



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 42 TO FACILITY OPERATING LICENSE NO. NPF-5

GEORGIA POWER COMPANY  
OGLETHORPE POWER CORPORATION  
MUNICIPAL ELECTRIC AUTHORITY OF GEORGIA  
CITY OF DALTON, GEORGIA

EDWIN I. HATCH NUCLEAR PLANT, UNIT NO. 2  
DOCKET NO. 50-366

1. INTRODUCTION

The NRC staff has been studying BWR thermal-hydraulic stability characteristics for several years. For modern higher power density reactors, pressure perturbation techniques were developed to measure core stability margins. Based on these tests and analytical models, it has been shown that the high power/low flow corner of the power/flow map is the region of least stability margin. This region is encountered during single loop and natural circulation operation of a BWR. To assure compliance with General Design Criteria (GDC) 10 and 12, natural circulation operation has been prohibited and single loop operation has been restricted by Technical Specifications for most plants.

GE recently presented the NRC staff with stability test data which demonstrated the occurrence of limit cycle neutron flux oscillations at natural circulation and several percent above the rated rod line. The oscillations were observable on the APRMs and were suppressed with control rod insertion. It was predicted that limit cycle oscillations would occur at the operating condition tested; however, the characteristics of the observed oscillations were different than those previously observed during other stability tests. Namely, the test data show that some LPRM indications oscillated out of phase with the APRM signal and at an amplitude as great as six times the core average. This behavior raises the possibility of incurring power oscillations which could lead to violation of specified acceptable fuel design limits without detection and suppression via the APRM high power scram channels.

GE has prepared and released a service information letter, SIL-380, describing methods to avoid and control abnormal neutron flux oscillations to assure conformance with GDC 12. The major operating action recommended by SIL-380 to avoid the regions of least stability following a BWR recirculation pump(s) trip event is to reduce power by inserting control rods to or below the 80% rod line using the plant's prescribed control rod shutdown insertion sequence.

8502270479 850124  
PDR ADOCK 05000366  
P PDR

By letter dated July 12, 1984, Georgia Power Company (licensee) proposed changes to the Edwin I. Hatch Unit 2 Technical Specifications designed to resolve the thermal-hydraulic stability concerns outlined in General Electric Service Information Letter No. 380, Revision 1, dated February 10, 1984. The principal addition made to the Technical Specifications is the following:

When operating with one recirculation loop, the plant will initiate within 15 minutes an orderly reduction in thermal power to less than a specified limit within 2 hours. This limit corresponds to a load line leading to 80% reactor power at rated core flow.

## 2. EVALUATION

We have reviewed these proposed changes and have found that they result in a considerably more stable operating mode since the plant will be operating at a lower power/flow ratio which has been shown by testing and analysis to result in increased thermal-hydraulic stability. We find that these changes are prudent and acceptably resolve our thermal-hydraulic stability concerns for Hatch Unit 2 since long term single loop operation is not permitted and natural circulation operation is prohibited. Should such operation be requested in the future, we will reevaluate this Technical Specification to determine if additional modifications are required.

## 3. ENVIRONMENTAL CONSIDERATIONS

The amendment involves a change in the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. We have determined that the amendment involves 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 amendment involves no significant hazards consideration and there has been no public comment on such finding. Accordingly, the amendment meets 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 amendment.

## 4. CONCLUSION

We have 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, and (2) such activities will be conducted in compliance with the Commission's regulations, and the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Dated: January 24, 1985

Principal Contributor: G. Schwenk