MAY 15 1975

Docket No. 50-261

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Carolina Power & Light Company
ATTN: Mr. E. E. Utley, Vice President
Bulk Power Supply Department
336 Fayetteville Street
Raleigh, North Carolina 27602

Gentlemen:

The Commission has issued the enclosed Amendment No. 11 to Facility Operating License No. DPR-23 for the H. B. Robinson Unit No. 2. The amendment includes Change No. 36 to the Technical Specifications in accordance with your request of August 30, 1974.

The amendment revises the provisions in the Technical Specifications relating to the minimum boron concentration permissible in the Boron Injection Tank while operating.

A copy of the related Safety Evaluation and the Federal Register Notice are also enclosed.

Sincerely,

/S/

George Lear, Chief
Operating Reactors Branch #3
Division of Reactor Licensing

Enclosures:
1. Amendment No. 11
2. Safety Evaluation
3. Federal Register Notice

OFFICE	ORB#3	ORB#3	OELD	ORB#3		
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Form AEC-318 (Rev. 9-53) AECM 0240 ☆ U. S. GOVERNMENT PRINTING OFFICE: 1974-526-166

cc: w/enclosures

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Darlington County Board of Supervisors
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Hartsville Memorial Library
Home and Fifth Avenues
Hartsville, South Carolina 29550

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

CAROLINA POWER & LIGHT COMPANY

DOCKET NO. 50-261

H. B. ROBINSON UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 11
License No. DPR-23

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

   A. The application for amendment by Carolina Power & Light Company (the licensee) dated August 30, 1974, 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; and

   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.

2. Accordingly, the license is amended by a change to the Technical Specifications as indicated in the attachment to this license amendment and Paragraph 3.B. of Facility License No. DPR-23 is hereby amended to read as follows:

   "(B) Technical Specifications

   The Technical Specifications contained in Appendix A, as revised, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications, as revised by issued changes thereto through Change No. 36."

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

George Lear

George Lear, Chief
Operating Reactors Branch #3
Division of Reactor Licensing

Attachment:
Change No. 36
Technical Specifications

Date of Issuance: MAY 15 1975

ATTACHMENT TO LICENSE AMENDMENT NO. 11

CHANGE NO. 36 TO THE TECHNICAL SPECIFICATIONS

FACILITY OPERATING LICENSE NO. DPR-23

DOCKET NO. 50-261

Replace Pages 3.3-3 and 3.3-9 with the attached revised pages.

Add Page 3.3-3a.

ATTACHMENT TO LICENSE AMENDMENT NO. 11

CHANGE NO. 36 TO THE TECHNICAL SPECIFICATIONS

FACILITY OPERATING LICENSE NO. DPR-23

DOCKET NO. 50-261

Replace Pages 3.3-3 and 3.3-9 with the attached revised pages.

Add Page 3.3-3a.

e. If any one flow path including valves of the safety injection or residual heat removal system is found to be inoperable during normal reactor operation, the reactor may remain in operation for a period not to exceed 24 hours, provided the other flow path(s) are demonstrated to be operable prior to initiating repairs. The hot leg injection paths of the Safety Injection System, including valves, are not subject to the requirements of this specification.

f. If the boron concentration in the boron injection tank falls below 20,000 ppm, and is greater than 15,000 ppm, the reactor may remain in operation for a period not to exceed 24 hours. If the concentration is less than 15,000 ppm, the reactor will be placed in the hot shutdown condition utilizing normal operating procedures. 36

3.3.1.3 When the reactor is in the hot shutdown condition, the requirements of 3.3.1.1 and 3.3.1.2 shall be met. Except that the accumulators may be isolated, and in addition, any one component as defined in 3.3.1.2 may be inoperable for a period equal to the time period specified in the subparagraphs of 3.3.1.2 plus 48 hours, after which the plant shall be placed in the cold shutdown condition utilizing normal operating procedures.

3.3.2 Containment Cooling and Iodine Removal Systems

3.3.2.1 The reactor shall not be made critical, except for low temperature physics tests, unless the following conditions are met:

a. The spray additive tank contains not less than 2505 gal. of solution with a sodium hydroxide concentration of not less than 30% by weight.

b. Two containment spray pumps are operable.

c. Four fan cooler units are operable.

d. All essential features, including valves, controls, dampers, and piping associated with the above components are operable.

e. The system which automatically initiates the sodium hydroxide addition to the containment spray simultaneously to the actuation of the containment spray is operable.

