May 28, 1987

Docket No.: 50-321

Mr. James P. O'Reilly
Senior Vice President - Nuclear Operations
Georgia Power Company
P. O. Box 4545
Atlanta, Georgia 30302

Dear Mr. O'Reilly:

Subject: Issuance of Amendment No. 138 to Facility Operating License DPR-57 - Edwin I. Hatch Nuclear Plant, Unit 1 (TAC 64778)

The Commission has issued the enclosed Amendment No. 138 to Facility Operating License DPR-57 for the Edwin I. Hatch Nuclear Plant, Unit 1. The amendment consists of changes to the Technical Specifications in response to your application dated February 6, 1987. Your May 8, 1987, supplement to this request will be addressed in a future amendment.

The amendment (1) reduces the limits on the Standby Liquid Control System (SLCS) sodium pentaborate solution concentration versus volume and concentration versus temperature to reflect the use of sodium pentaborate that has been enriched in Boron-10; (2) reduces the minimum acceptable SLCS pump flow rate from 43 to 41.2 gallons per minute (gpm); and (3) removes level and temperature alarm setpoint values from the concentration versus volume and the concentration versus temperature limit curves.

A copy of our Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's Bi-Weekly Federal Register Notice.

Sincerely,

/S/

Lawrence P. Crocker, Project Manager
Project Directorate II-3
Division of Reactor Projects-I/II

Enclosures:
1. Amendment No. 138 to DPR-57
2. Safety Evaluation

cc w/enclosures:
See next page

PD#II-3/DRP-I/II	PD#II-3/DRP-I/II	PD#II-3/DRP-I/II
LCrocker/mac	MDuncan	BJYoungblood
05/28/87	05/27/87	05/28/87

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

GEORGIA POWER COMPANY

OGLETHORPE POWER CORPORATION

MUNICIPAL ELECTRIC AUTHORITY OF GEORGIA

CITY OF DALTON, GEORGIA

DOCKET NO. 50-321

EDWIN I. HATCH NUCLEAR PLANT, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 138
License No. DPR-57

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment to the Edwin I. Hatch Nuclear Plant, Unit 1 (the facility) Facility Operating License No. DPR-57 filed by Georgia Power Company, acting for itself, Oglethorpe Power Corporation, Municipal Electric Authority of Georgia, and City of Dalton, Georgia, (the licensee) dated February 6, 1987, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-57 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendices A and B, as revised through Amendment No.138 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 60 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/S/

B. J. Youngblood, Director
Project Directorate II-3
Division of Reactor Projects-I/II

Attachment:
Changes to the Technical
Specifications

Date of Issuance: May 28, 1987

DSH for			DSH for
PD#II-3/DRP-I/II	PD#II-3/DRP-I/II	OGC-Bethesda	PD#II-3/DRP-I/II
LCrocker/mac	MDuncan		BJYoungblood
05/26/87	05/26/87	05/ /87	05/28/87

ATTACHMENT TO LICENSE AMENDMENT NO. 138

FACILITY OPERATING LICENSE NO. DPR-57

DOCKET NO. 50-321

Replace the following pages of the Appendix A Technical Specifications with the enclosed pages. The revised pages are identified by amendment number and contain vertical lines indicating the areas of change. The overleaf pages are provided for convenience.

Remove Page	Insert Page
3.4-1	3.4-1
3.4-4	3.4-4
3.4-5	3.4-5
3.4-6	---
Figure 3.4-1	Figure 3.4-1
Figure 3.4-2	Figure 3.4-2

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS

3.4. STANDBY LIQUID CONTROL SYSTEM

Applicability

The Limiting Conditions for Operation apply to the operating status of the Standby Liquid Control System.

Objective

The objective of the Limiting Conditions for Operation is to assure the availability of a system with the capability to shut down the reactor and maintain the shutdown condition without the use of control rods.

Specifications

A. Normal System Availability

During periods when fuel is in the reactor and prior to startup from the Cold Shutdown Condition the standby liquid control system shall be operable except:

1. When performing control rod drive maintenance, at which time Specification 3.10.E. shall be met,

   or

2. When operating with an inoperable component, at which time Specification 3.4.B. shall be met,

   or

3. When the reactor is in the Cold Shutdown Condition and all control rods capable of normal insertion are inserted and the requirements of Specification 3.3.A. are met.

4.4. STANDBY LIQUID CONTROL SYSTEM

Applicability

The Surveillance Requirements apply to the periodic test and examination of the Standby Liquid Control System.

Objective

The objective of the Surveillance Requirements is to verify the operability of the Standby Liquid Control System.

