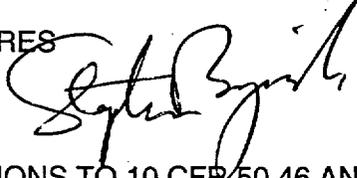




UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

July 9, 2002

MEMORANDUM TO: Jack Rosenthal, Chief, SMSAB:DSARE:RES
FROM: Stephen Bajorek, SMSAB:DSARE:RES 
SUBJECT: JUNE 28 PUBLIC MEETING ON REVISIONS TO 10 CFR 50.46 AND
APPENDIX K

A public meeting was held on June 28 to gain stakeholder input on proposed revisions to 10 CFR 50.46 Emergency Core Cooling System (ECCS) acceptance criteria and Evaluation Model (EM) requirements. The recently released Research Information Letter (RIL) 0202 was summarized by the staff and discussed at length with representatives that included the Nuclear Energy Institute (NEI), utilities and fuel vendors. The staff made three presentations to summarize RIL 0202. The presentations, meeting agenda and attendees list are attached. Each of these presentations, and comments made during the following discussions, is summarized below:

10 CFR 50.46 Acceptance Criteria

A presentation summarizing proposed changes to the 10 CFR 50.46 acceptance criteria was made by Ralph Meyer. The presentation described how the acceptance criteria could be made "performance based." The peak cladding temperature limit of 2200°F and the cladding oxidation limit of 17% could be eliminated from the rule and replaced by a specified mechanical properties test from which temperature and oxidation limits could be derived by a licensee. The derived temperature and oxidation limits might be different than 2200°F and 17%, respectively, but the cladding temperature limit should not exceed 2300°F according to the information presented.

A representative from Westinghouse expressed concern about applying the acceptance criteria to the burst region, since it represented only a small part of the total core even if all of the rods were ballooned. He suggested that the acceptance criteria should be based on non-ballooned regions of the rod since that would be more representative of what most of the core would be like. The staff responded that this matter had been addressed during the 1973 hearing that led to the original rule and that the rule specifically addresses the burst region.

There was an additional comment from the Westinghouse representative that it may not be necessary to test irradiated cladding material since radiation damage might be annealed out during operation. The staff replied that it, too, was interested in tests on material with simulated burnup effects of oxidation and hydriding, but that it could not tell if the simulations were adequate without testing real high-burnup fuel material.

Application of the 1994 Decay Heat Standard

A presentation on the 1994 Decay Heat Standard was made by Norm Lauben. The presentation showed a comparison between decay heat assuming the 1971 Decay Heat Standard + 20%, decay heat with various user selected inputs using the 1994 Decay Heat Standard, and decay heat predictions using the ORIGEN code. The comparisons showed that decay heat using the 1994 Standard was much lower than that using 1971 + 20%, even with conservative user input selections. Decay heat calculated using the 1994 Standard were seen to be conservative compared to best estimate ORIGEN calculations.

The stakeholders expressed no major reservations on the proposed decay heat standard revision. The group had no objections, and seemed comfortable with using the curve labeled "3a" for a revised decay heat curve that was a conservative approximation of the 1994 Standard. There were no objections to having the NRC define the user inputs for a conservative 1994 standard decay heat estimates in a Regulatory Guide, or in the NRC updating Regulatory Guide 1.157 to allow the use of the 1994 Decay Heat Standard for Best Estimate LOCA Analyses.

Evaluation Model Requirements and Appendix K

The third presentation was on the ECCS Evaluation Model requirements and on the staff's proposed optional Appendix K. This was presented by Steve Bajorek. The presentation summarized the recommendations to relax the existing Appendix K by replacing the Baker-Just correlation with Cathcart-Pawel, deleting the requirement for steam cooling only for reflood rates below one inch per second, while retaining the prohibition on return to nucleate boiling during blowdown. The need to account for recognized non-conservatisms such as downcomer boiling were also presented.

There were no major disagreements regarding the findings related to these other Appendix K models or the non-conservatisms. The point was made by one of the utility representatives that the 400 deg F peak cladding temperature increase for downcomer boiling reported in RIL 0202 was not applicable to a "typical" 4-loop plant but rather was for a specific plant. The increase would be different and probably much smaller for other 4-loop PWRs.

Follow-on Discussions

Following the presentations the meeting was opened to discussion and stakeholders were given the opportunity to comment on the presentations, the contents of RIL 0202, and on proposed rulemaking. There were no objections on the technical content of the RIL. However, there was no support by those in attendance to move forward on rulemaking to change the existing acceptance criteria or to develop a new, optional Appendix K. There was an acknowledgment that Appendix K based analysis should be by design conservative, and that any new type of Appendix K should also retain sufficient conservatism.

In a prepared statement, a representative from Framatome ANP stated that his organization did not support the proposed changes to 10 CFR 50.46 acceptance criteria and had no interest in a new, optional Appendix K. The costs would be excessive, and Framatome concluded that resources at both the staff and within their own organization would be better spent if directed at Best Estimate LOCA techniques. The statement will be sent to the staff in a letter in the next

few weeks. Utility representatives concurred, stating that they would likely use a conventional Appendix K analysis until it became necessary to switch to Best Estimate.

Attachments: As stated

cc: C. Grimes, NRR
S. Lee, NRR
U. Shoop, NRR
R. Caruso, NRR
A. Kuritzky, RES
M. Druin, RES
C. Ader, RES

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