D910591

Mr. James M. Taylor
Executive Director for Operations
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Taylor:

SUBJECT: DOCUMENTATION OF COMPUTER CODES

During the 373rd meeting of the Advisory Committee on Reactor Safeguards, May 8-11, 1991, we discussed documentation requirements for computer codes. We previously commented on this matter in a letter to you dated October 11, 1990. This matter was discussed during a meeting of the joint Thermal Hydraulic Phenomena/Severe Accidents Subcommittee held on March 21, 1991. Our Subcommittee on Thermal Hydraulic Phenomena held a meeting on August 28, 1990, in Idaho Falls, Idaho, to review the documentation associated with the RELAP5/MOD3 code developed by the NRC. During these meetings, we had the benefit of discussions with representatives of the NRC staff and its contractor. We also had the benefit of the documents referenced.

At the close of the March 21, 1991 subcommittee meeting, and again at this full Committee meeting, we were asked to comment on a "Charter for Evaluation of RES Code Documentation" to be used as a guide for documentation reviews. In general, we believe the Charter is adequate. However, we recommend adding reference to NUREG-1230, Section 4.4.3, entitled "Code Documentation to Address Scaling and Code Applicability" so that the reviewers apply the lessons learned about documentation requirements from the TRAC-PF1/MOD1 uncertainty study.

We received a memorandum from Eric S. Beckjord, RES, to David A. Ward, ACRS, dated April 10, 1991, with an enclosure entitled "NRC/RES Software Documentation Guidance." Although this guidance is a beginning, it should be fleshed out by providing more explicit guidance concerning the contents of the "Code Manual" and the "Developmental Assessment" document. For example, the "Code Manual" should contain requirements for time-step and nodalization studies dealing with convergence and accuracy. The "Developmental Assessment" document should contain guidance for application of the codes to full-scale nuclear power plants with reference to the convergence and accuracy studies.

To summarize, we recommend the following:

1. The guidelines for code documentation supplied to us by RES should be fleshed out and cited by reference in all code development work statements. Programs to maintain existing codes should include a task to bring code documentation into compliance with the proposed guidelines.

2. A similar set of guidelines should be developed for use by NRR in its review of industry codes used for safety evaluations.

3. Our proposal to modify the Charter for Evaluation of RES Code Documentation review should be adopted.

We would like to be kept informed of progress on this issue.

Sincerely,

David A. Ward
Chairman

References:

1. Memorandum dated November 23, 1990, from James M. Taylor, Executive Director for Operations, NRC, to Carlyle Michelson, Chairman, ACRS, Subject: NRC Computer Codes and Their Documentation
2. Memorandum dated April 10, 1991, from Eric S. Beckjord, Office of Nuclear Regulatory Research, to David A. Ward, Chairman, ACRS, Subject: NRC/RES Software Documentation Guidance
3. Charter for Evaluation of RES Code Documentation (undated) - Provided to Joint Thermal Hydraulic Phenomena/Severe Accidents Subcommittee during March 21, 1991 meeting
4. U.S. Nuclear Regulatory Commission, NUREG-1230, Subject: Compendium of ECCS Research for Realistic LOCA Analysis, December 1988