

January 4, 1995

Mr. M. S. Tuckman
Senior Vice President
Nuclear Generation
Duke Power Company
P. O. Box 1006
Charlotte, NC 28201

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION ON FUEL STORAGE MODIFICATIONS,
McGUIRE NUCLEAR STATION, UNITS 1 AND 2; AND CATAWBA NUCLEAR STATION,
UNITS 1 AND 2, TAC NOS M89744, M89745, M90447 AND M90448

Dear Mr. Tuckman:

The NRC staff has completed a preliminary review of the criticality aspects of the requests by Duke Power Company to increase the allowable U-235 enrichment of fuel to be stored in the new and spent fuel storage facilities at Catawba Nuclear Station Units 1 and 2 and at the McGuire Nuclear Station Units 1 and 2. The application for Catawba was submitted on September 19, 1994, and the application for McGuire was submitted on June 13, 1994. Questions numbered 4, 7 and 9 apply both to Catawba and McGuire. The remainder apply to Catawba. Please respond to the enclosed request for additional information so that we may continue our review.

Sincerely,

/s/

Robert E. Martin, Senior Project Manager
Project Directorate II-3
Directorate for Reactor Projects I/II
Office of Nuclear Reactor Regulation

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Docket Nos. 50-369, 50-370, 50-413 and 50-414

Enclosure: Request for Additional
Information

cc w/encl: See next page

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UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

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Nuclear Generation
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Sincerely,

A handwritten signature in cursive script, reading "Robert E. Martin", is positioned above the typed name and title.

Robert E. Martin, Senior Project Manager
Project Directorate II-3
Directorate for Reactor Projects I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-369, 50-370, 50-413 and 50-414

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cc w/encl: See next page

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REQUEST FOR ADDITIONAL INFORMATION
CATAWBA PROPOSED FUEL ENRICHMENT INCREASE
REACTOR SYSTEMS BRANCH

- 1) Discuss the number of neutron histories accumulated in each KENO Va calculation and why this is considered adequate to assure convergence.
- 2) How do KENO Va calculations with the 123 group GMTR cross sections compare with CASMO-3/SIMULATE-3 calculations for the same Catawba storage rack configuration?
- 3) Since DPC proposes to place the boron concentration limit that is maintained in the spent fuel pool in the COLR, the approved analytical methods used to determine this limit must be referenced in the COLR Section of TS 6.9 in order to conform with Generic Letter 88-16. If this has not been done, what are DPC's plans for a revision to the TS amendment application?
- 4) The NRC staff believes that the 31-day frequency for verifying spent fuel pool boron concentration stated in proposed SR 4.0.12 is too long, especially during fuel storage operations. We note that a comparable SR for ensuring subcriticality in the reactor during MODE 6 in the improved Westinghouse Standard TS is 7 days and that this is discussed in the BASES for those TS. We request that DPC provide further justification for the proposed SFP surveillance frequency. Any associated changes to the BASES should also be proposed including a discussion of the limiting SFP accident analysis.
- 5) The calculated worst-case k-eff for the most reactive fuel assembly under optimum moderation conditions in the new fuel vault is given as 0.95861 and, therefore, meets the 0.98 criterion. What is the calculated worst-case k-eff for the fully flooded condition in the new fuel vault?
- 6) DPC's proposed TS specifies that certain highly enriched fuel which could be used as filler assemblies would require assembly burnups of over 67 GWD/MTU in order to meet the NRC subcriticality requirements for spent fuel storage. However, the staff's current High Burnup Fuel Action Plan restricts burnups to currently approved levels (rod average of 60 GWD/MTU or less) because of recent experimental data which have shown a significant reduction of fuel failure thresholds for higher burnups. Although the proposed TS relates only to spent fuel storage, the implication is that this burnup level is also acceptable in the reload core. As a result, we will not approve this aspect of the amendment request. We recommend that proposed TS Table 3.9-2 have an assembly cutoff which corresponds to the current rod average limit of 60 GWD/MTU.
- 7) We do not agree with proposed TS 3.9.13.c, which would allow fuel storage configurations other than those reviewed by the NRC, and request that it be deleted.

ENCLOSURE

- 8) As stated in Bases 3.9.12 and 3.9.13, the enrichments listed in Tables 3.9-1 and 3.9-2 are nominal enrichments and may exceed the listed value by a manufacturing tolerance of up to 0.05 weight percent U-235. Since the Bases are not a part of the TS, we suggest that the labels in these Tables be titled Initial Nominal Enrichment.
- 9) The Duke Power submittal for the McGuire proposed TS changes for fuel enrichment and storage, dated June 13, 1994, states that the BWFC Mark BW fuel design is the most reactive of the three fuel types which exist at McGuire. The Duke Power submittal for Catawba, dated September 19, 1994, states that the Westinghouse OFA design is the most reactive fuel of all fuel types stored at any Duke Power facility. Please discuss this apparent discrepancy.
- 10) Section VII.3 discussing region interface restrictions appears to be incomplete. Please supply the missing information.