May 24, 2000

Mr. M.S. Tuckman
Executive Vice President
Nuclear Generation
Duke Energy Corporation
526 South Church Street
Charlotte, NC 28201-1006

SUBJECT: OCONEE NUCLEAR STATION, UNITS 1, 2 AND 3 RE: TECHNICAL REPORT NFS-1001, RELOAD DESIGN METHODOLOGY, REVISION 5 (TAC NOS. MA7752, MA7753, AND MA7754)

Dear Mr. Tuckman:

By letter dated December 22, 1999, Duke Energy Corporation submitted Technical Report NFS-1001, Reload Design Methodology, Revision 5 for staff approval. Based on our review of this submittal, we have determined that additional information is needed before our review can be completed. Our specific questions are contained in the enclosure and were discussed with Mr. Robert St. Clair of your staff on May 22, 2000. Mr. St. Clair agreed to provide the requested information by June 30, 2000.

Sincerely,

/RA/

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

Docket Nos. 50-269, 50-270, and 50-287

Enclosure: Request for Additional Information

cc w/encl: See next page

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REQUEST FOR ADDITIONAL INFORMATION
OCONEE NUCLEAR STATION, UNITS 1, 2, AND 3
TECHNICAL REPORT NFS-1001,
RELOAD DESIGN METHODOLOGY, REVISION 5

1. This reload methodology is only applicable to certain fuel designs because each of the referenced methodologies (for example the DNB methodology or the high burn-up methodology) is only approved for certain fuel designs. As a result, the fuel design discussion in chapter 2 should specify or limit the application of this methodology to the fuel designs that can use this methodology. This can be done through references. (Page 7 of submittal)

2. Section 3.1.1 states that the NRC approved nuclear calculation system (CASMO-3/SIMULATE-3P) is used, however, "[a]dditional detail or flexibility may be added to the model, provided the uncertainties specified in Reference 2 are demonstrated to remain conservative." This statement should be removed. The staff can not approve a methodology that indicates this methodology can be changed in the future. Any flexibility currently included in CASMO-3/SIMULATE-3P does not need to be discussed in this topical. (Page 8)

3. How and where are radial pin peaking limits controlled (section 3.2.3)? Is there any upper limit on radial peaking specified anywhere? If not, why not? Rather than stating that "typical" limits are used, it would be more clear to specify where the radial pin peaking limits are obtained. For example, specify, that the limits are obtained from the accident analysis, thermal and thermal hydraulic models and confirmed via the maneuvering analysis. (Page 11)

4. The staff believes that the methodologies used to calculate the reactivity coefficients and defects should be in the topical report or be referenced in the topical report. (Page 12)

5. In Chapter 4 of the report, the statement that the methods used to evaluate clad stress, fatigue, and corrosion are "consistent" with the NRC approved methods suggests that the methods used deviate (but are consistent) with the NRC approved references. Please explain how the clad stress, fatigue and corrosion are evaluated. If the methods are different to what was approved, provide a justification for the new methodologies. (Page 15)

6. With regard to the maneuvering analysis, how are the three-dimensional power distributions, rod positions, and imbalances for each of the cases generated? Please specify all methodologies used and cite references. (Page 16)

7. The spacer grid effect is included in the development of the TS in the currently approved version of NFS-1001. The grid spacer effect is not included in the currently approved version of DPC-1002 which is applicable to fuel with Zircoloy-4 intermediate grid spacers; however, the staff is unable to determine the bases or rationale for not

Enclosure

considering the effect. Please cite a specific reference (topical report and page number) that explicitly approves the elimination of this effect for all materials other than Inconel and enumerate any limitations associated with this application. (Pages 21 and 28)

8. Chapter 6 of the topical report requires the use of reference 6 to evaluate the reload DNB. However, the topical indicates in chapter 7 that if reference 6 is used, radial nuclear uncertainty is not needed in the development of the TS because it was already accounted for in the development of the DNBR limit. This appears to be in conflict because the topical requires the use of reference 6 in chapter 6 while permitting the use of other methodologies in chapter 7. Please eliminate any potential conflicts in the topical report. (Page 22)

9. The actual values for the power level error that make up the error adjustment factor are being removed from the methodology. However, the level of detail regarding what values should be used instead is not adequate. Please describe or reference (for example an approved uncertainty methodology) the methodology that will be used to determine power level error adjustments. (Pages 25 and 28)

10. The topical does not describe how are the cycle-specific and the generic quadrant peaking factors are determined. Statements like “typical values range from,” are not very useful when applying the methodology. Similarly, how the effect of non-equilibrium xenon conditions quantified and accounted for in the peaking factors is not described. Please explain the methodology as to how these values are determined and provide a bases as to why the methodology is acceptable. (Page 27)

11. The radial-local factor is not applied in the development of the DNB limits because it is accounted for in the DNB methodology. However, it is not clear why the factor is not accounted for in the development of the LOCA limits. Please explain why the radial-local factor does not need to be accounted for in the development of the LOCA limits. (Page 28)

12. The methodologies used to develop the core physics parameters in chapter 9 need to be stated or referenced. (Page 42)

13. Figure 1-1 should reference the approved version of DCP-NE-3005. (Page 5)

14. For the determination of the power-flow-imbalance trip setpoint, how is the allowable power-to-flow ratio obtained? Figure 7-5 displays the power-power imbalance portion of the trip function, however, it does not appear to display the power-to-flow ratio portion of the trip function. Please include an example display of the power-to-flow ratio portion of the trip. (Page 25)

15. Some of the references of the NRC approved topical reports reference the safety evaluation or the date of the safety evaluation. To be consistent with NUREG-0390, the approved version of the topical should be referenced. The approved version is a more complete reference because it includes the NRC safety evaluation and any relevant correspondence that occurred during the review. Additionally, when referencing the approved topical report, please include the date (day, month, year) to make the document easier to locate.

16. For DCP-NE-2005-A, Revision 1, in Attachment C the SER dated November 7, 1996, is referenced as the applicable SER. However, the November 7, 1996, SER only addresses the Catawba and McGuire stations and approves the specific uncertainties, distributions, and selection of statepoints used for generating the statistical design limit. The February 24, 1995, SER addresses all the Duke Power Company PWRs, including Oconee the stations, and requires that the specific uncertainties, distributions, and selection of statepoints used for generating the statistical design limit be justified on a plant specific basis. Please describe how this was or will be done for the Oconee stations.

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