



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENTS NOS. 167 AND 103 TO

FACILITY OPERATING LICENSES DPR-57 AND NPF-5

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

EDWIN I. HATCH NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-321 AND 50-366

1.0 INTRODUCTION

By letter dated October 20, 1989, Georgia Power Company, the licensee for the Edwin I. Hatch Nuclear Plant, Units 1 and 2, requested changes to Technical Specification (TS) Table 4.2-9 for Unit 1, and to the Definitions and Table 3.3.9.2-3 for Unit 2. These specifications address the End-of-Cycle Recirculation Pump Trip (EOC-RPT) response times.

Both units at the Hatch Nuclear Plant are equipped with EOC-RPT system instrumentation. The EOC-RPT system is designed to improve fuel thermal margin by tripping both recirculation pumps upon sensing Turbine Stop Valve (TSV) closure or Turbine Control Valve (TCV) fast closure. Tripping of the recirculation pumps results in reduced core flow which causes a smaller net positive void reactivity addition to the system during pressurization events. This results in a lower power increase and consequently smaller change in critical power ratio. The net result is to reduce the thermal severity of turbine trip, generator load rejection, and feedwater controller failure events.

The increase in thermal margin depends on how fast core flow is reduced. There is a time delay associated with opening the pump motor breakers, and the actual coastdown of the pumps. The coastdown time of the pumps is a physical parameter based on pump design and inertia and is not expected to change unless major modifications are performed. Plant TS require testing of the time delay associated with opening the breakers and associated logic (EOC-RPT response time). This response time is the subject of this proposed change.

2.0 EVALUATION

Proposed Change 1: This proposed change would add a definition of EOC-RPT response time to the Unit 2 TS Definitions and would change the EOC-RPT response time acceptance criteria in Table 3.3.9.2-3 from the existing 135 milliseconds (ms) to 175 ms for the test associated with TCV fast closure and to 155 ms for the test associated with TSV closure.

Operability and surveillance requirements for the Unit 2 EOC-RPT were added to the TS by Amendment 69, issued on November 17, 1986. The response time acceptance criteria added by Amendment 69 were less than or equal to 135 ms for both TCV fast closure and TSV closure. This 135 ms was taken from the Unit 2 Final Safety Analysis Report (FSAR) (Section 5.5.16.2) which specifies 135 ms as the time within which the recirculation pump trip (RPT) breakers will fully open after initiation of the breaker opening mechanism. The Standard Technical Specification (STS) definition of EOC-RPT response time is that time interval between initial movement of the TCV or TSV and "complete suppression of the electric arc between fully open contacts of the recirculation pump circuit breaker." This time interval necessarily must be longer than the time required for the breaker to fully open since the initiation of breaker opening depends upon receipt of a signal generated by the initial valve movement.

The definition of EOC-RPT response time proposed by the licensee is similar to the STS definition but would take into account the time delay associated with the receipt of a signal for the breakers to open in addition to the actual breaker opening time.

For the TCVs, the trip initiation signal is generated by pressure switches on the electrohydraulic control (EHC) oil lines. Fast closure of the TCVs (when the reactor power is greater than 30%) initiates an anticipatory reactor scram and an RPT. EHC oil pressure drops rapidly following a generator load rejection and when the pressure drops below the pressure switch trip setpoint, the switch sends initiating signals to the reactor protection system to scram the reactor and to the RPT logic, which in turn signals the RPT pump motor breakers to open. The transient analyses presented in the Unit 2 FSAR, Section 15.1.1.1.2, and in subsequent reload analyses, assume that the EHC oil pressure switch trip setpoint and the initial TCV motion are coincident and occur at the start of the transient. The analyses assume a total response time of 175 ms from the time the switch actuates until the pump motor breakers are fully open. The licensee proposes to use this 175 ms total response time as the criterion for acceptability of the EOC-RPT based upon the TCV fast closure signal.

Closure of the TSVs (when the reactor power is above 30%) also initiates an anticipatory reactor scram and an RPT. Position switches on the TSVs send the signal when the valves reach the 90% open position. The FSAR and subsequent reload turbine trip analyses assume an EOC-RPT response time of 175 ms from the start of valve motion to the time the recirculation pump motor breakers are fully open. However, there is a time delay associated with the valve movement from the fully open to the 90% open position. The turbine trip transient analyses assume that it takes 20 ms after initial TSV movement until the limit switch actuates to send the signal to the reactor protection system and to the RPT logic. This leaves 155 ms for the RPT logic to signal the motor breakers and for the breakers to fully open. The licensee proposes to use this 155 ms as the criterion for acceptability of the EOC-RPT response time based upon the TSV signal.

The definition of EOC-RPT response time proposed by the licensee is that time interval from initial signal generation by the TSV limit switch or from the time the EHC oil pressure drops below the pressure switch setpoint to complete suppression of the electric arc between the fully-open contacts of the recirculation pump circuit breaker. This definition is functionally equivalent to the STS definition of EOC-RPT response time and is therefore acceptable.

The proposed changes to Table 3.3.9.2-3, revising the response times to less than or equal to 155 ms for TSV closure and to less than or equal to 175 ms for TCV fast closure are consistent with the proposed definition of these response times and are in accordance with the response times assumed in safety analyses for the plant. They are, therefore, acceptable.

Proposed Change 2 would add a footnote to Unit 1 TS Table 4.2-9 defining the EOC-RPT response time and adding acceptance criteria of less than or equal to 175 ms for the response time associated with TCV fast closure and less than or equal to 155 ms for the response time associated with TSV closure. The existing Table 4.2-9 requires a test of the EOC-RPT response time, but does not identify precisely what is meant by the term or provide acceptance criteria for the test. The proposed change will define EOC-RPT response time and provide the acceptance criteria for the response time tests. Both the definition and the acceptance criteria are consistent with the changes to the Unit 2 TS discussed under Proposed Change 1, above. For the same reasons as stated above for Unit 2, the proposed changes for Unit 1 also are acceptable.

3.0 ENVIRONMENTAL CONSIDERATION

These amendments involve changes in requirements with respect to the installation or use of facility components located within the restricted area as defined in 10 CFR Part 20. The 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. 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.

4.0 CONCLUSION

The Commission made a proposed determination that the amendments involve no significant hazards consideration which was published in the Federal Register on November 1, 1989 (54 FR 46148), and consulted with the State of Georgia. No public comments were received, and the State of Georgia did not have any comments.

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 amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: Lawrence P. Crocker, PDII-3, DRP I/II, NRR

Dated: December 4, 1989