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August 14, 1990

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Docket Nos. 50-424
50-425

ELV-01761

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

Gentlemen:

VOGTLE ELECTRIC GENERATING PLANT
TECHNICAL SPECIFICATION CHANGE
DELETION OF THE NEGATIVE FLUX RATE TRIP

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) Units 1 and 2 Technical Specifications, Appendix A to Operating Licenses NPF-68 and NPF-81.

The proposed revision to Technical Specification Tables 2.2-1, 3.3-1, and 4.3-1 and Bases 2.2.1 will revise the reactor trip system instrumentation requirements to delete the Negative Flux Rate Trip (NFRT) function for both of the VEGP units. This request is being made in conjunction with NRC acceptance of Westinghouse licensing topical reports WCAP-11394-P-A (Proprietary), and WCAP-11395-A (Non-Proprietary), "Methodology for the Analysis of the Dropped Rod Event." These reports demonstrate that the Departure from Nucleate Boiling (DNB) design basis is met during the course of the dropped Rod Cluster Control Assembly (RCCA) transient (one or more-dropped rods) with no credit taken for actuation of any power reduction features. Deletion of the NFRT function will provide a benefit to plant safety by eliminating unnecessary automatic reactor trips and resulting challenges to safety systems.

GPC requests that this Technical Specification change be approved within four months of the submittal date. Implementation of this change on both of the VEGP Units can occur immediately following NRC approval since the reload analyses for Unit 1, Cycle 3 and Unit 2, Cycle 2 will have both been evaluated for the dropped rod event assuming deletion of the NFRT function. Subsequent reloads will be similarly analyzed to reverify that DNB limits are not exceeded.

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

Enclosure 2 provides the basis for a determination that the proposed change does not involve a significant hazards consideration.

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Enclosure 3 provides instructions for incorporating the proposed change into the Technical Specifications. The proposed revised pages are also provided in Enclosure 3.

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

Mr. W. G. Hairston, III states that he is a Senior 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: W. G. Hairston, III

Sworn to and subscribed before me this 14th day of Aug., 1990.

Notary Public MY COMMISSION EXPIRES DEC. 15, 1992

WGH,III/TMM:kdc

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

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Mr. J. L. Ledbetter, Commissioner, Department of Natural Resources

ENCLOSURE 1

VOGTLE ELECTRIC GENERATING PLANT
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BASIS FOR PROPOSED CHANGE

Proposed Change

This proposed change to the Vogtle Electric Generating Plant (VEGP) Unit 1 and Unit 2 Technical Specifications will delete the Negative Flux Rate Trip (NFRT) function from the Reactor Trip System Instrumentation requirements found in Tables 2.2-1, 3.3-1, and 4.3-1 and Bases 2.2.1.

Basis

The current design of the Reactor Protection System for VEGP includes a NFRT. A dropped Rod Cluster Control Assembly (RCCA) bank or a single or multiple dropped RCCAs within the same group results in a negative reactivity insertion which causes a NFRT. Georgia Power Company proposes to delete the NFRT function to provide an enhancement to plant safety by eliminating unnecessary automatic reactor trips and resulting challenges to safety systems.

A single or multiple RCCA drop can cause local flux peaking, which could result in an unconservative local Departure from Nucleate Boiling (DNB) ratio. This can be prevented by a NFRT. However, an evaluation has been performed by Westinghouse for VEGP to justify deletion of the NFRT function based on a plant specific demonstration that the DNB design basis is met as a result of the dropped RCCA transient assuming no actuation of power reduction features. The approach used by Westinghouse is consistent with the accident analysis methodology presented in Reference 1 which has been reviewed by the NRC and found to be an acceptable analysis procedure for plant specific applications.

References

(1) Haessler, R. L., et al, "Methodology for the Analysis of the Dropped Rod Event," WCAP-11394-P-A (Proprietary) and WCAP-11395-A (Non-Proprietary), January 1990.

ENCLOSURE 2

VOGTLE ELECTRIC GENERATING PLANT
TECHNICAL SPECIFICATION CHANGE
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10 CFR 50.92 EVALUATION

Pursuant to 10 CFR 50.92, Georgia Power Company (GPC) has evaluated the attached proposed amendment and has determined that operation of the facility in accordance with the proposed amendment would not involve significant hazards considerations.