3.3.2.2 During power operation, the requirements of 3.3.2.1 may be modified to allow any one of the following components to be inoperable. If the system is not restored to meet the requirements of 3.3.2.1 within the time period specified, the reactor shall be placed in the hot shutdown condition utilizing normal operating procedures. If the requirements of 3.3.2.1 are not satisfied within an additional 48 hours, the reactor shall be placed in the cold shutdown condition utilizing normal operating procedures.

a. If one fan cooler unit or the flow path for a fan cooler unit becomes inoperable during normal reactor operation, the reactor may remain in operation for a period not to exceed 24 hours, provided both containment spray pumps are demonstrated to be operable.

sodium hydroxide addition, are capable of being operated on emergency power with one diesel generator inoperable. If all diesel generators are operating or another source of emergency power is available, the other containment spray pump, with sodium hydroxide addition, can be operated to provide iodine removal in excess of the minimum requirements. Adequate power for operation of the redundant containment heat removal system (i.e. four fan-cooler units and two containment spray pumps) is also assured in this case.

The Component Cooling System is different from the other systems discussed above in that the components are so located in the auxiliary buildings as to be accessible for repair after a loss-of-coolant accident.(4)

A total of four service water pumps are installed, a minimum of two of which are required to operate during the postulated loss-of-coolant accident.(5)

A minimum of 300,000 gallons of water will be maintained in the refueling water storage tank. This requirement is based on recirculation mode operation which may start with a depth of 1.5 feet on the containment floor. This depth of water is equivalent to the amount of water in the primary system plus 60% of the refueling water storage tank, approximately 215,000 gallons of water at 263°F.(1)

Analysis have shown that the consequences of the steam line break accident are successfully mitigated with a boron injection tank boron concentration of 15,000 ppm or greater.(9) The specification of 20,000 ppm as a minimum concentration is maintained to provide additional margin in the event of such an accident. 36

The post accident containment venting system is designed with redundant air supply and vent paths. The valves in the system will be demonstrated to be operable prior to criticality. Testing of the air supply system is not required because of the long lead time between an accident and the required operation of the venting system. This period of time will permit maintenance effort, if required. The efficiency of the filters in each vent path was not used in this safety analysis; therefore, testing of these filters is not required.(6)

The Isolation Seal Water System provides a reliable means for injecting seal water between the seats and stem packing of the globe and double disc types of isolation valves and into the piping between closed diaphragm type isolation valves.(7)

The minimum 775 ft^3 and maximum 791 ft^3 of water in the accumulators correspond to an instrument reading of 15% and 33% of instrument span, respectively.

References

(1) FSAR Section 6.2
(2) FSAR Section 6.3
(3) FSAR Section 14.3.5
(4) FSAR Section 9.3
(5) FSAR Section 9.6.2
(6) FSAR - Appendix 6B
(7) FSAR - Section 5.2.2
(8) CP&L report and supplemental letters of September 29, November 5, December 8, 1971, and March 20, 1972.
(9) CP&L letter of August 30, 1974. 36

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 11 TO LICENSE NO. DPR-23

(CHANGE NO. 36 TO THE TECHNICAL SPECIFICATIONS)

CAROLINA POWER & LIGHT COMPANY

H. B. ROBINSON STEAM ELECTRIC PLANT UNIT NO. 2

Introduction

By letter dated August 30, 1974 Carolina Power and Light Company (CP&L) requested a change to the Technical Specifications appended to Facility Operating License No. DPR-23 for the H. B. Robinson Steam Electric Unit No. 2 (Robinson-2). The change involves the allowance of a decrease in the required boron concentration in the Boron Injection Tank (BIT) below the present minimum specified value without immediate reactor shutdown.

Discussion

The licensee presently has a technical specification limit that requires that the boron concentration in the Boron Injection Tank be maintained in the range from 20,000 to 22,500 ppm. If the boron concentration is determined to be outside these limits, the reactor must be brought to a hot shutdown condition immediately.

While trying to maintain the specified boron concentration limits the licensee has had a number of operational problems and has, on occasion, brought the reactor to hot shutdown when the measured concentration varied only slightly from either the high or low limit. On at least one occasion the power reduction occurred because the boron concentration sample analyzed was not a representative sample. The sampling and analysis of a representative sample of the highly concentrated boric acid solutions in itself has proven to be quite difficult. In this regard, the concern of the licensee is that present license restrictions require that the reactor be reduced in power immediately without time for confirmatory sample analyses.

