Mr. M. S. Tuckman
Senior Vice President
Nuclear Generation
Duke Power Company
P. O. Box 1006
Charlotte, NC 28201

September 6, 1995

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION - DPC-NE-3000, THERMAL-HYDRAULIC TRANSIENT ANALYSIS METHODOLOGY - McGUIRE NUCLEAR STATION, UNITS 1 AND 2; AND CATAWBA NUCLEAR STATION, UNIT 1 (TAC NOS. M90143, M90144, AND M90145)

Dear Mr. Tuckman:

By letter dated August 9, 1994, you submitted for staff review and approval a report identified as Revision 3 of Topical Report DPC-NE-3000, "Thermal-Hydraulic Transient Analysis Methodology." Based on our review of your report conducted to date, the NRC staff has identified a need for additional information as indicated in the enclosure. Proprietary information in the enclosure was identified by your staff and documented by your letter dated April 9, 1994. The enclosure should be controlled and distribution limited to personnel with a "need to know." The enclosure is considered exempt from Public Disclosure in accordance with Title 10, Code of Federal Regulations, Part 2.790. However, a copy of this letter, with a non-proprietary version of the enclosure, will be placed in the NRC Public Document Room. Please provide a response within sixty (60) days of receipt of this letter to enable us to complete our review.

This requirement affects nine or fewer respondents, and therefore, it is not subject to the Office of Management and Budget review under P.L. 96-511.

Sincerely,

Original signed by:

Robert E. Martin, Senior Project Manager
Project Directorate II-2
Directorate for Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-369, 50-370,
and 50-413

Enclosure:
Request For Information
(Proprietary)

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

September 6, 1995

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McGuire Nuclear Station
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# NON-PROPRIETARY INFORMATION

## REQUEST FOR ADDITIONAL INFORMATION

## THERMAL-HYDRAULIC TRANSIENT

## ANALYSIS METHODOLOGY

1. Justify the proposed use of the [ ] for material properties and the [ ] for the fuel gap conductivity by demonstrating that computations will result in conservative system predictions for all transients. (p.2-40)

2. Discuss the situations in which [ ] during steady-state initialization may not result in conservative prediction of the transient calculations and reconcile that result with the response to Question 1. (p.2-40)

3. In the previously submitted model with the original topical report, DPC observed that a large adjustment in the [ ] was necessary during the outsurge portion of any transient containing a strong outsurge. Discuss how this problem is addressed by the use of the revised PZR model which includes modeling of the surge line.

4. Demonstrate by reanalysis of transients/tests that the revised PZR model with heat conductors results in adequately conservative predictions. In addition, DPC should qualify its PZR water level prediction procedure.(p.2-42 & p.3-47)

5. Discuss modeling of phase separation including the selected BR velocity in the [ ] (p.2-49 & 51).

6. Provide thorough discussion and qualification of the revised SG model for feedring SGs including steady-state initialization and nodalization sensitivities, and demonstrate that the model produces an adequately conservative prediction of heat transfer. In addition, DPC should qualify the SG level calculator for the feedring SG against the data.

7. Discuss the source(s) of the significant reduction in trip setpoints for the load rejection controller for Catawba.

8. Clarify the new paragraph to be inserted in page 3-16 regarding the SG level control. Do both Catawba Units have the DFCS? Discuss how this system is simulated and qualified in the RETRAN analysis.

9. Discuss the source(s) and reasons for changes and impact on safety analysis in the following plant models, setpoints and values:

   a. HHSI pump characteristics
   b. IHSI pump characteristics
   c. LHSI pump characteristics
   d. Steam line pressure for SI signal & steam line isolation
   e. elimination of a RPS condition for reactor trip
   f. steam line safety valve opening setpoints
   g. HHSI and IHSI injection after 7 hours

10. Once the planned steam generator replacement takes place, what does DPC plan to do with respect to the aspects of the report addressing the old SGs for McGuire #1 and 2 and Catawba #1 which would no longer be applicable? Provide comparable benchmark analysis to be included in the topical report in support of the new steam generators.

11. Clarify Section 3.1.6.2. Which unit at Catawba does the revised AFW runout protection apply to and how is the other unit protected?

12. Discuss the impact of installation of feedring steam generators and its accompanying changes on transient analysis such as the MFW and AFW flow.

13. Discuss in detail how the general transport model is used to ismulate boron transport, including the nodalization of injection site, mixing coefficient, analysis for which this is credited, and demonstrate that the model produces conservative results.

14. Discuss the change in assumed steady-state pump head and flow for various transients (§ 2.2.6.2).