Specifications

A. Normal Operational Tests

The operability of the Standby Liquid Control System shall be verified by the performance of the following tests:

1. Monthly
   At least once per month each pump loop shall be locally started and functionally tested by recirculating demineralized water to the test tank.
2. Each Operating Cycle
   At least once during each operating cycle:

   a. Check that the setting of the system relief valve is 1325 ± 75 psig.
   b. Verify that each pump will deliver 41.2 gpm against a system head of at least 1190 psig.
   c. Initiate one of the Standby Liquid Control System loops from the control room after arranging suction from the test tank and pump demineralized water into the reactor

4.4.A.2. Each Operating Cycle (Continued)

c. vessel. This test checks the explosive charge, proper operation of the associated valves and selected pump operability. The replacement charge to be installed will be selected from a manufactured batch which has been tested.

d. Both loops including both explosive valves should be tested in the course of two operating cycles.

3.4.B. Operating with Inoperable Components

If one Standby Liquid Control redundant component is inoperable the reactor may remain in operation for a period not to exceed seven (7) days provided the redundant component is operable.

B. Surveillance with Inoperable Components

When a component is found to be inoperable, its redundant component shall be demonstrated to be operable immediately and daily thereafter until the inoperable component is repaired. Continuity of the explosive charge is considered a demonstration of operability.

C. Sodium Pentaborate Solution

At all times when the Standby Liquid Control System is required to be operable the following conditions shall be met:

C. Sodium Pentaborate Solution

The following tests shall be performed to verify the availability of the liquid control solution:

1. Volume

The volume of the liquid control solution in the liquid control tank shall be maintained as required in Figure 3.4-1.

1. Volume

Check the standby liquid control tank volume at least once per day.

2. Concentration

The concentration of the liquid control tank shall be maintained as required in Figure 3.4-1.

2. Concentration

Check the concentration of the liquid in the standby liquid control tank by chemical analysis:

3.4. STANDBY LIQUID CONTROL SYSTEM

The standby liquid control (SLC) system provides a backup reactivity control capability to the control rod scram system. The original design basis for the standby liquid control system is to provide a soluble boron concentration to the reactor vessel sufficient to bring the reactor to a cold shutdown. In addition to meeting its original design basis, the system must also satisfy the requirements of the ATWS Rule 10 CFR 50.62 paragraph (c) (4), which requires that the system have a control capacity equivalent to that for a system with an injection rate of 86 gpm of 13 weight percent unenriched sodium pentaborate, normalized to a 251 inch diameter reactor vessel.

To meet its original design basis, the SLC system was designed with a sodium pentaborate solution tank, redundant pumps, and redundant explosive injection valves. The tank contains a sodium pentaborate solution of sufficient volume, concentration and B^{10} enrichment to bring the reactor to a cold shutdown. The solution is injected into the reactor vessel using one of the redundant pumps.

The volume limits in Figure 3.4-1 are calculated such that for a given concentration of sodium pentaborate, the tank contains a volume of solution adequate to bring the reactor to a cold shutdown, with margin. These volume limits are based on gross volume and account for the unusable volume of solution in the tank and suction lines.

To meet 10 CFR 50.62 Paragraph (c) (4), the system must have a reactivity control capacity equivalent to that of a system with an 86 gpm injection flow rate of 13 weight percent unenriched sodium pentaborate into a 251 inch diameter reactor vessel. The term "equivalent reactivity control capacity" refers to the rate at which the boron isotope B^{10} is injected into the reactor core. The standby liquid control system meets this requirement by using a sodium pentaborate solution enriched with a higher concentration of the B^{10} isotope. The minimum concentration limit of 6.2 percent sodium pentaborate solution is based on 60 atomic percent B^{10} enriched boron in sodium pentaborate and a flow rate of 41.2 gpm. The method used to show equivalence with 10 CFR 50.62 is set forth in NEDE-31096-P (Ref. 1).

Limiting Conditions for Operation are established based on the redundancy within the system and the reliability of the control rod scram system. With the standby liquid control system inoperable, reactor operation for short periods of time is justified because of the reliability of the control rod scram system. With one redundant component inoperable, reactor operation for longer periods of time is justified because the system could still fulfill its function.

Surveillance requirements are established on a frequency that assures a high system reliability. Thorough testing of the system each operating cycle assures that the system can be actuated from the control room and will develop the flow rate required. Replacement of the explosive charges in the valves at regular intervals assures that these valves will not fail due to deterioration of the charges. Functional testing of the pumps is performed once per month to assure pump operability.

