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SUBJECT: Informs of intent to transition all three units at Oconee Nuclear Station to Framatome MkB11 fuel beginning w/Oconee 3 Cycle 19.W/chart comparing mkB11 design feature w/current MkB10L fuel & list of topical repts supporting transition.

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December 2, 1997

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

Attention: Document Control Desk

Subject: Oconee Nuclear Station
Docket Numbers 50-269, -270, and -287
Oconee Nuclear Station Transition to Framatome MkB11 Fuel

Duke Power Company intends to transition all three units at Oconee Nuclear Station to Framatome MkB11 fuel beginning with Oconee 3 Cycle 19. The MkB11 fuel assembly is a new fuel assembly design that incorporates mixing vane grids and a smaller rod diameter. A comparison of the MkB11 fuel assembly with the current MkB10L is provided in Attachment 1.

The transition to MkB11 will require that the cycle design begin in November 1998 and that the fuel be on-site in February 2000. Duke requests NRC's continued support with this transition. Because of organizational changes both at NRC and Duke, a few previous interactions on the subject of the MkB11 fuel assembly development and its use at Duke are provided.

- January 31, 1995 Duke and Framatome met with NRC to present the MkB11 development program and lead assembly analysis and irradiation plans.
- July 14, 1995 Framatome met with NRC and presented the BWU CHF correlation. As part of this presentation Framatome discussed a MkB11 mixing vane grid design change and an intent to use the BWU correlation on the MkB11 LTAs.
- August 15, 1995 Duke met with NRC and presented the status of supporting topicals and the then-current status of the MkB11 fuel assembly development program.
- May 1996 four lead MkB11 fuel assemblies began their irradiation in Oconee 2 cycle 16. This cycle will shut down in February of 1998, and the first cycle of post-irradiation-examination will be conducted during this outage.

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Four topical reports supporting this transition have been transmitted to NRC in 1996 and 1997 by Duke and Framatome. One additional minor revision to a Duke report will be submitted before year's end. NRC approval of all five topicals is requested in 1998. Each report is described below, and the schedules are summarized in table form in Attachment 2.

Framatome's MkB11 Fuel Assembly Design Topical (BAW-10229P) was submitted to NRC on September 1997 and has a requested review date of December 1998. This report provides a detailed description of the fuel assembly design, the test program, and technical evaluations (mechanical, thermal-hydraulic, ECCS, and nuclear design).

Framatome's BWU CHF correlation topical, BAW-10199P Addendum 1, was submitted in September 1996 and has a requested SER date of January 1998. This report justifies use of a performance factor multiplier on the previously approved BWU-Z CHF correlation when applied to MkB11 fuel. Duke understands that Framatome and NRC have discussed the possibility of NRC's approval of this report without formal NRC review.

Duke topical report DPC-NE-3005-P, "UFSAR Chapter 15 Transient Analysis Methodology", was submitted to the NRC on July 30, 1997. This report describes the methodology for analyzing all of the Oconee UFSAR Chapter 15 non-LOCA transients and accidents. This methodology will be used to replace the 1970s vintage UFSAR Chapter 15 analyses originally performed by B&W, and will serve as the new licensing basis non-LOCA analyses. NRC review was requested by October 1998 to support the Oconee 3 Cycle 19 reload. Approval for this reload is needed since the new MkB11 fuel assembly design will be loaded, and the current UFSAR analyses will no longer be valid. This topical report is also an integral part of the Oconee conversion to Improved Technical Specifications. The methodology was used to determine parameter values for many of the technical specifications. The planned implementation date for the Oconee Improved Technical Specifications is December 1998.

A revision to Duke topical report DPC-NE-3000-PA, "Thermal-Hydraulic Transient Analysis Methodology", will be submitted for review by the NRC in December 1997. This revision describes minor changes to the Oconee RETRAN and VIPRE simulation models that have been previously reviewed and approved by the NRC. It is expected that the NRC review effort on this minor revision will be limited.

Duke's statistical core design topical report, DPC-NE-2005 Addendum D was submitted in April 1997. This Duke statistical core design topical report documents the application of previously approved Duke statistical core design methods to the MkB11 fuel assembly. The BWU-Z CHF correlation was used with the Framatome determined performance factor for MkB11 fuel, documented in the Framatome CHF correlation topical, BAW-10199, Addendum 1. DPC-NE-2005 Addendum D is identical to the approach used in the original DPC-NE-2005 topical and also in Addendum C to the DPC-NE-2005 topical (both are approved). Duke understands that NRC intends to complete review of Addendum D on the same schedule as the Duke UFSAR Chapter 15 topical report (October 1998). However, because of the routine nature of Addendum D, 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).

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.

If there are any questions regarding this matter, please call Ron Gribble at (704) 382-6160.

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Attachment 1
MkB11 Design Feature Comparison with Current MkB10L Fuel

Design Feature	**Current Mk-B10L fuel assembly design**	**Mk-B11**
Fuel assembly dry weight, lbs	1563	1480
Top nozzle design	Quick disconnect UEF	Quick disconnect UEF
Number of spacer grids	8	8
Type of spacer grids	2 inconel end grids, one at the top and one at the bottom; 6 zircaloy intermediate grids, no mixing vanes	2 inconel end grids, one at the top and one at the bottom; 6 zircaloy intermediate grids, the upper 5 having mixing vanes and the lowest one without mixing vanes
CRGT ID, inches	0.498	0.498
IT ID, inches	0.441	0.441
Fuel rod cladding OD, inches	0.430	0.416
Cladding material	Zircaloy-4	Zircaloy-4
Fuel rod pre-pressure, psig	proprietary	unchanged
Pellet stack height, inches	142.29	143.05

Attachment 2
Topical Reports Supporting MkB11 Fuel Transition

Topical Title	Submittal	SER Need Date
1. MkB11 Fuel Assembly Design Topical (BAW-10229P)	9/30/97	12/98
2. FCF BWU Critical Heat Flux Correlations Addendum 1 (BAW-10199P)	9/96	1/98
3. Duke Thermal-Hydraulic Statistical Core Design Methodology, Addendum D (DPC-NE-2005)	4/22/97	10/98
4. Duke UFSAR Chapter 15 Transient Analysis Methodology (DPC-NE-2005-P)	7/30/97	10/98
5. Duke Thermal Hydraulic Transient Analysis Methodology Revision (DPC-NE-3000-PA, Rev)	12/97	10/98