Duke Power
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D.M. Jamil
Vice President

January 15, 2003

U.S. Nuclear Regulatory Commission
ATTENTION: Document Control Desk
Washington, DC 20555-0001

Subject: Duke Energy Corporation (DEC)
McGuire Nuclear Station Units 1 and 2
Docket Numbers 50-369 and 50-370
Technical Specifications (TS) Amendment Request for Additional Information (RAI); TS 3.7.15 - Spent Fuel Assembly Storage, and TS 4.3 - Fuel Storage (TAC NOS. MB5014 and MB5015)

Reference: (1) DEC letter to NRC dated April 18, 2002, (2) WCAP-14416-NP-A, "Westinghouse Spent Fuel Rack Criticality Analysis Methodology," November 1996, and (3) DEC letter to NRC dated October 30, 2002

In recent discussions between DEC and the NRC on issues related to the License Amendment Request (LAR), dated April 18, 2002, it was stated that an inconsistency may exist between the spent fuel pool (SFP) soluble boron credit methodology outlined in WCAP-14416-NP-A (Ref. 2) and the criterion stipulated in 10 CFR 50.68 (b)(4). The criterion states that the SFP storage rack k_{eff} must remain less than 1.0 in unborated water, with a 95 percent probability, 95 percent confidence level (95/95 basis). However, the WCAP methodology requires this to be true only for unirradiated fuel of the maximum allowable reactivity. When credit for burnup is employed, using irradiated fuel of equivalent reactivity to the limiting fresh fuel, the WCAP methodology allows burnup-related uncertainties to be offset with soluble boron credit.

A rigorous interpretation of 10 CFR 50.68(b)(4) would imply that all biases and uncertainties (rack-related, fuel manufacturing-related, code-related, AND burnup-related) should be considered to satisfy the $k_{eff} < 1.0$ criterion on a 95/95 basis. Therefore, adherence to the WCAP methodology for burnup credit applications is inconsistent with the rigorous interpretation.

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However, the WCAP methodology does require all pertinent uncertainties to be included in addressing the $k_{eff} < 0.95$ criterion with soluble boron credit. In addition, the WCAP methodology requires the licensee to ensure that the amount of soluble boron needed in the SFP to maintain the 95/95 k_{eff} below 0.95 is less than the soluble boron concentration which results from a worst-case credible dilution scenario. By performing a confirmatory dilution analysis per the WCAP methodology, the licensee demonstrates that an event where the SFP soluble boron concentration reaches 0 ppm is not likely to occur.

Previous DEC soluble boron credit LARs (McGuire, dated 8/1/00, and Oconee, dated 12/28/00) and other industry submittals (e.g., Indian Point 9/20/01 LAR) employed the WCAP methodology. DEC acknowledged in the pending LAR (Ref. 1) that to achieve $k_{eff} < 1.0$ on a 95/95 basis in accordance with the strict interpretation of 10 CFR 50.68 (b) (4), soluble boron would be needed to offset the burnup-related uncertainties. Table 11 of Attachment 6 in the LAR (Ref. 1) shows that Region 2B of the McGuire SFP requires the largest amount of soluble boron (totaling 570 ppm) to account for all reactivity equivalencing uncertainties.

Different boron dilution scenarios were evaluated to determine the time duration required to significantly dilute the SFP. For the worst-case "continuous flow" dilution event identified in Reference 3 (a 700 gpm pipe break in the non-seismic fire protection system), calculations show that it would take approximately 13 hours with the cask loading pit isolated to dilute the McGuire SFP from the current minimum 2675 ppm down to 570 ppm and the pool would overflow in less than two hours. The SFP level is monitored in the control room on the operator aid computer with High, Low and Low-Low Alarms, and plant personnel make two rounds through the SFP area every twelve hour shift in accordance with procedures OP/1/A/6500/003 (Unit One) and OP/2/6500/003 (Unit Two). Thus, plant personnel would be aware of and responding to this worst-case dilution event well before the SFP water could be diluted to 570 ppm.

DEC continues to evaluate and pursue options for the long-term resolution of the ongoing Boraflex degradation issues in the McGuire spent fuel pool racks. DEC has entered into a contract for the replacement of the Region 1 rack modules in both McGuire pools. Additionally, as discussed with the NRC staff during our December 10, 2002 meeting, DEC is exploring the potential use of poison inserts as a permanent solution for the Region 2 racks. DEC anticipates submitting an LAR to the NRC for its review in the third quarter of 2003, addressing both the new rack modules for Region 1 and the Region 2 poison inserts. For that LAR

submittal, Duke plans to resolve the Boraflex degradation issue by implementing poison inserts into the spent fuel pools by September of 2005.

DEC requests approval of the April 18, 2002 LAR (Ref. 1) by January 31, 2003 with a 60 day implementation period. Please contact Norman T. Simms of Regulatory Compliance at 704-875-4685 with any questions with respect to this matter.

Very truly yours,

D. M. Jamil

xc:

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Dhiaa M. Jamil, being duly sworn, states that he is Vice President of McGuire Nuclear Station; that he is authorized on the part of Duke Energy Corporation to sign and file with the U.S. Nuclear Regulatory Commission these revisions to the McGuire Nuclear Station Facility Operating Licenses Nos. NPF-9 and NPF-17; and, that all statements and matters set forth therein are true and correct to the best of his knowledge.

Dhiaa M. Jamil, Vice President
McGuire Nuclear Station
Duke Energy Corporation

Subscribed and sworn to before me on January 15, 2003.

Deborah B. Thrap
Notary Public
Deborah C. Thrap

My Commission Expires: 4/6/07

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