3.4. STANDBY LIQUID CONTROL SYSTEM (Continued)

The sodium pentaborate solution is carefully monitored to assure its reactivity control capability is maintained. The enriched sodium pentaborate solution is made by mixing granular, enriched sodium pentaborate with water. Isotopic tests on the granular sodium pentaborate are performed to verify the actual B^{10} enrichment, prior to mixing with water. Once the enrichment is established, only the solution concentration, volume and temperature must be monitored to insure that an adequate amount of reactivity control is available. Determining the solution concentration once per 31 days verifies that the solution has not been diluted with water. Checking the volume once each day will guard against noticeable fluid losses or dilutions, and daily temperature checks will prevent sodium pentaborate precipitation.

1. "Anticipated Transients without scram, Response to NRC ATWS Rule, 10 CFR 50.62", NEDE-31096-P, December 1985.

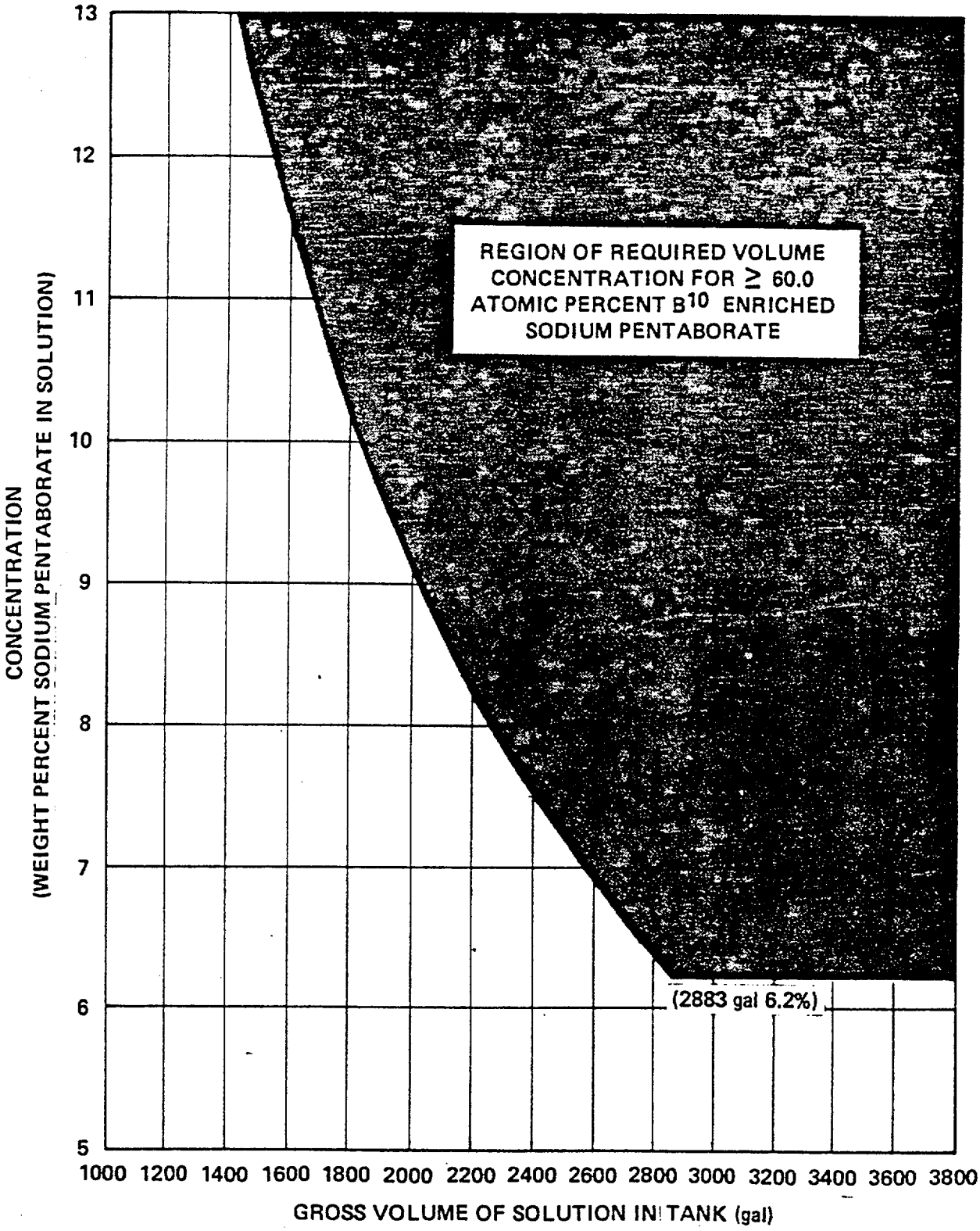

FIGURE 3.4-1 SODIUM PENTABORATE SOLUTION VOLUME VERSUS CONCENTRATION REQUIREMENTS

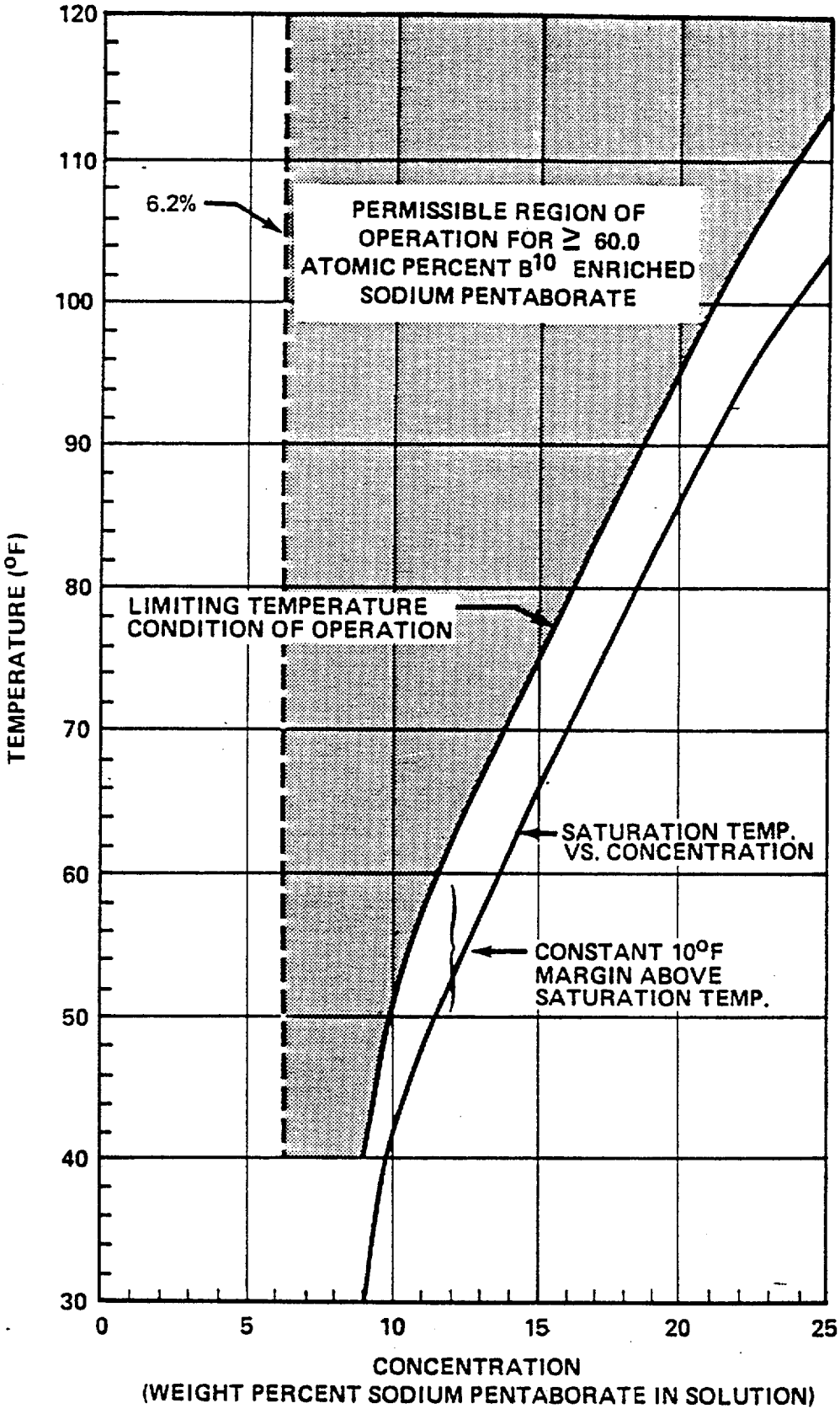

FIGURE 3.4-2 SODIUM PENTABORATE SOLUTION TEMPERATURE VERSUS CONCENTRATION REQUIREMENTS

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 138TO

FACILITY OPERATING LICENSE DPR-57

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

EDWIN I. HATCH NUCLEAR PLANT, UNIT 1

DOCKET NO. 50-321

INTRODUCTION

By letter dated February 6, 1987 (Reference 1), Georgia Power Company (the licensee) proposed changes to the Hatch Plant Unit 1 Technical Specifications (TSs) that would: (1) reduce the limits on the Standby Liquid Control System (SLCS) sodium pentaborate solution concentration versus volume and concentration versus temperature to reflect the use of sodium pentaborate that has been enriched in Boron-10; (2) reduce the minimum acceptable SLCS pump flow rate from 43 to 41.2 gallons per minute (gpm) in order to conform with the 41.2 gpm minimum acceptable flow rate for Hatch Unit 2; and (3) remove level and temperature alarm setpoint values from the concentration versus volume and the concentration versus temperature limit curves. The