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Docket No. 50-261

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

Gentlemen:

Although your emergency core cooling systems generally satisfy our requirements with regard to long-term cooling, the system configurations have not been specifically evaluated to show that significant changes in chemical concentrations would not occur during the long term after a loss-of-coolant accident (LOCA) and these potential changes have not been specifically addressed by appropriate operating procedures. Accordingly, you should review your system capabilities and operating procedures to assure that boron precipitation would not compromise long-term core cooling capability following a LOCA. This review should consider all aspects of your design including component qualification in the LOCA environment in addition to a detailed review of operating procedures. You should examine the vulnerability of your design to single failures that would result in any significant boron precipitation.

You should submit this evaluation and associated operating procedures within 30 days of receipt of this letter. These procedures should be promptly effected to assure that boron precipitation would not interfere with the ability of your facility to conform to Criterion (5) of 10 CFR 50.46(b). We will inform you as to the acceptability of your evaluation and associated operating procedures.

While solute concentrations may be subject to control through operating procedures, equipment modifications may be required or desirable to simplify such procedures. Your submittal should include a plan for completing such modifications within six months of the date of this letter.

This request for generic information was approved by GAO under a blanket clearance No. B-180225 (R0072); this clearance expires July 31, 1977.

Sincerely,

GL

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

cc: See next page

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DATE ➤	3/ /75	3/ /75				

cc: G. F. Trowbridge, Esquire
Shaw, Pittman, Potts, Trowbridge
and Madden
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Docket No. 50-261

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

Gentlemen:

10 CFR 50.46(a)(2)(iv) requires that upon submission of your revised ECCS evaluation, developed in accordance with Appendix K to Part 50, the facility shall continue or commence operation within the limits of both the proposed technical specifications submitted pursuant to Section 50.46 and all technical specifications or license conditions previously imposed by the Commission, including the requirements of the ECCS Interim Policy Statement of June 29, 1971.

Our preliminary review of recent ECCS submittals indicates that there may be instances where the proposed technical specifications that have been submitted in accordance with Section 50.46 are not consistent with the evaluation that has been submitted in accordance with Appendix K, or are in conflict with existing technical specifications for your facility. Further, it appears that in some cases compliance with the limits of both specifications may be a physical impossibility . For example, in some facilities the proposed technical specifications require a greater amount of water in the accumulators than is permitted by your existing technical specifications.

Discrepancies such as those discussed above must be corrected as soon as practicable. Accordingly, you should reexamine your ECCS submittals, including both the existing and proposed technical specifications related thereto, to assure that the facility can be operated within the limits of both sets of technical specifications; that your proposed technical specifications are consistent with 50.46 requirements, including your evaluation showing compliance with Appendix K; and to identify any areas of conflict between the two sets of technical specifications. After this review, you should submit to the Director of Licensing, within thirty days of receipt of this letter, the results of your review and necessary documentation to correct any discrepancies in your previous ECCS submittals and to remove any conflicts in technical specifications similar to those discussed above.

KRG

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DATE▶	10/ 2 /74	10/ 2 /74	10/ 2 /74			

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In the interim, pending resolution of such technical non-compliance with the Commission's regulations, your facility should be operated within the limits of those technical specifications that have been shown to result in compliance with the Interim Acceptance Criteria and, in addition, within the limits of any proposed technical specifications submitted pursuant to 50.4 to the extent that those proposed technical specifications have been shown to be consistent with the Interim Acceptance Criteria and provide a greater margin of safety.

Sincerely,

Original Signed

Karl R. Goller, Assistant Director
for Operating Reactors
Directorate of Licensing

cc: George F. Trowbridge, Esquire
Shaw, Pittman, Potts & Trowbridge
910 - 17th Street, N. W.
Washington, D. C. 20006

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Chairman, Darlington County
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Docket No. 50-261

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

Gentlemen:

As a result of our generic review of the Westinghouse ECCS Evaluation Model, we have identified information which must be provided on a case-by-case basis to enable us to complete our review of individual plant compliance with the criteria set forth in paragraph 50.46(b), "Acceptance Criteria for Emergency Core Cooling Systems for Light-Water Cooled Nuclear Power Reactors," of 10 CFR Part 50. The information required is identified in the Enclosure to this letter. (Items 1 and 2 are applicable to all plants. Item 3 is applicable to plants with ice-condenser containments.)