Background

By letter dated May 22, 1987, the Westinghouse Owners Group submitted WCAP-11394-P, "Methodology for the Analysis of the Dropped Rod Event." The dropped rod event is assumed to be initiated by a single electrical or mechanical failure which causes any number and combination of rods (Rod Cluster Control Assemblies (RCCAs)) from the same group of a given bank to drop to the bottom of the core. The resulting negative reactivity insertion causes nuclear power to quickly decrease leading to a Negative Flux Rate Trip (NFRT). WCAP-11394-P demonstrated that the Departure from Nucleate Boiling (DNB) design basis is met during the course of the dropped RCCA transient (one or more dropped rods) where no credit is taken for any actuation of power reduction features, thereby providing justification for deletion of the NFRT.

By letter dated October 23, 1989, the Nuclear Regulatory Commission (NRC) issued their Safety Evaluation Report which accepted WCAP-11394-P for referencing in plant specific license applications. Accordingly, Westinghouse issued WCAP-11394-P-A and WCAP-11395-A (Reference 1), the accepted proprietary and non-proprietary versions, respectively, of the topical report. To support deletion of the NFRT function for both of the Vogtle Electric Generating Plant (VEGP) Units, Westinghouse performed a plant specific evaluation to demonstrate that the DNB design basis is met during the course of the dropped RCCA transient as discussed in VEGP Unit 1 and Unit 2 FSAR Chapter 15. The evaluation assumed no actuation of power reduction features due to the dropped RCCAs. This is consistent with the accident analysis methodology presented in Reference 1. The results of the Westinghouse evaluation are described in the following sections.

References

(1) Haessler, R. L., et al, "Methodology for the Analysis of the Dropped Rod Event," WCAP-11394-P-A (Proprietary) and WCAP-11395-A (Non-Proprietary), January 1990.
(2) Bordelon, F.M., et al, "Westinghouse Reload Safety Eva on Methodology," WCAP-9272, March 1978.

ENCLOSURE 2 (CONT'D)

VOGTLE ELECTRIC GENERATING PLANT
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10 CFR 50.92 EVALUATION

Analysis

1.0 Non-LOCA Evaluation

Only one non-LOCA accident models the NFRT, that being RCCA Misalignment (System Malfunction or Operator Error) as described in VEGP Unit 1 and Unit 2 FSAR Section 15.4.3 This accident is modeled to address the following scenarios:

- o One or more dropped RCCAs within the same group
- o A dropped RCCA bank
- o Statically misaligned RCCA
- o Withdrawal of a single RCCA

Only the first two scenarios listed above rely on the NFRT function. Therefore, the scope of this evaluation is to demonstrate that the deletion of the NFRT function does not violate the DNB design basis for these two scenarios. The last two scenarios listed above do not require and have not employed the NFRT function in their analyses and therefore are unaffected by its deletion. A detailed summary of the two affected scenarios follows.

Method of Analysis

A. One or More Dropped RCCAs Within the Same Group

For evaluation of the dropped RCCA event, the transient system response is calculated using the LOFTRAN computer code. The code simulates the neutron kinetics, reactor coolant system, pressurizer, pressurizer relief and safety valves, pressurizer spray, steam generator, and steam generator safety valves. The code computes pertinent plant variables including temperatures, pressures, and power level.

Statepoints are calculated and nuclear models are used to obtain a hot channel factor consistent with the primary system conditions and reactor power. By incorporating the primary conditions from the transient and the hot channel factor from the nuclear analysis, the DNB design basis is shown to be met using the THINC code. Note that the new analysis does not take credit for the NFRT. The transient response, nuclear peaking factor analysis, and DNB design basis confirmation are performed in accordance with the methodology described in Reference 1.

B. Dropped RCCA Bank

A dropped RCCA bank results in a symmetric power change in the core. The asymmetric assumptions made for the dropped RCCA(s) analysis provide a bounding analysis for the dropped RCCA bank (Reference 1).

Non-LOCA Results

A. One or More Dropped RCCAs Within the Same Group

Single or multiple dropped RCCAs within the same group result in a negative reactivity insertion. The core is not adversely affected during this period since power is decreasing rapidly. Power may be re-established either by reactivity feedback or control bank withdrawal.

Following a dropped rod event in manual rod control, the plant will establish a new equilibrium condition. The equilibrium process without control system interaction is monotonic, thus removing power overshoot as a concern and establishing the automatic rod control mode of operation as the limiting case.