To alleviate these problems the licensee has proposed a measure that would allow limited operation of the reactor when boron concentration is below the 20,000 ppm limit. The proposed specification would allow operation for a period not to exceed 24 hours if the boron concentration in the Boron Injection Tank falls below 20,000 ppm and is greater than 15,000 ppm. If the concentration fell below 15,000 ppm, the reactor would be placed in the hot shutdown condition utilizing normal operating procedures.

Evaluation

The Boron Injection Tank and the Safety Injection pumps (pumps that force the boron solution into the reactor coolant system) are a part of the Emergency Core Cooling System (ECCS) and as such serve to provide a rapid injection of high concentration chemical poison into the reactor coolant system upon a safety injection signal. This aspect of the ECCS is designed primarily to provide boron injection and cooling water during small breaks in the reactor coolant system or during other accidents resulting in rapid pressure and temperature drops in the primary coolant system.

The licensee has obtained the analysis for this change in technical specification from the reactor vendor, Westinghouse. The most critical accident that requires use of the boric acid solution from the BIT was determined to be a rupture in a main steam line.

During the steam line break accident, energy is rapidly transferred from the reactor coolant system. This transfer of energy results in rapid cooling of the primary coolant, thereby reducing its pressure and temperature. The main steam line break also immediately actuates the safety injection system and also trips the reactor, thus bringing the reactor core to a subcritical configuration. As the primary coolant system cools down, the reactor core begins to approach criticality due to the positive reactivity effect of the temperature reduction. To counteract this latter phenomenon, poison (negative reactivity) in the form of boric acid from the BIT is introduced to maintain the reactor core in the subcritical condition.

An accident analysis was done for several break locations and reactor power levels. These analyses were also done for both cases of 20,000 ppm boron concentration and 15,000 ppm boron concentration in the Boron Injection Tank.

The results of the analyses indicate an insignificant change in system response for the reduced boron concentration cases. Both concentrations of boron are adequate to maintain the reactor core in the subcritical condition; hence, there is a resultant similarity in system response.

We have reviewed and concur in these analyses and methods documented in the licensee's request dated August 30, 1974 and in WCAP-8243 (H. B. Robinson Unit 2 - Justification for Operation at 2300 MWt). Therefore, we conclude that the specified reduction, for a limited time, of minimum boron concentration in the BIT to 15,000 ppm will not result in an increased risk to the health and safety of the public.

Summary

The licensee has requested that a minimum boron concentration of 15,000 ppm in the Boron Injection Tank be allowed for periods of up to 24 hours. This request was initiated to alleviate operational difficulties encountered in maintaining the normal Technical Specification limits (20,000 to 22,500 ppm). We have reviewed the analyses submitted to support the request and conclude that the minimum boron concentration requested will not result in an increased risk to the health and safety of the public.

CONCLUSION

We have concluded, based on the considerations discussed above, that: (1) because the change does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the change does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Dated: MAY 15 1975

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-261

CAROLINA POWER & LIGHT COMPANY

NOTICE OF ISSUANCE OF AMENDMENT TO FACILITY OPERATING LICENSE

Notice is hereby given that the U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 11 to Facility Operating License No. DPR-23 issued to Carolina Power & Light Company which revised Technical Specifications for operation of the H. B. Robinson Unit No. 2, located in Darlington County, Hartsville, South Carolina. The amendment is effective as of its date of issuance.

The amendment revises the provisions in the Technical Specifications relating to the minimum boron concentration permissible in the Boron Injection Tank while operating in accordance with the licensee's application for amendment dated August 30, 1974. Present Technical Specifications limit the minimum boron concentration to 20,000 ppm. The amendment allows operation for a period not to exceed 24 hours if the boron concentration in the Boron Injection Tank falls below 20,000 ppm and is greater than 15,000 ppm. If the concentration falls below 15,000 ppm, the reactor would be placed in the hot shutdown condition utilizing normal operating procedures.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Prior public notice of this amendment is not required since the amendment does not involve a significant hazards consideration.

For further details with respect to this action, see (1) the application for amendment dated August 30, 1974, (2) Amendment No. 11 to License No. DPR-23, with Change No. 36 and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N. W., Washington, D. C. and at the Hartsville Memorial Library, Home and Fifth Avenue, Hartsville, South Carolina 29550.

A copy of items (2) and (3) may be obtained upon request addressed to the U.S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Reactor Licensing.

Dated at Bethesda, Maryland, this 15th day of May, 1975.

FOR THE NUCLEAR REGULATORY COMMISSION

George Lear

George Lear, Chief
Operating Reactors Branch #3
Division of Reactor Licensing