

BWR OWNERS' GROUP

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PROJECT NUMBER 691

BWROG-03047
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Document Control Desk
United States Nuclear Regulatory Commission
Washington, DC 20555

Subject: Resolution of Reportable Condition for Stability Reload Licensing Calculations Using Generic Regional Mode DIVOM Curve

References:

1. MFN 01-025, "Stability Reload Licensing Calculations Using Generic DIVOM Curves," from Jason S. Post, GENE, Manager Engineering Quality & Safety Evaluations, June 29, 2001.
2. MFN 01-046, "Stability Reload Licensing Calculations Using Generic DIVOM Curves," from Jason S. Post, GENE, Manager Engineering Quality & Safety Evaluations, August 31, 2001.

This letter, as previously discussed with the NRC, transmits a resolution to the reportable condition as reviewed and accepted by the BWROG. The NRC was notified of this reportable condition in the reference documents in accordance with 10 CFR Part 21.21(d). The BWROG Detect & Suppress Committee has worked with GE and other BWR fuel vendors to support resolution of this issue.

Background

The methodology for detect and suppress stability reload licensing calculations is defined in NEDO-32465-A, "Reactor Stability Detect & Suppress Solutions Licensing Basis Methodology for Reload Applications," August 1996. The report specifies a generic regional mode DIVOM (Delta CPR/Initial CPR Vs. Oscillation Magnitude) curve, which is a curve of normalized CPR performance versus hot channel oscillation magnitude for regional mode oscillations. The regional mode curve is used in the Option III stability solution reload licensing methodology to determine the Oscillation Power Range Monitor (OPRM) trip system setpoint.

Evaluations by GE in 2001 showed that the generic regional mode DIVOM curve specified in NEDO-32465-A may not be conservative for some current plant operating conditions. Specifically, a deficiency was identified for use of the generic regional mode

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DIVOM curve for reload cycles that include high peak bundle power-to-flow ratios. The deficiency results in a non-conservative slope of the regional mode DIVOM curve so that the Option III trip setpoint is potentially non-conservative. An interim approach, using a figure of merit, was defined to determine the applicability of the generic curve to the potentially affected plants. This evaluation showed that Option III plants were affected.

The BWROG has been working on resolution of this issue since July 2001. The BWROG met with the NRC on August 15, 2003 (OG03-0246-260), with the three U.S. BWR fuel vendors in attendance, to present a proposed resolution path. The NRC endorsed the proposed resolution and requested this letter to document the resolution of the reportable condition for stability reload licensing calculations using the generic regional mode DIVOM curve.

BWROG Resolution

After significant study and consideration of alternative approaches, the BWROG has concluded that the best resolution is to use plant-specific DIVOM curves in the reload licensing calculations. A plant-specific DIVOM curve will be generated or confirmed for each reload fuel cycle. The plant-specific DIVOM curve will then be used in the NRC-approved reload licensing methodology (NEDO-32465-A) to compute the Option III trip setpoint. This is consistent with the interim approach being used by some plants. Since there is no change in the approach, no change to NEDO-32465-A and no generic submittals are planned.

The plant-specific DIVOM curves will be developed consistent with the process described in NEDO-32465-A. In contrast to the generic DIVOM curve, the plant-specific curves will take into account changes in core loading, fuel designs, and operating strategies. As a consequence, the plant-specific DIVOM curves will provide a more accurate representation of the plant-specific CPR response to power oscillations than the generic DIVOM curve. The plant-specific curves will be reasonably conservative, but not necessarily bounding, for a particular fuel cycle. In conjunction with the 95-95 statistical approach of the licensing methodology, the plant-specific DIVOM curves will result in a high probability that the fuel cladding integrity safety limit will not be violated as a result of anticipated instability events.

The BWROG has also concluded that implementing the GE stability solution DSS-CD, pending NRC approval, is an acceptable resolution to the reportable condition. DSS-CD is a modified Option III solution, but does not use a DIVOM curve in its licensing methodology. DSS-CD was developed for application to MELLLA+, but is applicable to all licensed operating domains.

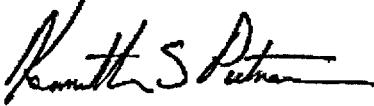
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If you have any questions about this resolution, please contact me.

Regards,

A handwritten signature in black ink, appearing to read "K. S. Putnam". The signature is fluid and cursive, with the first name "K" and last name "Putnam" being the most prominent parts.

K. S. Putnam

BWR Owners' Group Chairman

cc: BWROG Executives
BWROG Primary Representatives
BWROG Detect and Suppress Committee
A. Wang, NRC
T. G. Hurst, GE
I. Nir, GE
J. Post, GE
R. A. Hill, GE