For a dropped RCCA event in the automatic rod control mode, the rod control system detects the drop in power and initiates control bank withdrawal. Power overshoot may occur due to this action by the automatic rod controller after which the control system will insert the control bank to restore nominal power. In all cases, the minimum DNB ratio remains above the limit value.

Following plant stabilization, normal procedures are followed. The operator may manually retrieve the RCCA(s) by following approved procedures.

B. Dropped RCCA Bank

A dropped RCCA bank typically results in a negative reactivity insertion greater than 500 pcm. The core is not adversely affected during the insertion period since power is decreasing rapidly. The transient will proceed as described above for one or

more RCCAs within the same group; however, the return to power will be less severe due to the greater worth of the entire bank and the symmetric power change in the core. Following plant stabilization, normal procedures are followed.

Non-LOCA Conclusion

For cases of dropped RCCAs or dropped banks, the DNB ratio remains greater than the limit value; therefore, the DNB design criteria continue to be met. The dropped rod event will continue to be evaluated on a reload basis in accordance with the reload methodology described in WCAP-9272 (Reference 2).

2.0 LOCA and LOCA-Related Evaluation

The proposed change to delete the NFRT has been reviewed with respect to the potential effects on the LOCA analysis and conclusions of record. Currently, the NFRT is not used in the LOCA analyses. Consequently, the proposed deletion of the NFRT function would show no effect for the large and small break LOCA analyses.

Deleting the NFRT function is of no consequence to the analyses for LOCA hydraulic forces, rod ejection mass releases, post-LOCA long term core cooling, or hot leg switchover to prevent boron precipitation as currently described in the FSAR.

3.0 Fluid Systems Evaluation

Deletion of the NFRT function would not adversely affect the ability of any fluid system to perform its safety functions nor would it impact the structural integrity of the fluid system. Therefore, deleting the NFRT function does not impact the fluid systems performance.

4.0 Steam Generator Tube Rupture (SGTR) Evaluation

The NFRT function is not used for protection in a SGTR event nor is the NFRT modeled in the SGTR analysis. Therefore, the deletion of the NFRT function will not change any of the assumptions used in the SGTR analysis and consequently will not have any impact on the SGTR analysis.

ENCLOSURE 2 (CONT'D)

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10 CFR 50.92 EVALUATION

5.0 Containment Integrity Evaluation

The NFRT function is not modeled in the containment integrity analysis for LOCA. Therefore, deletion of the NFRT function would have no impact on the containment integrity analysis. In addition, the LOCA mass and energy releases are not increased as a result of deleting the NFRT function. Since the NFRT is not assumed in the steamline break analyses, its deletion will not affect calculated steam releases. Consequently, the main steam line break containment integrity analysis is not impacted by deletion of the NFRT function.

6.0 Systems Interaction Evaluation

The elimination of the NFRT function will be performed in a manner such that the remaining components or systems of the Reactor Protection System will not be affected. The functional performance requirements of the Reactor Protection System to provide a reactor trip will be maintained.

Results

The proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated. Elimination of the NFRT function will be implemented such that no new performance requirements will be imposed on any system or component therefore no design criteria will be exceeded. Since the NFRT function is not an initiator for any of the postulated accidents analyzed in the FSAR, removal of the NFRT will have no effect on the probability of occurrence of any accident. With respect to the LOCA accidents, the mass/energy analyses are unaffected by the elimination of the NFRT function. The evaluations and analyses to determine the effects of removing the NFRT function on the non-LOCA transients have shown that the design basis conclusions are met. As such, the conclusions presented in the FSAR remain valid such that no increase in radiological consequences will occur. The proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

ENCLOSURE 2 (CONT'D)

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10 CFR 50.92 EVALUATION

The proposed change does not involve a significant reduction in a margin of safety. The evaluation for elimination of the NFRT function has taken into account the applicable Technical Specifications and has bounded the conditions under which the Technical Specifications permit safe plant operation. The DNB design criteria and all acceptable LOCA and non-LOCA safety analysis acceptance criteria continue to be met. All other safety analysis assumptions remain valid. Therefore, the safety analysis results as presented in the FSAR remain bounding. In addition, deletion of the NFRT function will enhance plant safety by eliminating unnecessary automatic reactor trips and resulting challenges to safety systems.

Conclusion

Based on the preceding analysis, GPC has determined that the proposed change to the Technical Specifications does 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 previously evaluated or involve a significant reduction in a margin of safety. Therefore, GPC concludes that the proposed change meets the requirements of 10 CFR 50.92 (c) and does not involve significant hazards considerations.

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