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ALEXANDER,D.B. Carolina Power & Light Co.
RECIP.NAME RECIPIENT AFFILIATION
NRC - No Detailed Affiliation Given

SUBJECT: Forwards comments of CP&L on NRC proposed & direct final rules on 10CFR50.68 & 10CFR70.24 criticality accident requirements.

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CP&L Letter: PE&RAS-97-101
December 24, 1997

Secretary
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Attn: Rulemakings and Adjucations Staff

Subject: **Comments on NRC Proposed and Direct Final Rules on 10CFR50.68 and 10CFR70.24 Criticality Accident Requirements (62 FR 63825 and 62 FR 63911)**

Dear Sir or Madam:

Attached are the comments of Carolina Power & Light Company (CP&L) on the NRC Proposed and Direct Final Rules on 10CFR50.68 and 10CFR70.24 Criticality Accident Requirements. In general, CP&L supports this change as an efficient and effective improvement in the regulatory process.

Please contact me at (919) 546-6901 if you have questions.

Sincerely,

P.A. Ornl for D.B. Alexander

D.B. Alexander, Manager
Performance Evaluation & Regulatory Affairs

A001

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Attachment

Comments on NRC Proposed and Direct Final Rules on 10CFR50.68 and 10CFR70.24 Criticality Accident Requirements (62 FR 63825 and 62 FR 63911)

cc: Mr. L.J. Callan, Executive Director for Operations
Mr. S.J. Collins, Director, USNRC Office of Nuclear Reactor Regulation
Mr. L.A. Reyes, Regional Administrator, Region II
Mr. J.B. Brady, USNRC Resident Inspector - HNP, Unit 1
Mr. B.B. Desai, USNRC Resident Inspector - HBRSEP, Unit 2
Mr. V.L. Rooney, USNRC Project Manager - HNP, Unit 1
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Mr. C.A. Patterson, USNRC Resident Inspector - BSEP, Units 1 and 2
Mr. D.C. Trimble, USNRC Project Manager - BSEP, Units 1 and 2
Chairman J.A. Sanford - North Carolina Utilities Commission

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Comments on NRC Proposed and Direct Final Rules on 10CFR50.68 and 10CFR70.24 Criticality Accident Requirements (62 FR 63825 and 62 FR 63911)

1. The proposed paragraph 10CFR50.68(b)(1) reads:

   "Plant procedures may not permit handling and transportation at any one time of more fuel assemblies than have been determined to be safely subcritical under the most adverse moderation conditions feasible by unborated water."

   a) In order to express this as a clear requirement, CP&L suggests replacing the phrase "may not permit" with the phrase "shall prohibit the."

   b) CP&L suggests that the paragraph be revised to clarify that the determination is to be made by the license, in a engineering calculation for example, rather than by the NRC in a Safety Evaluation.

   c) In subsequent paragraphs 10CFR50.68(b)(2), 10CFR50.68(b)(3) and 10CFR50.68(b)(4), subcriticality is expressed as a maximum limit (either 0.95 or 0.98 or 1.0) on the estimated k-effective at a 95 percent probability and a 95 percent confidence level. Since the requirement is "to be safely subcritical," is 1.0 the correct maximum limit on k-effective? Or, does the absence of specific criteria imply the application of a different standard? CP&L suggests that more specific criteria be added to paragraph 10CFR50.68(b)(1).

   d) In subsequent paragraphs 10CFR50.68(b)(2) and 10CFR50.68(b)(4), the moderator is identified as "pure water" rather than "unborated water." If the moderators under consideration were intended to be the same, then CP&L suggests that these paragraphs be clarified to use the same words. Otherwise, some further explanation of the difference between "pure water" and "unborated water" might be necessary to avoid future misunderstandings.

   e) Paragraph 10CFR50.68(b)(3) discusses "optimum moderation" by a "low-density hydrogenous fluid." The phrases "most adverse moderation" and "optimum moderation" seem to express opposite relationships but are used to describe the same physical phenomenon. CP&L suggests some clarification is necessary. CP&L also suggests that some clarification is necessary to help understand why it is appropriate to use unborated water to determine the most adverse moderation for handling and transportation when an assumption of a low-density hydrogenous fluid is required for the optimum moderation for new fuel storage.

2. The proposed paragraph 10CFR50.68(b)(2) reads, in part:

   "The estimated ratio of neutron production to neutron absorption and leakage (k-effective) of the fresh fuel ...."

   Since all neutrons (that are produced) subsequently either leak or are absorbed, CP&L suggests that the paragraph be clarified to specify its applicability to an instant in time. Alternately, CP&L suggests that paragraph be revised to eliminate the words "ratio of neutron production to neutron absorption and leakage," since "k-effective" is a sufficiently understood term to permit its use without the need to define it.

Comments on NRC Proposed and Direct Final Rules on 10CFR50.68 and 10CFR70.24 Criticality Accident Requirements (62 FR 63825 and 62 FR 63911)

3. Paragraphs 10CFR50.68(b)(2) and 10CFR50.68(b)(3) address fresh fuel storage racks, but CP&L understands that at least one licensee has committed not to use such storage racks in order to avoid criticality accident concerns. For simplicity, CP&L suggests that these paragraphs be revised to be applicable unless the license institutes administrative controls to prohibit the use of fresh fuel storage racks.

4. The proposed paragraph 10CFR50.68(b)(6) reads:

   "Radiation monitors, as required by GDC 63, are provided in storage and associated handling areas when fuel is present to detect excessive radiation levels and to initiate appropriate safety actions."

   To be precise, GDC 63 requires that appropriate systems be provided to detect excessive radiation levels and to initiate appropriate safety actions. Logically, radiation monitors would be a necessary part of such systems, but GDC 63 does not require the radiation monitors to initiate safety actions. CP&L suggests that this paragraph be clarified.

5. The proposed paragraph 10CFR50.68(b)(7) reads:

   "The maximum nominal U-235 enrichment of the fresh fuel assemblies is limited to no greater than five (5.0) percent by weight."

   CP&L understands that at least one U.S. reactor is currently pursuing a license to operate with test assemblies containing mixed-oxide fuel. Until either more operating experience or more analysis is available for MOX fuel, CP&L suggests that this paragraph be revised to limit the fissionable material to U-235.