

May 19, 2004

Mr. H. B. Barron
Executive Vice President
Nuclear Generation
Duke Energy Corporation
526 South Church Street
Charlotte, NC 28202

SUBJECT: CATAWBA NUCLEAR STATION, UNITS 1 AND 2 - REQUEST FOR
ADDITIONAL INFORMATION CONCERNING MIXED OXIDE LEAD FUEL
ASSEMBLIES (TAC NOS. MB7863 AND MB7864)

Dear Mr. Barron:

By letter dated February 27, 2003, Duke Energy Corporation submitted an application for amendments to the renewed facility operating licenses for Catawba Nuclear Station, Units 1 and 2 (Catawba). The proposed amendments would revise the Technical Specifications to allow the use of four mixed oxide (MOX) Lead Test Assemblies (LTAs) at the Catawba station. The Nuclear Regulatory Commission staff's letter dated April 30, 2004, requested additional information (RAI) on the inclusion of Westinghouse Next Generation Fuel LTAs in the MOX core. That RAI has been updated based on the information that we have obtained up to and including our meeting with your staff on May 14, 2004, in Charlotte, North Carolina. The enclosed RAI will serve as a replacement, in its entirety, to the April 30, 2004, RAI.

Please contact me on (301) 415-1493 if you have any other questions on these issues.

Sincerely,

/RA/

Robert E. Martin, Senior Project Manager, Section 1
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-413 and 50-414

Enclosure: As stated

cc w/encl: See next page

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NAME	RMartin	DClarke	FAkstulewicz	SCoffin
DATE	5/19/04	5/19/04	05/18/04	5/19/04

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REQUEST FOR ADDITIONAL INFORMATION
ON APPLICATION FOR MIXED OXIDE (MOX) LEAD TEST ASSEMBLIES
DUKE POWER COMPANY
CATAWBA NUCLEAR STATION, UNITS 1 AND 2
DOCKET NOS. 50-413 AND 50-414

1. Provide supporting information for the validity of the WRB-2M critical heat flux correlation with respect to the Next Generation Fuel (NGF) design. The information should demonstrate the conservatism of the application of the WRB-2M correlation to NGF, as planned for use in the mixed oxide (MOX) core. This information should include the following Duke calculations and analyses:
 - a. NGF-03-127, "Next Generation Fuel Program Design Closeout Package," May 20, 2003.
 - b. CNC-1553.26-00-0292, "Catawba Units 1 and 2 Westinghouse NGF Fuel Assembly T-H Model," July 10, 2003.
 - c. CN-17NGF-03-23, Rev 0, "Confirming the WRB-2M Applicability to 17 x 17 Next Generation Fuel via CHF [Critical Heat Flux] Testing."
 - d. CNC-1553.26-00-0294, "Catawba 1 Cycle 15 Thermal-Hydraulic Evaluation," March 20, 2003.
- At this time the NRC staff does not request a meeting on this subject.
2. Describe calculations performed in support of specification of the exclusion zone for the NGF/MOX Lead Test Assemblies (LTAs). This should include the impact on the Robust Fuel Assemblies (RFAs) that are between the NGF and MOX LTAs.
3. Provide design calculations and discuss the analysis of the coolant crossflows for the RFA assemblies that are located between the NGF and MOX LTAs.
4. Provide a qualitative comparison of the two methodologies used to analyze the fuel (PAD and COPERNIC).
5. Provide the following design document reports for the RFA and NGF for examination by the Nuclear Regulatory Commission (NRC) staff.
 - a. DPC-1553.26-00-151, "Functionality Evaluation of the Westinghouse Standard Robust Fuel Assembly."
 - b. DPC-1553.26-00-0174, "Functionality Evaluation of the Westinghouse Next Generation Fuel (NGF) Assembly Design."

