

May 22, 2003

MEMORANDUM TO: Stephen Dembek, Chief, Section 2
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

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

SUBJECT: SUMMARY OF MEETING WITH THE BOILING WATER REACTOR
OWNERS GROUP (BWROG) CONCERNING THE DEVELOPMENT OF
A NEW REACTOR CORE STABILITY LIMIT

On April 30, 2003, an open meeting was held between the BWROG and the NRC staff to discuss the BWROG efforts to develop a new reactor core stability limit. If developed, the new stability limit will provide the best basis for the final resolution of this issue with the class of boiling water reactors (BWR) referred to as the "detect and suppress" (D&S) plants. In June 2001, GE Nuclear Energy (GENE) reported that generic delta I versus oscillation magnitude (DIVOM) curves could be non-conservative. This resulted in a 10 CFR Part 21 notification. Individual plants implemented corrective actions as a result and the BWROG D&S Committee was formed to develop a new generic DIVOM correlation.

The committee considered several alternatives and selected an approach that uses the TRACG computer program to calculate a best estimate critical power ratio response to oscillations and initiating events. In addition, the alternative would establish a generic setpoint that would provide safety limit minimum critical power ratio (MCPR) protection. The new stability limit will no longer be based on the MCPR.

The BWROG stated that requirements for the new limit include:

- satisfying regulatory requirements,
- satisfying fuel design limits for stability,
- allowing a return to operation immediately after a stability event and not requiring additional evaluations,
- applicability to all BWR fuel vendors,
- compatibility with existing stability based hardware/software,
- maintenance of stability scram setpoints near current values, and
- a limitation on oscillation magnitude and duration such that there is no predicted fuel rod failure and negligible change in fuel rod properties from those assumed in design and licensing analyses.

The proposed approach would allow plant oscillations to take fuel in and out of boiling transition. The staff noted that separating departure from nucleate boiling from fuel damage would be a major paradigm shift in NRC philosophy regarding protection of the fuel. The staff wanted the BWROG to understand that this is a major undertaking. The staff noted that other major hurdles include qualification of the TRACG code, defining how the regulations are met, determining how other accident analyses would be affected, and assuring the change does not affect safety. The BWROG stated they understood this and noted that they expected to submit six to nine topical reports in support of this request. The staff noted that the first hurdle would be that the Codes need to be qualified for the approach before a review of the application could be started. The BWROG agreed and stated that they would like to meet in July 2003 when they have more results. They also noted that they wanted to have a conference call to clarify what are the regulatory requirements for the fuel.

The BWROG stated that they are convinced that the current hardware and software adequately protect the fuel. However, the BWROG has not been able to demonstrate that the instability issue is not a significant safety issue. Because the proposed approach is work intensive, the BWROG is looking at other concepts to lessen the workload. One possibility is a risk-informed argument. The BWROG believes that it could make an argument that can limit the probability for exceeding departure from nucleate boiling and also demonstrate that if the plant did enter transition boiling it will not affect the fuel. This approach would include compensatory measures, defense-in-depth arguments and post-event reports. The staff agreed that if the BWROG could make a risk-informed submittal this could provide the staff and industry a significant savings in time and effort.

The staff thanked the BWROG for the presentation and encouraged an update on developments in the next several months. The staff expressed that this would be an ambitious undertaking. This meeting was informational. No regulatory decisions were made. The meeting handouts can be found in ADAMS under Accession No. ML031360474.

Project No. 691

Attachment: Meeting Attendees

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MEETING WITH THE BOILING WATER REACTORS OWNERS GROUP

DEVELOPMENT OF A NEW REACTOR CORE STABILITY LIMIT

APRIL 30, 2003

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