

December 21, 2005

Mr. Joseph E. Conen  
Chairman, BWR Owners Group  
DTE Energy - Fermi 2  
200 TAC  
6400 N. Dixie Highway  
Newport, MI 48166

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION (RAI) REGARDING THE  
BOILING WATER REACTOR OWNERS GROUP (BWROG) TOPICAL REPORT  
(TR) NEDO-33148, "SEPARATION OF LOSS OF OFFSITE POWER FROM  
LARGE BREAK LOCA [LOSS-OF-COOLANT ACCIDENT]" (TAC NO. MC3042)

Dear Mr. Conen:

By letter dated April 27, 2004, the BWROG submitted for NRC staff review TR NEDO-33148, "Separation of Loss of Offsite Power From Large Break LOCA." The NRC staff has completed its preliminary review of your submittal and has identified a number of items for which additional information is needed to continue its review. The NRC staff of the Nuclear Performance and Code Review Branch requires responses to the enclosed RAI questions in order to continue the review.

In an e-mail from Fred Emerson of your staff, BWROG stated that the NRC staff will receive your response to the enclosed RAI questions by March 31, 2006. Additional RAI questions from the Electrical Engineering Branch will be submitted under separate cover letter at a later date. Please call me at 301-415-1774, if you have any questions on this issue.

Sincerely,

*/RA/*

Michelle C. Honcharik, Project Manager  
Special Projects Branch  
Division of Policy and Rulemaking  
Office of Nuclear Reactor Regulation

Project No. 691

Enclosure: RAI

cc w/encl: See next page

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**NRR-088**

**\* No Substantial change from the Memorandum**

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REQUEST FOR ADDITIONAL INFORMATION

BOILING WATER REACTOR (BWR) OWNERS GROUP

TOPICAL REPORT (TR) NEDO-33148, "SEPARATION OF LOSS OF OFFSITE

POWER FROM LARGE BREAK LOCA [LOSS-OF-COOLANT ACCIDENT]"

PROJECT NO. 691

All section, page, table, figure, or reference numbers in the questions below refer to items in TR NEDO-33148, unless specified otherwise.

1. A recent paper comparing calculations performed for a pressurized water reactor using MAAP and RELAP5, Park, C.H., Lee, D. Y., Lee, I. J. U. C., Suh, K, and Park, G. C., "Comparative Study of Loss-of-Coolant Accident Using MAAP4.03 and RELAP5/MOD3.2.2," ICONE10-22439, Proceedings of ICONE10, Arlington, VA, April 14-18, 2002, noted that the same initiating event resulted in significantly different predicted sequences of events for a large break LOCA. One point in particular mentioned is that the break flows and emergency core cooling system (ECCS) flows were significantly different. Explain what is done to get "Approximately the same total break flow..." stated in Section B.4.2.1.
2. Large break LOCA analysis necessitates proper accounting for conservation of momentum. Provide the development of the conservation of momentum equation as applied in MAAP with detailed discussion of each of the following components: (1) temporal change of momentum, (2) momentum convection, (3) area change momentum flux, (4) momentum change due to compressibility, (5) pressure loss resulting from wall friction, (6) pressure loss resulting from area change, and (7) gravitational acceleration.
3. Provide code versus experimental data assessment cases for MAAP, including break flow, system depressurization, core flow, collapsed two-phase level, and ECCS injection. Assessment cases must include separate effects tests, component tests, integral systems tests, and plant data where available. The comparisons must also indicate the ranges of applicability of the experimental data for the large break LOCA in a BWR.
4. Describe the MAAP CCFL model and provide assessment results.
5. The PCT responses provided in Figures B.4-5 and B.4-10 are clearly not the same event. Provide detailed thermal hydraulic comparisons. Include flow direction and mass flow rate, two-phase level, heat transfer regime and coefficient.
6. The TR indicates that for the BWR/4 a TRACG02 PCT adder of 193 EF is applied to a PCT of 1758 EF, while the BWR/6 the PCT adder of 212 EF is applied to 1422 EF. Justify these adders and provide for the uncertainty analysis.
7. In a study performed by the Josef Stefan Institute, Reactor Engineering Division, "Differences Between MAAP and RELAP5 Analyses of Large Break Loss of Coolant Accident," Technical Committee Meeting IAEA, Vienna, Austria, November 15-18, 1993, it was found that MAAP over predicted the reactor vessel liquid inventory when compared with RELAP5 by as much as a factor of nine. Please provide MAAP and TRACG comparisons of reactor vessel liquid level and inventory for the BWR/4 and BWR/6 cases in the TR.