCS) loops not filled and Mode 6 with the reactor vessel head on and with the RCS loops not filled.

2. Revise the bases for TS 3/4.5.3.2 to explain that one SI pump is allowed to be available in Modes 5 and 6 with the RCS loops not filled so that it can be used to mitigate the effects of a loss of decay heat removal capability during partially drained conditions. The bases will also state that the control room handswitch for the available SI pump will be in the pull-to-lock position to preclude the pump from being inadvertently started by a signal.

BASIS

Georgia Power Company (GPC) has previously identified program enhancements to be implemented in response to NRC recommendations (defined in Generic Letter 88-17) which address the loss of residual heat removal (RHR) capability while operating in a reduced RCS inventory condition. These enhancements were discussed in ELV-00186 submitted by GPC to the NRC on February 2, 1989. In that submittal, the response to NRC recommendations 3, 4, and 5 dealt with maintaining equipment in available status to mitigate a loss of RHR or RCS inventory, conducting analyses to support the system and equipment alignments, and implementing changes to the Technical Specifications which would facilitate such activities, respectively.

Reducing the reactor coolant level during Modes 5 and 6 for refueling and maintenance creates the potential for the loss of suction to the RHR pumps. The reduced inventory condition, coupled with a loss of RHR capability and the potential for RCS openings due to maintenance activities, creates the concern addressed by Generic Letter 88-17 for rapid core uncovery without a means of inventory addition. Georgia Power Company proposes using an SI pump during Modes 5 and 6, when the RCS loops are not filled and the vessel head is on, to mitigate the effects of a loss of residual heat removal capability.

The enclosed proposed technical specification change is intended to permit the availability of one intermediate head SI pump in Mode 5 with the RCS loops not filled and in Mode 6 with the reactor vessel head on and the RCS loops not

BASIS FOR PROPOSED CHANGE

filled. Appropriate evaluations have been prepared which support the necessary system and equipment alignments and address the potential for cold overpressurization. The behavior of the RCS and the overall system response to SI pump injection during Modes 5 and 6 has been reviewed against the guidance presented in WCAP-11916, "Loss of RHRS Cooling While the RCS is Partially Filled." A summary of the evaluation results is presented below.

ANALYSIS

Use of an SI Pump During Reduced Inventory Conditions

In the event of a loss of RHR, the VEGP Abnormal Operating Procedure 18019-C, "Loss of Residual Heat Removal," directs the operator to verify or restore the reactor vessel level to a specified level higher than mid-loop. A number of diverse and redundant means could be used to increase the reactor vessel inventory. These include charging, gravity drain from the refueling water storage tank (RWST), or emergency core cooling system (ECCS) operation. Charging flow could be established via the normal charging or alternate charging lines or the high head safety injection flowpath. If charging is not available and if RCS pressure is less than 35 psig, gravity drain from the RWST through various RHR and SI lines to the cold or hot legs may be possible. Finally, if charging and gravity drain are not successful, ECCS flow from any available intermediate head SI or RHR pump (or possibly from the accumulators) could be established. Procedurally, the intent of Generic Letter 88-17 to have at least two available or operable means of restoring RCS inventory is satisfied by use of these options including an SI pump, provided the associated equipment or systems are allowed to be in service in accordance with the Technical Specifications. Otherwise, the provisions of 10 CFR 50.54(x) would have to be invoked.

Finally, pump integrity and runout during Modes 5 and 6 were evaluated. Although an SI pump is not typically operated during these modes, the operating conditions are similar to those experienced during other operating modes. Therefore, SI pump operation in this capacity is acceptable.

Fluid System Calculation for Overpressurization

Operating an SI pump during Modes 5 and 6 under partially drained conditions must be addressed from the standpoint of overpressurizing the RCS by compressing the air in the system. Note that inadvertent operation of the available SI pump as a result of a signal will be precluded by placing the control room handswitch in the pull-to-lock position. Therefore, this evaluation addresses

BASIS FOR PROPOSED CHANGE

the potential for overpressurizing the RCS as a result of the deliberate operation of an SI pump to mitigate the effects of a loss of RHR capability. This evaluation determined the amount of time required to compress the air in the system and therefore, the time available for the operator to take action to prevent overpressurization. Two RCS water levels were considered: at the reactor vessel flange with the steam generator tubes filled and at mid-loop. The limiting pressure was assumed to be 500 psig, the maximum RCS pressure bounded by the existing Appendix G steady state curve at 100°F. The evaluation was performed with one intermediate head SI pump operating. Note that the proposed change would require the SI pumps to be inoperable in Modes 5 and 6 with the RCS loops filled. The RCS loops are considered to be filled when the water level is greater than elevation 192 feet, and the steam generator tubes are full. The reactor vessel flange corresponds to elevation 194 feet. Therefore, the proposed change represents a conservative requirement with respect to the assumption that the water level is at the reactor vessel flange. In addition, the proposed change is consistent with the wording of Specifications 3.4.1.4.1 and 3.4.1.4.2 which also address the loops filled and loops not filled conditions. The results of the evaluation indicate that with one SI pump operating and the water level at the flange, the operator has 27.1 minutes to stop the pressurization before a pressure of 500 psig is achieved. With the water level at mid-loop, the operator has 37.3 minutes to react. Therefore, in the event that an SI pump is required to mitigate the effects of a loss of RHR capability, there is sufficient time available for operator action before an overpressurization event could occur.

