

March 28, 2003

Mr. G. R. Peterson
Vice President, Catawba Site
Duke Energy Corporation
4800 Concord Road
York, SC 29710

SUBJECT: CATAWBA NUCLEAR STATION, UNITS 1 AND 2 RE: REQUEST FOR
ADDITIONAL INFORMATION (TAC NOS. MB6907 AND MB6908)

Dear Mr. Peterson:

By letter dated December 3, 2002, you submitted a request for an exemption from certain requirements of the U. S. Nuclear Regulatory Commission's (NRC's) regulations, "Request for Exemption Pursuant to 10 CFR 50.12 - Exemption to the Cladding Material Specified in 10 CFR 50.44, 10 CFR 50.46 and 10 CFR Part 50, Appendix K." The exemption requested relates to the specific types of cladding material specified in NRC's regulations for use in light water reactors. The NRC staff has reviewed the information provided and has determined that additional information is required. Our questions are provided in the Enclosure. We discussed these issues with your staff on March 18, 2003. Your staff indicated that a response could be provided by April 30, 2003.

Please contact me at (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: Request for Additional Information

cc w/encl: See next page

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Catawba Nuclear Station

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Catawba Nuclear Station

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REQUEST FOR ADDITIONAL INFORMATION

ON LOW TIN ZIRLO

DUKE POWER COMPANY

CATAWBA NUCLEAR STATION, UNITS 1 AND 2

DOCKET NOS. 50-413 AND 50-414

INTRODUCTION

By letter dated December 3, 2002, the Duke Power Company (Duke) requested an exemption from certain requirements of the regulations of the U. S. Nuclear Regulatory Commission (NRC) that would allow Duke to load up to eight lead test assemblies (LTAs) containing fuel rods clad with a low tin version of ZIRLO into Catawba Nuclear Station, Unit 1 during operating Cycle 15. Duke requested an exemption from requirements specified in Title 10 of the *Code of the Federal Regulations* (10 CFR) Section 50.44, Section 50.46 and Appendix K to Part 50. These LTAs will have a tin composition that is less than the tin composition used in the licensing basis for ZIRLO as specified in WCAP-12610-P-A, "VANTAGE+ Fuel Assembly Reference Core Report."

The NRC staff has previously reviewed and approved a Westinghouse Topical Report on an LTA program that provides useful guidance with respect to the type of information needed to support an LTA review. The subject of WCAP-15604-NP, Revision 1, "Limited Scope High Burnup Lead Test Assemblies," is a Limited Scope Lead Test Assembly program involving high burnup lead test assemblies. Although this is not the same subject as that addressed by Duke's letter of December 3, 2002, the review guidance developed during the review of WCAP-15604-NP is considered useful for the review of Duke's submittal. Therefore, since there is currently no topical report dealing with the methodology proposed by Duke, the staff has utilized the review guidance developed in the review of WCAP-15604-NP, Revision 1 as guidance in the review of the proposed Catawba LTAs. Based on the use of this guidance, the staff has identified a need for additional information, as addressed below:

The staff uses several "conditions" that are contained in the final approved version of WCAP-15604 as guidance for its evaluation of the licensee's proposals. The issues that have not been addressed in Duke's submittal are listed below:

- (1) WCAP-15604 states that post-irradiation examinations of the fuel should consist of at least the following examinations: clad oxidation, rod and assembly growth, and visual examinations for pressurized water reactors.

Please provide a list of the proposed post-irradiation examinations for the LTAs.

- (2) WCAP-15604 states that for all fuel rods in the LTAs, the predicted oxidation should be less than 100 microns used on a best estimate basis with prediction of no blistering or spallation based on the current data.

Please provide assurance that this limit will not be exceeded, and no blistering or spallation will occur.

- (3) WCAP-15604 describes two reports that the licensee will submit to the NRC for information.

The first report would be a notification of intent to irradiate LTAs above the current burn-up limit. It will contain at least the following information:

- Utility Name
- Plant Name
- Cycle and date when the LTAs will be inserted
- Number of LTAs
- Location of the LTAs
- Anticipated pre- and post-cycle burnups for each LTA
- Purpose of LTAs
- Estimated dates for pre- and post-irradiation characterizations or the results of the pre-characterization and an estimation of the date for the post-irradiation characterization
- Estimated date of second report
- Statement that the LTAs will not be irradiated if:
 - the fuel does not meet all current design criteria, or
 - the predicted oxidation is not less than 100 microns, or
 - blistering or spallation is predicted, or
 - the pre-characterization examinations show anomalous results.

The second report would present the results of the pre- and post-irradiation examinations. It will consist of at least the following information:

- Utility Name
- Plant Name
- Assembly Identification Number
- Specific Measurements - Actual data and predictions
- Comment section

Please describe the reports that will be completed and submitted to the NRC and when the first report will be received by the NRC before irradiation of the LTAs.

The remainder of the issues as discussed in the final approved version of WCAP-15604-NP have already been addressed by the licensee. These issues are discussed in the NRC report "Safety Evaluation by the Office of Nuclear Reactor Regulation Relating to Topical Report WCAP-15604, Revision 1, Limited Scope High Burnup Lead Test Assemblies," in the Agency Wide Document Access and Management System under accession number ML021510437.