In order to maintain our review schedule for the H. B. Robinson Nuclear Plant Unit 2, we need the information requested by December 1, 1974.

Please contact us if you desire any discussion of clarification of the information required.

Sincerely,

Original Signed

George Lear, Chief
Operating Reactors Branch #3
Directorate of Licensing

Enclosure:
Request for Additional
Information

cc: See page 2

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

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cc:

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ADDITIONAL INFORMATION REQUIRED
FROM ALL UTILITIES
UTILIZING WESTINGHOUSE NUCLEAR STEAM SUPPLY SYSTEMS

1. Provide justification for the following input parameters used in the ECCS evaluation model:

   a) Net Free Containment Volume - Justification should include the total gross internal containment volume and the internal structures and equipment and their volumes which are subtracted to obtain the net free containment volume. A discussion of the uncertainties should be provided.

   b) Passive Heat Sinks - Discuss the method of determining the passive containment heat sinks. Identify each heat sink by category (i.e., cable tray, equipment supports, floor grating, crane wall, etc.) and provide surface area, thickness, materials of construction, thermal conductivity and volumetric heat capacity, by component category used in the containment transient analysis code.

   c) Starting Time of Containment Cooling System(s) - Discuss the factors that show that the start time(s) assumed in the containment response analysis represent the earliest possible initiation of system(s) operation.

   d) Containment Initial Conditions - Compare the initial values of temperature, pressure and relative humidity in the containment with the range of values that will be permitted during plant operation.

e) Containment Spray Water Temperature - Show that the value of containment spray water temperature used in the containment response analysis is the lower bound temperature consistent with plant operating conditions.

2. For the most severe break provide the following information:

a) Fan-cooler heat removal rate as a function of containment atmosphere temperature. Show that minimum operational values of service water temperature have been used in determining the fan-cooler heat removal rate.

b) Mass and energy release rates to the containment as a function of time during the blowdown, refill and reflooding periods of the accident. Include any spilled ECCS water.

3. For plants using the ice condenser containment provide the following additional information:

a) For each heat sink identified for question 1(b) above, indicate the location within the containment (i.e., upper compartment, lower compartment or ice condenser compartment).

b) Graphically provide the maximum steam condensation rate in the lower compartment as a function of time from t=0 until the core is recovered. Consider each of the following possible sources of steam condensation and show the condensation rate of each as a function of time for the above time period:

(1) passive heat sinks;

(2) lower compartment containment sprays (give the spray flow rate as a function of time);

(3) upper compartment containment spray water returning to the lower compartment (give the flow rate as a function of time);

(4) ice condenser drain water entering the lower compartment (give the flow rate as a function of time);

(5) interface between the containment sump water and the lower compartment atmosphere; and,

(6) lower compartment normal cooling systems which could operate during the accident.

For items (3), (4), (5), and (6) above, discuss the analysis performed to determine the steam condensation rates. Identify and justify all heat transfer coefficients and processes, service and drain water temperatures, and containment atmospheric conditions assumed in the analysis.

c) Graphically show the containment pressure and upper and lower compartment atmosphere temperatures calculated by the LOTIC analysis as a function of time from the time of accident initiation until the core is recovered. On the same figure show the containment pressure used for the ECCS performance evaluation as a function of time and identify the time at which core "reflooding" starts.

d) Identify and justify the possible flow paths which are available to allow the flow of air from the upper compartment to the lower compartment during the time from t=0 seconds until the core is recovered. Provide the flow area and loss coefficient for each flow path.

e) Graphically compare the steam energy release rate into the lower compartment to the total steam condensation rate in the lower compartment for the period t=0 seconds until the core is recovered. In the event that the total steam condensation rate in the lower compartment exceeds the steam release rate into the lower compartment at any time, graphically show the air flow rate from the upper compartment to the lower compartment and the upper compartment and lower compartment pressure transients. Describe the analysis used to determine the effect of the air flow from upper to lower compartment upon the lower compartment depressurization rate.