Consequences of Steam Generator Nozzle Dam Failure Due to SI Pump Operation

The minimum nozzle dam yield point was taken to be 47 psig. Based on nozzle dam testing, this water pressure (47 psig) corresponds to a limiting yield condition; the corresponding pressure at the ultimate stress condition would be approximately 56.5 psig. If the SI pump is allowed to operate for a sufficient period of time, one or more of the nozzle dams will eventually start to leak. Upon further pressurization, it may be possible that one or more dams would fail and the water level in the RCS would drop to the level of the resulting opening (assuming the water level is initially above the nozzle dams and all nozzle dams are in place). Since the nozzle dams are located near or above the top of the loops, it is not likely that RHR cooling would be lost as a result of this event. Previous work for the Westinghouse Owners Group has demonstrated that regardless of which nozzle dam fails (hot leg or cold leg), core cooling is maintained as long as one RHR train is operating. Given that two trains are required to be operable in accordance with the Technical Specifications and, since nozzle dam failure will not result in a loss of RHR cooling (i.e., the RCS will not drain below mid-loop), core cooling is maintained.

BASIS FOR PROPOSED CHANGE

Consequences of Temporary Thimble Tube Seal Failure Due to SI Pump Operation

The minimum temporary thimble tube seal design pressure was assumed to be 25 psig as discussed in NUREG-1410, Section 8.9. The seal table where the thimble tube seals are located is at the 194-foot elevation inside containment. The reactor vessel flange is also at the 194-foot elevation. The top of the cold and hot leg nozzle connections to the reactor vessel are approximately 6 feet below the seal table and flange, or approximately at elevation 188 feet. Assuming a worst case scenario of temporary thimble tube seal failure after pressurizing the system to 25 psig and then simultaneous loss of all capability for inventory addition, the system could only drain down to the reactor vessel flange. This is sufficient level to maintain suction, and RHR cooling would not be compromised.

CONCLUSION

The proposed change is consistent with NRC and industry guidance concerning mid-loop operation. Furthermore, the above analysis demonstrates that the proposed change is consistent with the VEGP safety analysis.

ENCLOSURE 2

VOGTLE ELECTRIC GENERATING PLANT
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10 CFR 50.92 EVALUATION

Pursuant to 10 CFR 50.92, GPC has evaluated the proposed amendment and has determined that operation of the facility in accordance with the proposed amendment would not involve a significant hazards consideration. The basis for this determination is as follows:

1. The use of one SI pump in Modes 5 and 6 does not involve a significant increase in the probability or consequences of an accident previously evaluated in the Final Safety Analysis Report (FSAR). In this application, one SI pump will be used to mitigate a loss of RHR during Modes 5 and 6. This is not an accident previously evaluated in the FSAR, but it is a condition addressed in Generic Letter 88-17. The availability of the SI pump will allow restoration of RCS level after a loss of RHR cooling in order to prevent fuel failures due to excessive heatup. By maintaining RCS level with the SI pump, the potential for an accident involving fuel failures beyond that assumed in the FSAR is minimized. Therefore, the dose consequences defined in the FSAR remain bounding. Furthermore, based on the analysis presented in Enclosure 1, the cold overpressurization analysis presented in FSAR section 5.2.2.10 remains valid.

2. The use of the SI pump in Modes 5 and 6 does not create the possibility of an accident which is different than any already evaluated in the FSAR. Cold overpressurization is a transient which is already considered in the FSAR as a result of charging pump operation. The evaluations presented have considered the potential for overpressurization resulting from SI pump operation and have defined conditions under which SI pump availability is acceptable. Failure of the nozzle dams or temporary thimble tube seals are not scenarios which would be created by the proposed amendment. They are possible under existing requirements. Furthermore, the evaluations, which are presented in Enclosure 1 for the sake of completeness, demonstrate that their occurence is of no consequence from the standpoint of the safety analysis. No new performance requirements are being imposed on the SI pumps, since operation under the conditions in Modes 5 and 6 is similar to that experienced for operation in response to a loss of coolant accident (LOCA), for which the pumps have been designed. The availability of an SI pump in Modes 5 and 6 will not affect the integrity or reliability of the pumps to function in their normal emergency core cooling system mode in response to a LOCA. Therefore, no new credible single failure scenario has been created.

3. The proposed amendment does not involve a significant reduction in a margin of safety. The margin of safety provided by Technical Specification 3/4.5.3.2 provides assurance that a mass addition pressure transient can be

relieved by the operation of a single pressurizer power operated relief valve or RHR suction relief valve. Analyses in support of SI pump availability have determined that sufficient operator action time exists, assuming operation of one SI pump, to prevent the overpressurization of the system. Therefore, the margin of safety as originally defined in Technical Specification 3.5.3.2 is maintained.

CONCLUSION

Based upon the preceding analysis, it has been determined that the proposed change to the technical specifications does not involve a significant increase in the probability or consequences of an accident from any accident previously evaluated or involve a significant reduction in a margin of safety. Therefore, it is concluded that the proposed amendment meets the requirements of 10 CFR 50.92(c) and does not involve a significant hazards consideration.