

March 25, 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 February 20, 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. The new stability limit will provide the best basis for the final resolution of this issue with the class of boiling water reactors referred to as the "detect and suppress" (D&S) plants. In June 2001, GE Nuclear Energy reported that generic delta versus initial 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 reformed to develop a new generic DIVOM correlation.

The BWROG again stressed that the solution must satisfy all regulatory requirements, applicable fuel design limits for stability and allow return to operation immediately after a stability event. In addition, the BWROG wanted a robust solution that would be applicable to all BWR fuel vendors, and compatible with existing stability based hardware/software. The committee considered several alternatives and selected an approach that evaluates the actual response of the fuel pellets, cladding, and associated structural materials to instability events. Instead of using the critical power ratio as a surrogate measure for cladding performance, they would use the TRACG calculations to define the reactor power and fluid conditions, and apply those values as inputs to fuel thermal-mechanical analyses to show that specified acceptable fuel design limits (SAFDLs) would not be exceeded. The evaluations for each fuel type would be performed by each fuel vendor, using the thermal-hydraulic inputs from TRACG. The new stability limit would no longer be based on protection of the minimum critical power ratio.

The BWROG has developed NEDO-33095, "Licensing Application Framework for BWROG Stability Limit Analysis." This document would provide a flow chart for the scope, objective, licensing requirements and all the documentation to support a new stability limit analysis. The BWROG presented detailed information on how they thought this process could proceed. The BWROG milestones were to have the confirmation analysis completed by the third quarter of 2003 and the engineering analysis by the fourth quarter of 2004. The topical report would be provided to the staff by the first quarter of 2005 with the anticipation that the NRC review would take one year.

Mr. Wermiel asked the industry to think about how the NRC might incorporate safety significance thinking into this program reducing NRC (and industry) resources. In particular, he specifically suggested that if the NRC is aware of and has confidence in the BWROG methods, then the review would require fewer resources to come to agreement on an acceptable approach. It could be possible that the NRC could perform a limited scope review of BWROG reports and the industry could implement the new safety limit on its own.

NRC approval would be conveyed through a technical specification change that requires NRC review and approval. That review and approval would be supported by the BWROG documentation. However, NRC's approval would be largely based on the safety significance of the technical specification change.

The NRC asked what the BWROG saw as the impetus to pursue the new safety limit approach. The BWROG responded that they had equipment installed, but in various stages of operability and arming. Use of this equipment would be advantageous. Also, the industry saw the use of interim corrective actions as limiting operationally, and saw the need for NRC-required approval for technical specifications relative to their detect and suppress equipment.

It was also pointed out that this possible safety significance approach applied only to the current stability issue, not to MELLLA+. However, in general, Mr. Wermiel suggested that the use of resources should be commensurate with the safety significance of the issue.

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 and there are a number of technical issues that need to be addressed for which there is limited experimental evidence. This meeting was informational. No regulatory decisions were made. The BWROG was encouraged by the staff's suggestions and proposed to meet in 4 to 6 weeks. The meeting handouts (Attachments 1, 2, and 3) can be found in ADAMS under Accession Nos. ML030620110, ML030620118, and ML030620120. The attendance list is attached.

Project No. 691

Attachment: Meeting Attendees

cc w/att: See next page

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Package No.: ML030640029

Attachment No. 1: M030620110L

Meeting Notice No.: ML030360470

Attachment No. 2: ML030620118

ADAMS Accession No.: ML030590410

Attachment No. 3: ML030620120

NRC-001

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DOCUMENT NAME: G:\PDIV-2\bwrog\Mtg Summary BWROG Stability220.wpd

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MEETING WITH THE BOILING WATER REACTORS OWNERS GROUP

DEVELOPMENT OF A NEW REACTOR CORE STABILITY LIMIT

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