



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
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TO ALL BABCOCK AND WILCOX LICENSEES

Gentlemen:

Concerns regarding the capability of your small break LOCA model to predict small break behavior led to previous requests by the staff for you to provide additional verification information for your small break ECCS evaluation models. Specifically, we required you to provide pretest predictions of two integral systems tests being run in NRC-sponsored facilities. These tests were S-07-10D in the Semiscale Facility and L3-1 in the LOFT facility.

Both of these tests have now been completed and the comparisons of your pretest predictions to the test data have been published in references 1 and 2.

Inspection of these references shows that certain discrepancies exist between your pretest predictions and the test data. However, experience has shown us that the causes for discrepancies between prediction and data are usually complex and not readily obvious. In particular, follow-up examination of the L3-1 test shows that a flow path between the vessel upper head and upper downcomer annulus which may not have been included in many of the vendors' models could be a source for the discrepancies.

We have recognized that differences between predicted and actual initial and boundary conditions can also be a significant contributor to poor comparisons between pretest calculations and data. We have attempted to eliminate this aspect of the problem in the recently required analysis of LOFT test L3-6, in which each participant will evaluate the test after it has been performed, and will use actual initial and boundary conditions. The "prediction" aspect will hopefully be retained by the requirement for each participant to document the analysis model, including modelling input options, prior to performing the test.

In order to fully utilize the results of L3-1 and S-07-10D, as well as to resolve the differences between the pretest predictions and test data that presently exist, further post-test analyses by you are warranted. The objective of these post-test analyses would be to:

1. Evaluate the code predictive capability using initial and boundary conditions consistent with the actual test data..

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2. Identify code modifications and/or improvements necessary to predict the test data.
3. Assess whether any improvements and/or modifications necessary for code predictions to agree with test data should be incorporated in present ECCS small break evaluation models.
4. Identify shortcomings in the test facility, instrumentation, etc., and their impact on code prediction capability, and recommend improvements to the test facility, instrumentation, or test procedures to improve the verification process.

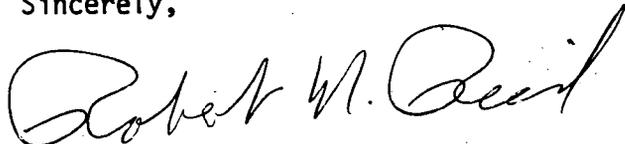
In general, we have concluded that the most productive way in which test results from integral facilities such as Semiscale and LOFT can be utilized for verification of industry analysis codes is for the industry to assume overall responsibility for both the pre- and post-test evaluations. For the near-term, we request that you prepare and submit post-test evaluations of your L3-1 and S-07-10D predictions, including all post-test analyses necessary to address the previously stated objectives. We would like these evaluations to be submitted by April 1, 1981, in order that the results can be appropriately factored into our evaluation of your predictions of LOFT test L3-6.

It is anticipated that questions will arise as part of the post-test evaluation regarding specifics of the test facility design, test conduct, etc. These should be addressed directly to the RES program manager of the facility in question. [Dr. G. D. McPherson for questions on LOFT and Mr. Warren Lyon for questions on Semiscale. Dr. McPherson can be reached on (301) 427-4437 and Mr. Lyon can be reached on (301) 427-4260.] Any other questions on the pre- and post-test evaluations should be directed to Dr. Brian Sheron at (301) 492-9453.

Although the approach to vendor code verification described in this letter represents a departure from the previous staff approach to "standard" or "required" problems for the industry, we believe it represents a marked improvement.

Please advise me if you cannot meet the April 1, 1981 date for submittal of your post-test evaluation report and of any other comments or suggestions you might have on this approach.

Sincerely,



Robert W. Reid, Chief  
Operating Reactors Branch #4  
Division of Licensing

cc: Service Lists

References

1. Dobbe, C. A., "Small Break Experiment (Semiscale S-07-10D) Preliminary Comparison Report" EGG-CAAP-5279, dated December 1980.
2. Czapary, L. S., "LOFT L3-1 Preliminary Comparison Report" EGG-CAAP-5255, dated September 1980.