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*A Duke Energy Company*

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January 31, 2000

U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555-001

Attention: Document Control Desk

Subject: Duke Energy Corporation  
Oconee Nuclear Station, Units 1, 2, and 3  
Docket Numbers 50-269, 50-270, and 50-287

Transition to Mark-B11 Fuel With M5 Cladding

Duke Energy Corporation plans to transition to Mark-B11 fuel with M5 cladding beginning with Oconee Unit 1 Cycle 20. The transition to Mark-B11 fuel is supported by a number of licensing submittals requiring NRC approvals. The purpose of this letter is to provide a list of these documents and to identify the Mark-B11/M5 cladding reviews that are needed to support the Oconee 1 Cycle 20 startup scheduled for the end of 2000. A list of the licensing documents supporting Mark-B11/M5 cladding implementation is provided in Attachment 1. A list of the applicable reference documents is provided in Attachment 2.

In order to implement Mark-B11 fuel with M5 cladding the following items are needed prior to Cycle 20 startup:

- 1) Approval of the BWU-Z CHF Correlation - This correlation was submitted in Reference 1 to be applied to Mark-B11 (15x15) and Mark-BW (17x17) fuel with mid-span mixers (MSM). It is Duke's understanding that the NRC staff has some question about the applicability of this correlation to Mark-BW fuel. In order to expedite the review of this topical report, FCF (Reference 2) requested that the review be limited to Mark-B11 fuel.

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- 2) Granting of an Exemption to the Cladding Material Specified in 10CFR50.46, 10CFR50.44, and 10CFR50, Appendix K for M5 cladding (Reference 3) - In Reference 10, the NRC staff found the acceptance criteria of 10CFR 50.46 and 10CFR50, Appendix K appropriately conservative for M5 cladding. However, the staff noted that an exemption would be needed to these requirements along with a similar exemption to cladding material specified in 10CFR50.44. Duke submitted the request for this exemption on September 15, 1999.
- 3) Approval of a Forthcoming LAR Related to Mark-B11 Fuel With M5 Cladding - This amendment request will contain changes to the Technical Specifications and Bases. The expected changes are as follows:
- Add M5 as one of the cladding materials contained in the description of the fuel assemblies in the design features section.
  - Add the BWU CHF correlation in the safety limits section.
  - Revise the COLR references to include the latest revision of the thermal hydraulic statistical design topical report, and update the LOCA evaluation model by adding the M5 topical report.
  - Include Technical Specification bases changes related to the use of the BWU CHF correlation.

Plans are to submit this LAR by the end of March 2000.

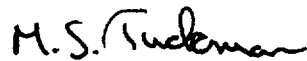
The Oconee 1 Cycle 19 is scheduled to shutdown in November 2000, with an anticipated startup of Cycle 20 by the end of the year. In order to support this schedule, it is requested that the items currently undergoing NRC review

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(as listed in Attachment 1) be completed and approved by the end of March 2000. This approval date is needed in order for the required documentation to be prepared in time to support plant startup.

Please address any comments or questions regarding this matter to J. S. Warren at (704) 382-4986.

Very truly yours,



M. S. Tuckman

Attachments

xc w/Attachments:

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ELL

**Attachment 1**  
**Licensing Documents for Mark-B11 Implementation**

<u>Topical Report or Licensing Document</u>	<u>Submittal Status/ Reference</u>	<u>Review Status/ Reference</u>
Mk-B11 Fuel Assembly Design Topical Report (BAW-10229P)	Submitted 9-30-97 Ref. 7	Approved 10-26-99 Ref. 12
BWU-Z CHF Correlation (BAW-10199P)	Submitted 9-30-96 Ref. 1	Under Review
M5 Topical Report (BAW-10227P)	Submitted 9-30-97 Ref. 8	Approved 12-14-99 Ref. 13
M5 Cladding Exemption Request	Submitted 9-15-99 Ref. 3	Under Review
Duke Thermal-Hydraulic Transient Analysis Topical Report (DPC-NE-3000-P, Rev. 2)	Submitted 12-23-97 Ref. 9	Approved 10-14-98 Ref. 14 (Submittal of -A version will replace "Zircaloy-4" with "M5 alloy" on p. A-1)
Duke Chapter 15 Transient Analysis Methodology Topical Report (DPC-NE-3005-P Rev. 1)	Submitted 2-1-99 Ref. 10	Approved 5-25-99 Ref. 5
Duke Thermal-Hydraulic Statistical Core Design Topical Report (DPC-NE-2005-P, Rev. 2)	Submitted 4-22-97 Ref. 11	Approved 6-8-99 Ref. 15

**Attachment 1**  
**Licensing Documents for Mark-B11 Implementation**

<u>Topical Report or Licensing Document</u>	<u>Submittal Status/Reference</u>	<u>Review Status/Reference</u>
Unit 2 Cycle 18 LAR (TSC 99-06) Environmental Consequence Calculation Methodology	Submitted 4-5-99 Ref. 4, Submitted 5-27-99 Ref. 6	Approved 1-18-00 Ref. 16
Mark-B11/M5 Licensing Amendment	To be submitted 3/00.	