proposed changes would result from the use of boron enriched in the isotope B-10 in the SLCS in order to meet the requirements of the Anticipated Transient Without Scram (ATWS) rule, 10 CFR 50.62. The current Technical Specifications are based on the use of sodium pentaborate unenriched in the B-10 isotope. The proposed changes are to TS Figure 3.4-1 and 3.4-2, to TS 4.4.A.2.b, and to Basis 3.4, all associated with the SLCS.

EVALUATION

The proposed TS changes for Hatch 1 are intended to meet the requirements of 10 CFR 50.62, with values chosen so that the results could also be applied to Hatch 2. The ATWS Rule requires that the SLCS be equivalent in control capacity to a system with an 86 gpm injection rate, using 13 weight percent unenriched sodium pentaborate solution, in a system with a 251 inch diameter reactor vessel. Of the several proposed approaches presented in the General Electric report (Reference 2), and approved in the NRC evaluation (Reference 3), GPC has chosen to use boron enriched in the B-10 isotope. Using the calculational methods of Reference 1 results in a minimum concentration of 6.2 weight percent sodium pentaborate when using an enrichment of 60 weight percent B-10, an injection flow rate of 41.2 gpm, and a water mass of 434,800 pounds. These values are (conservatively) applicable to both Hatch 1 and 2. The approach taken for Hatch 1 and the resulting parameter values are reasonable and acceptable.

The changed values lead to proposed changes in the TS. This includes a change from 43 to 41.2 gpm pump rate in TS 4.4.A.2.b, and changes to Figures 3.4-1 and 3.4-2 giving required sodium pentaborate (1) concentration as a function of gross volume of solvent in the tank and (2) temperature as a function of concentration. (Unneeded alarm setpoints, used for information only, would be removed from the figures.) These changes are the result of straightforward calculations and are reasonable and acceptable. The related Basis 3.4 has also been changed to reflect the revised approach and requirements. This, too, is acceptable.

