June 20, 2003

Mr. James F. Klapproth, Manager
Engineering & Technology
GE Nuclear Energy
175 Curtner Avenue
San Jose, CA 95125

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION RELATED TO REVIEW OF GE LICENSING TOPICAL REPORT NEDE-32906P, SUPPLEMENT 1, "TRACG APPLICATION FOR ANTICIPATED TRANSIENT WITHOUT SCRAM ANALYSES" (TAC NO. MB6359)

Dear Mr. Klapproth:

By letter dated September 18, 2002, GE Nuclear Energy (GENE) requested the NRC's review and approval of licensing Topical Report NEDE-32906P, Supplement 1. GENE is seeking approval for the TRACG code to be used for licensing applications related to anticipated transient without scram analyses in operating BWR/2-6 plants. The primary document describing the TRACG code is NEDE-32176P, Rev. 2, "TRACG Model Description," dated December 1999. The NRC staff has reviewed NEDE-32906P, Supplement 1 and has determined that additional information is needed to complete our review. Enclosed is our request for additional information (RAI). This has been discussed with Mike Lalor of your staff and it was agreed that a response would be provided within 30 days of receipt of this letter.

If you have any questions, please contact me at (301) 415-1445.

Sincerely,

/RA/

Alan B. Wang, Project Manager, Section 2
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Project No. 710

Enclosure: Request for Additional Information

cc w/encl: See next page

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REQUEST FOR ADDITIONAL INFORMATION

NEDE-32906P, SUPPLEMENT 1, "TRACG APPLICATION FOR ANTICIPATED

TRANSIENT WITHOUT SCRAM ANALYSES"

GE NUCLEAR ENERGY

PROJECT NO. 710

By letter dated September 18, 2002, GE Nuclear Energy (GENE) requested the NRC's review and approval of licensing Topical Report NEDE-32906P, Supplement 1. GENE is seeking approval for the TRACG code to be used for licensing applications related to anticipated transient without scram (ATWS) analyses in operating boiling water reactors (BWR)/2-6 plants. The primary document describing the TRACG code is NEDE-32176P, Rev. 2, "TRACG Model Description," dated December 1999. The staff has determined that the following additional information is needed to complete our review.

1. Throughout the initial discussions regarding the use of TRACG for ATWS analysis it was stated that the application was limited to the initial pressure peak. The ODYN code would continue to be used for the bulk of the transient.

   In NEDE-32906P, Supplement 1, the statement is made in Section 1.3, "...may be applied to ATWS criterion up to the point that Boron begins to inject." In addition, Section 2.4.2 refers to the primary advantage of TRACG as its 3-D kinetics model.

   Please clarify the intended usage of TRACG for BWR ATWS, addressing the transient timeframe for application. Also, describe an entire typical ATWS transient and the time during which TRACG would be used and when ODYN would be used. Please provide a transient time-line showing the portions of the event predicted by each code.

2. NEDE-32906P, Supplement 1, states in Section 2.7, first sentence, that the application is "...associated with ATWS in BWR/2...." It is the staff's understanding that maximum extended load line limit analysis plus (MELLLA+) is not applicable to BWR/2s. Please reconcile the application of TRACG to BWR/2 ATWS, use of MELLLA+ in the main steam isolation valve closure (MSIVC) and pressure regulator failed open (PRFO) transients, and the non-applicability of MELLLA+ to BWR/2's.

3. NEDE-32906P, Supplement 1, Tables 8-2 and 8-3, MSIVC and PRFO Key Transient Parameters, respectively, indicate the core power used is 100 percent. What is meant by 100 percent power – true 100 percent or 120 percent of rated power?

4. NEDE-32906P, Supplement 1, Tables 8-2 and 8-3, Key Transient Parameters indicate that the core flow is 73 percent (MELLLA+). Our understanding is that the MELLLA+ value would be different for different plants. What is the limiting value and how can that be justified for the entire operating fleet?

5. Please discuss the neutron flux event as predicted with and without scram. The results provided in NEDE-32906P, Figure 8-11 indicate a neutron flux peak of 310 percent at 3.42 sec with scram, while Supplement 1, indicates a peak of 225 percent at 4 sec without scram. Please explain why the flux peak is higher and earlier in the transient when scram occurs.

6. In response to question 3, it is stated that 100 percent power means 100 percent of licensed core power which corresponds to 113.4 percent of the original rated power for the demonstration plant. Please clarify this in regard to the ordinate title of Figure 8-8 in NEDE-32906P, Supplement 1, which says Power (% of Original Licensed Thermal Power).

7. Tables 8-2 and 8-3 in NEDE-32906P, Supplement 1, indicate that the core flow (%) is 73.0 (MELLLA+), while Figure 8-8 would indicate that the 73 percent flow point would lie on the MELLLA line at 100 percent power. Please clarify which line (MELLLA or MELLLA+) is meant and the corresponding core power.

8. Please clarify that the use of TRACG for ATWS analysis is being considered under the condition of no-instability.