Note: Many of the topical reports or licensing documents shown above might contain supplementary submittals that are not listed in this table. The purpose of this list is to identify the documents that are required to support implementation of Mark-B11 fuel.

**Attachment 2**  
**References**

- 1) Letter, J. H. Taylor (FCF) to U. S. NRC Document Control Desk, "Submittal of Topical Report BAW-10199P, Addendum 1, The BWU Critical Heat Flux Correlations," dated September 30, 1996, JHT/96-64.
- 2) Letter, T. A. Coleman (FCF) to U. S. NRC Document Control Desk, "Topical Report BAW-10199P, Addendum 1, The BWU Critical Heat Flux Correlations, TAC: M96728," dated December 16, 1999.
- 3) Letter, W. R. McCollum Jr. (Duke) to D. E. LaBarge (NRC), "Exemption to the Cladding Material Specified in 10 CFR 50.44, 10 CFR 50.46 and 10 CFR 50 Appendix K," dated September 15, 1999.
- 4) Letter, M. S. Tuckman (Duke) to U. S. NRC Document Control Desk, "Unit 2 Cycle 18 Reload Report and License Amendment Request (TSC 99-06)," dated April 5, 1999.
- 5) Letter, D. E. LaBarge (NRC) to W. R. McCollum, Jr. (Duke), "Safety Evaluation for Revision 1 to Topical Report DPC-NE-3005-P, UFSAR Chapter 15 Transient and Accident Analysis Methodology (TAC Nos. MA4713, MA4714, and MA4715)," dated May 25, 1999.
- 6) Letter, W. R. McCollum Jr. (Duke) to U. S. NRC Document Control Desk, "Supplement to Unit 2 Cycle 18 Reload Report and License Amendment Request (TSC 99-06)," dated May 27, 1999.
- 7) Letter, J. H. Taylor (FCF) to U. S. NRC Document Control Desk, "Submittal of Topical Report BAW-10229P, Mark-B11 Fuel Assembly Design Report," dated September 30, 1997, JHT/97-35.
- 8) Letter, J. H. Taylor (FCF) to U. S. NRC Document Control Desk, "Submittal of Topical Report BAW-10227P, Evaluation of Advanced Cladding and Structural Material in PWR Reactor Fuel," dated September 30, 1997, JHT/97-36.

**Attachment 2**  
**References**

- 9) Letter, M. S. Tuckman (Duke) to U. S. NRC Document Control Desk, "Topical Report DPC-NE-3000-P, Revision 2," dated December 23, 1997.
- 10) Letter, M. S. Tuckman (Duke) to U. S. NRC Document Control Desk, "UFSAR Chapter 15 Transient Analysis Methodology DPC-NE-3005-P, Revision 1," dated February 1, 1999.
- 11) Letter, M. S. Tuckman (Duke) to U. S. NRC Document Control Desk, "Use of BWU-Z Critical Heat Flux Correlation for Mark-B11 Fuel," dated April 22, 1997.
- 12) Letter, Stewart N. Bailey (NRC) to T. A. Coleman (FCF), "Safety Evaluation for Topical Report BAW-10229P, Mark-B11 Fuel Assembly Design Topical Report, September 1997 (TAC No. M99904)," dated October 26, 1999.
- 13) Letter, S. A. Richards (NRC) to T. A. Coleman (FCF), "Acceptance for Referencing of Topical Report BAW-10227P: Evaluation of Advanced Cladding Material and Structural Material (M5) in PWR Reactor Fuel (TAC No. M99903)," dated December 14, 1999.
- 14) Letter, D. E. LaBarge (NRC) to W. R. McCollum, Jr. (Duke), "Review of Topical Report DPC-NE-3000-PA Thermal-Hydraulic Transient Analysis Methodology, - Oconee Nuclear Station, Units 1, 2, and 3, (TAC Nos. MA1127, MA1128, and MA1129)," dated October 14, 1998.
- 15) Letter, D. E. LaBarge (NRC) to W. R. McCollum, Jr. (Duke), "Topical Report Number DPC-NE-2005P Use of BWU-Z Critical Heat Flux Correlation for Mark-B11 Fuel (TAC Nos. M98660, M98661, and M98662)," dated June 8, 1999.
- 16) Letter, D. E. LaBarge (NRC) to W. R. McCollum, Jr. (Duke), "Issuance of Amendments (TAC Nos. MA5153, MA5154, and MA5155)," dated January 18, 2000.