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U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Document Control Desk

Subject: McGuire Nuclear Station
Docket Numbers 50-369 and -370
Catawba Nuclear Station
Docket Numbers 50-413 and -414
McGuire and Catawba transition to Westinghouse fuel

McGuire and Catawba Nuclear stations will be transitioning from Framatome Cogema Fuels (FCF) MkBW fuel to Westinghouse MV5H fuel beginning with Catawba 2 cycle 11 (startup May 2000). Attachment 1 is a comparison of the current FCF MkBW fuel assembly design with the Westinghouse modified V5H (MV5H fuel assembly). The MV5H fuel will contain all advanced features available to provide enhanced margin to mitigate incomplete rod insertion, cladding corrosion, and rod internal pressure concerns. These features are anticipated to include: Zirlo, IFM grids, thicker guide tubes, fuel rods seated on bottom, lower holddown force, a shorter fuel assembly, and annular axial blankets. Duke does not intend to request fuel rod burnup extensions beyond the current licensed burnup limits.

Duke plans to submit a single transition topical, Duke Power Company Westinghouse Fuel Transition Report, DPC-NE-2009, to NRC in June of 1998 and requests approval in July 1999. Only two new topical reports are currently necessary to support Duke's transition to Westinghouse fuel as indicated in Attachment 2. A draft outline for the transition topical report is included as Attachment 3. Duke understands that NRC is interested in how utilities analyze transition cores; DPC-NE-2009 will explicitly describe these analyses. The scope of the report as indicated in the outline is fuel design, core design (physics methods), fuel

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rod analysis, thermal hydraulics and updated UFSAR Chapter 15 transient and accident analyses.

The fuel rod analyses will be performed by Duke using the current Westinghouse PAD code and Westinghouse approved methodology. No departures from Westinghouse methodology are intended. The purpose of submittal of the fuel rod analysis section will be to demonstrate Duke's proficiency in performing the fuel rod analyses using approved Westinghouse methods. Further, as NRC is aware, Westinghouse will be revising their PAD code in mid-1998 to address the current fuel rod internal pressure concern. Duke does not anticipate a resubmittal of the above Duke topical report following the Westinghouse PAD revision. Rather Duke will ask NRC to approve Duke's proficiency and to accept Duke's use of the revised PAD model without resubmittal.

The thermal-hydraulics section of DPC-NE-2009 will verify the use of the Westinghouse WRB-2M CHF correlation in VIPRE, present the core model including the transition, and describe the statistical core design methods and design limits. The core model and statistical core design approach will be nearly identical to the existing approved Duke VIPRE methods for McGuire and Catawba, DPC-NE-2005 Addendum C. Thus, Duke suggests that this methodology could be approved more expeditiously through Duke presentations or an NRC audit in Charlotte as was previously performed by NRC for Duke's use of TACO3 and the fuel rod gas pressure criterion (Re: NRC letter dated April 3, 1995).

The nuclear design section will present benchmarking of currently approved nuclear design codes for Westinghouse fuel with integral burnable absorbers. Sequoyah data will be utilized. The results of this benchmarking demonstrate that the current nuclear uncertainty factors remain bounding, and therefore, NRC review of this work may not be necessary. Typical nuclear fuel management schemes for the transition to an all-Westinghouse core would be presented.

As part of Topical Report DPC-NE-2009, minor revisions to the three topical reports which are the basis of the McGuire and Catawba UFSAR Chapter 15 non-LOCA transient and accident analyses will be included, and a code/methodology change will be made for rod ejection analysis. Specifically the SIMULATE-3K 3-D transient nodal code for the rod ejection analysis will be described. (Similar methodology was submitted for Oconee in July 1997 in Duke topical DPC-NE-

3005-P, "UFSAR Chapter 15 Transient Analysis Methodology".) These reports are DPC-NE-3000-PA, "Thermal-Hydraulic Transient Analysis Methodology", DPC-NE-3001-PA, "Multidimensional Reactor Transients and Safety Analysis Physics Parameters Methodology", and DPC-NE-3002-A, "FSAR Chapter 15 System Transient Analysis Methodology." These revisions will address the input changes necessary to model the new Westinghouse fuel assemblies and CHF technology, in addition to minor modeling refinements. Again there may be an opportunity to expedite review of these minor methods changes through Duke presentations or an NRC audit in Charlotte.

Duke believes that a meeting would be helpful to facilitate a clear understanding of the scope of the topicals and to discuss alternative approaches that might expedite approval as mentioned above. Duke appreciates NRC's support of this request and looks forward to hearing from NRC concerning a possible meeting.

Very truly yours,

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Attachment 1

Design Feature	Current FCF MkBW Design	Future Westinghouse MV5H Design
Fuel assembly dry weight	1470	1436
Top nozzle design	leaf spring; nut/locking cup	leaf spring; quick disconnect
Number of spacer grids	8	12
Type of spacer grids	2 T/B inconel, 1 zirc non-mixing, & 5 mixing vane grids.	1 protective, 2 T/B inconel anti-snag grids, 6 MV5H mixing vane m[illegible], 3 IFMs.
CRGT ID	.450" upper/ .397" lower	.442 upper/ .397" lower
IT ID	.450"	.440"
Fuel rod cladding OD	.374"	.374"
Guide tube and grid material	zircaloy 4	Zirlo
Cladding material	low tin zircaloy 4	Zirlo
Fuel rod prepressure	proprietary	proprietary (reduced pressure for IFBA)
Pellet stack height	144.0	144.0
Fuel Assembly length, in.	159.764	159.775

Attachment 2
Duke Topical Reports Needed to Support Westinghouse Fuel Transition

Topical Title	Submittal	SER Need Date
1. Westinghouse WRB-2M Critical Heat Flux correlation	1/98	1/99
2. Duke Power Company Westinghouse Fuel Transition Report, DPC-NE-2009.	6/98	7/99

Begin Cycle Design - 12/98
Fuel Delivery - 3/2000

Attachment 3
Outline for: Duke Power Company Westinghouse Fuel Transition Report

1. Introduction

2. Fuel Design

3. Core Design
   - Methods Summary
   - Westinghouse Fuel Benchmarking
   - Typical Transition Fuel Cycles

4. Fuel Rod Analysis
   - Fuel Rod ECCS Interface
   - Fuel Rod Internal Pressure
   - Fuel Rod Clad Stress and Strain
   - Fuel Rod Clad Oxidation and Hydriding
   - Fuel Clad Fatigue
   - Fuel Clad Flattening
   - Fuel Temperature

5. Thermal Hydraulics
   - CHF Correlation Verification
   - Core Models
   - Transition Core Model and Analysis
   - Statistical Core Design
   - Thermal limits and Maximum Allowable Peaking

6. UFSAR Chapter 15
   - Transition core transient analysis
   - Revision to DPC-NE-3000.
   - Revision to DPC-NE-3001.
   - Revision to DPC-NE-3002.
   - Revision to DPC-NE-3004.
   - Loss of Coolant Analysis
   - UFSAR revisions.