Having selected the enriched boron option of compliance with the ATWS Rule, GPC, following an approved approach, has elected to have the sodium pentaborate formulated at the chemical vendor's facility. The boron enrichment test will therefore be done prior to the acceptance for use on the site. The appropriate content of the SLCS will then be verified by monitoring the system volume, concentration and temperature using existing TS 4.4.C surveillance requirements. These are all acceptable procedures. They have been agreed upon as elements of an appropriate approach for compliance with the ATWS Rule in discussions between the staff and industry (BWR Owners Group ATWS Committee).

In summary, the licensee has requested TS changes for Hatch Unit 1 which would provide for the use of boron enriched in the B-10 isotope in the SLCS to meet the requirements of 10 CFR 50.62. The use of the enriched boron in the SLCS would allow the TS changes requested by the licensee without any loss of reactivity control. The approach selected by the licensee to meet the requirements of 10 CFR 50.62 and the associated TS changes are acceptable.

ENVIRONMENTAL CONSIDERATIONS

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The staff has 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 this 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.

CONCLUSION

The Commission made a proposed determination that the amendment involves no significant hazards consideration which was published in the Federal Register (52 FR 9568) on March 25, 1987, 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 amendment will not be inimical to the common defense and security or to the health and safety of the public.

REFERENCES

1. Letter from J. P. O'Reilly, Georgia Power Company, to U. S. Nuclear Regulatory Commission, dated February 6, 1987.

2. "Anticipated Transients Without Scram: Response to NRC ATWS Rule, 10 CFR 50.62," NEDE-31096-P, December 1985.

3. "Safety Evalaution of Topical Report (NEDE-31096-P) 'Anticipated Transients Without Scram: Response to ATWS Rule, 10 CFR 50.62'," October 21, 1986.

Principal Contributors: H. Richings
L. Crocker

Dated: May 28, 1987

DATED May 28, 1987

AMENDMENT NO. 138 TO FACILITY OPERATING LICENSE DPR-57, EDWIN I. HATCH, UNIT 1

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