Enclosure

6. Further specific RAIs:
 - a. What is the differential peak cladding temperature (ΔPCT) for RFA vs. NGF?
 - b. Provide the results of the sensitivity studies performed that consider steam generator designs, power shapes and fuel cycle burnup.
 - c. Provide the large-break best estimate loss-of-coolant analysis (LB BELOCA) calculation (NF-DA-03-1, "Duke Energy Corporation LB BELOCA Evaluation of Final NGF LTAs," January 2, 2003) that necessitates limiting the peaking factor for the NGF LTA.
 - d. Clarify what the PCT of record is since WCAP-15540, "Best Estimate Analysis of Large Break Loss of Coolant Accident for the McGuire and Catawba Nuclear Stations, Revision 0, July 2000," and calculation number DPC-04-16, "10 CFR 50.46 Annual Notification and Reporting, March 19, 2004," refer to a PCT of 2028 °F while the MOX LTA submittal refers to a PCT of 2056 °F.
 - e. Clarify the steam generator tube plugging level that is assumed. WCAP-15440 refers to ten percent while DPC-04-16 for Catawba Unit 1 refers to five percent.
 - f. Submit the results of the calculation DPC-04-16 as it pertains to Catawba Unit 1.
 - g. Resubmit in their entirety the responses to RAIs 14, 29, 30 and 31 from Duke's letters dated November 3 and 4, 2004, reflecting the inclusion of NGF fuel in the MOX core.
 - h. Discuss whether the Framatome ANP MOX LTA Appendix K analysis considered axial nodalization to capture the effect of the mid-span spacer grids.
7. Provide clarification regarding whether Duke's letter dated May 13, 2004, provides the response to the April 30, 2004, RAI to provide the NRC staff with a description of and the results of a thorough re-review of all information in the application of February 27, 2003, as supplemented, to confirm its completeness and accuracy. Also, for Item number 5, in the May 13, 2004, letter, provide the degree of variation to be allowed by Duke from the responses to Item 2 in Attachment 1 to Duke's letter dated December 10, 2003, with respect to whether the December 10, 2003 power history will be bounding for the MOX LTA cycles.
8. Provide a discussion of Duke's reload analysis processes that will ensure that NGF and MOX LTAs will be placed in non-limiting core regions for all cycles that utilize these LTAs, in conformance with Catawba Technical Specification 4.2.1.

Catawba Nuclear Station

cc

Lee Keller, Manager
Regulatory Compliance
Duke Energy Corporation
4800 Concord Road
York, South Carolina 29745

Ms. Lisa F. Vaughn
Duke Energy Corporation
Mail Code - PB05E
422 South Church Street
P.O. Box 1244
Charlotte, North Carolina 28201-1244

Anne Cottingham, Esquire
Winston and Strawn
1400 L Street, NW
Washington, DC 20005

North Carolina Municipal Power
Agency Number 1
1427 Meadowood Boulevard
P. O. Box 29513
Raleigh, North Carolina 27626

County Manager of York County
York County Courthouse
York, South Carolina 29745

Piedmont Municipal Power Agency
121 Village Drive
Greer, South Carolina 29651

Ms. Karen E. Long
Assistant Attorney General
North Carolina Department of Justice
P. O. Box 629
Raleigh, North Carolina 27602

NCEM REP Program Manager
4713 Mail Service Center
Raleigh, North Carolina 27699-4713

North Carolina Electric Membership Corp.
P. O. Box 27306
Raleigh, North Carolina 27611

Senior Resident Inspector
U. S. Nuclear Regulatory Commission
4830 Concord Road
York, South Carolina 29745

Henry Porter, Assistant Director
Division of Waste Management
Bureau of Land and Waste Management
Dept. of Health and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201-1708

Mr. R. L. Gill, Jr., Manager
Nuclear Regulatory Issues
and Industry Affairs
Duke Energy Corporation
526 South Church Street
Mail Stop EC05P
Charlotte, North Carolina 28202

Saluda River Electric
P. O. Box 929
Laurens, South Carolina 29360

Mr. Peter R. Harden, IV, Vice President
Customer Relations and Sales
Westinghouse Electric Company
6000 Fairview Road
12th Floor
Charlotte, North Carolina 28210

Mary Olson
Director of the Southeast Office
Nuclear Information and Resource Service
729 Haywood Road, 1-A
P. O. Box 7586
Asheville, North Carolina 28802

Catawba Nuclear Station

cc:

Mr. T. Richard Puryear
Owners Group (NCEMC)
Duke Energy Corporation
4800 Concord Road
York, South Carolina 29745

Richard M. Fry, Director
Division of Radiation Protection
N. C. Dept. of Environment, Health, and
Natural Resources
3825 Barrett Drive
Raleigh, North Carolina 27609-7721

Diane Curran
Harmon, Curran, Spielberg &
Eisenberg, LLP
1726 M Street, N.W.
Suite 600
Washington, DC 20036

D. M. Jamil
Vice President
Catawba Nuclear Station
Duke Energy Corporation
4800 Concord Road
York, South Carolina 29745-9635