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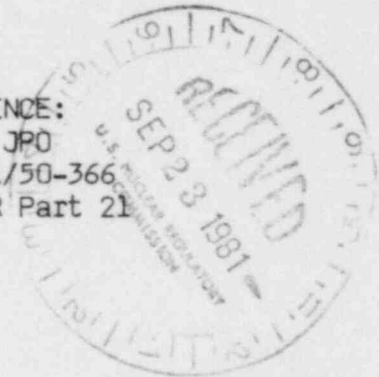


J. T. Beckham, Jr.
Vice President and General Manager
Nuclear Generation

September 17, 1981

U. S. Nuclear Regulatory Commission
Office of Inspection and Enforcement
Region II - Suite 3100
101 Marietta Street, NW
Atlanta, Georgia 30303

REFERENCE:
RII: JPO
50-321/50-366
10 CFR Part 21



ATTENTION: Mr. James P. O'Reilly

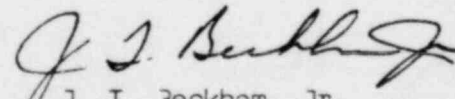
GENTLEMEN:

On April 14, 1981, Georgia Power Company (GPC) submitted LER 81-027 to the NRC concerning a non-conservatism in the calculation of the Minimum Critical Power Ratio (MCPR) limit for Hatch Unit 2. The calculation was part of an Increased Core Flow Analysis (NEDO-24292) done by General Electric (GE). In conjunction with Southern Company Services, Inc. (SCSI), GPC conducted further investigations into the analysis. GPC concluded on September 14, 1981, that a defect, as defined under 10 CFR Part 21, existed which later in the cycle could have contributed to the unit exceeding a Technical Specification safety limit under a certain specified condition. At no time during the actual operation of the plant did this condition exist which could have caused a safety limit to be violated. Your office was notified of our findings and determination that 10 CFR Part 21 reporting was required on September 14, 1981.

GPC is submitting the enclosed evaluation (Attachment 1) to the NRC in order to more fully explain the problems associated with the reactor core conditions analysis.

This evaluation contains no proprietary information.

Very truly yours,


J. T. Beckham, Jr.

DLT/mh

Enclosure

xc: M. Manry
R. F. Rogers, III

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Evaluation for 10 CFR Part 21

Summary of Events:

In 1979 General Electric Company (GE) submitted a proposal to GPC (GE G-GPC-9-88), dated June 29, 1979) to perform a Detailed Increased Core Flow Analysis for Edwin I. Hatch Nuclear Plant Units 1 and 2. These analyses were intended to support continuous reactor operation with core flows up to a maximum of 105% design rated flow. Because feedwater heaters may be taken out of service to help maintain thermal power, GPC requested that 105% core flow be additionally verified for operation with feedwater heaters out of service. The evaluations were made for Plant Hatch Unit 2, Cycle 2 and Unit 1, Cycle 5. As part of GE's effort, analyses were to be performed to identify the most limiting events or transients.

During early 1981, GPC received a report (NEDO-24292, dated October 1980) from GE evaluating operation of Hatch-2 Cycle-2 at 105% of rated core flow. As part of this report, GE had analyzed the load rejection without bypass and feedwater controller failure transients under both normal conditions and with feedwater heaters taken out of service. The report indicated that the load rejection without bypass was the more limiting transient and that the Δ CPR was greater with the feedwater heaters out of service than with them in service.

GE was requested to provide more details of the analysis so that a determination of ODDYN code Option B Technical Specification limits could be made at conditions of increased core flow and with feedwater heaters out of service. This would determine if the Option B Technical Specification limit was conservative with feedwater heaters out of service. In the process of generating the necessary detailed information, GE discovered anomalies in their analysis of the feedwater controller failure transient. Under the conditions analyzed (105% steam flow, 105% core flow, feedwater heaters out), a flux scram occurred prior to the turbine trip minimizing the transient Δ CPR. At lower power levels, a turbine trip preceded the flux scram, increasing the severity of the event. Therefore, the feedwater controller failure transient is more limiting at a lower power level (95%), than at the normally analyzed condition of 105% steam flow. The analysis at 100% core flow showed similar results. These corrections were made by GE in NEDO-24292 Revision 1 dated June 1981.

A review of the Hatch-1 analysis indicated that the limiting event was similarly misidentified for operation with feedwater heaters out of service. The Hatch-1 analysis had not yet been submitted; therefore, it is not reportable under 10 CFR Part 21 requirements.

Evaluation for 10 CFR Part 21 (Continued)

Engineering Evaluation:

Section 4.4.1.4 of the Plant Hatch Unit 2 FSAR discusses requirements for transient conditions. For HNP-2, the transient thermal limits are established so that no fuel damage is expected to occur during the most severe moderate-frequency transient event. Fuel damage is perforation of the cladding that permits release of fission products. For HNP-2, the transient limit is met if at least 99.9 percent of the fuel rods in the core are not expected to experience boiling transition during any moderate-frequency transient event. This is assured for reload cores by observing an MCPR safety limit of 1.07. No fuel damage would be expected to occur even if a fuel rod actually experienced a transition from nucleate boiling.

Because the feedwater controller failure transient in the original analysis was incorrectly terminated by a flux scram, the transient results indicated that the load rejection without bypass event was the limiting transient (greatest Δ CPR value) with feedwater heaters out of service. On reanalysis, GE acknowledged a potential non-conservatism had been identified. Had the results presented in the original analysis been used to establish operating limits in the Technical Specifications, it would have been possible to operate the unit near the end of cycle such that if a feedwater controller failure had occurred the MCPR safety limit (1.07) could have been violated.

Criteria established by the NRC have indicated that "an analysis error, modeling error, or data input error could be reportable under 10 CFR Part 21 where such an error is detected after delivery of the analysis data to the purchaser." Additional guidance states that a defect involves "a condition or circumstance involving a basic component that could contribute to the exceeding of a safety limit, as defined in the Technical Specifications of a license for operation issued pursuant to Part 50 of this chapter." Furthermore, "the condition or circumstance should be evaluated for normal operation and anticipated transients, considering a single failure in addition to the condition or circumstance being evaluated in order to determine if a safety limit could be exceeded." A basic component has been defined to include design, inspection, testing, or consulting services important to safety.

Consequently, GPC has evaluated an "analysis error" discovered in a GE licensing document. Since the defect (incorrectly specified MCPR limit) in the analysis could contribute to the exceeding of a safety limit as defined in the facility Technical Specifications, GPC is reporting this defect in accordance with 10 CFR Part 21.

Evaluation for 10 CFR Part 21 (Continued)

Corrective Action

GE modified its procedures for evaluating the feedwater controller system failure to check if the turbine trip precedes the flux scram. GE reissued the analysis in June 1981, as NEDO-24292, Revision 1. The appropriate actions will be taken pursuant to 10 CFR 50.59 prior to utilizing the subject analysis.