Babcock & Wilcox

Power Generation Group

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May 19, 1980

Dr. D. F. Ross
Director of Systems Integration
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Dr. Ross:

Reference: Letter from R.P. Denise, Acting Assistant
Director for Reactor Safety, Division of Systems Safety
to J.H. Taylor, Manager, Licensing, Babcock & Wilcox Company
of March 24, 1980, subject: HDR Blowdown Experiment

The referenced letter transmitted a draft copy of a report titled "Preliminary Design Report for the RPV-1 Blowdown Experiments V29, V30 and V31 with Specifications for the Pretest Computations", November 1979, and requested that both the thermal-hydraulic and the structural analyses associated with the test be submitted to the NRC by June 15, 1980.

We understand that the purpose of this work is to verify the rigid fluid boundary assumptions used in our CRAFT 2 computer program.

B&W has evaluated this requirement and we have concluded that only the thermal-hydraulic analysis of the HDR blowdown experiment is required to verify the rigid boundary assumption. Therefore, we plan to submit only the thermal-hydraulic portion of the analysis.

We have also reviewed our current manpower resources and have concluded that the June 15, 1980 submittal date cannot be met and that based upon our current estimates, this analysis could not be performed in calendar year 1980.

We have also reviewed the referenced design report for the HDR blowdown experiments and have concluded that additional information is required to accurately model the HDR test facility. Therefore, the following information is requested:

1. Specifications of and physical layout of all attached piping.

2. Identification of both the water and metal mass associated with dead-ended and active piping prior to the initiation of the blowdown test.

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3. Pressure drop characteristics of any valves, flow meters, etc. in the active piping.

4. The rigidity of the vessel supports.

5. The extent to which the vessel support resulting from the attached piping should be considered in the analysis.

6. The extent to which it is necessary to consider the containment in the analysis. If necessary, provide the geometry of the containment and any subcompartments within the containment.

7. Provide the stiffnesses for the entire system.

B&W in the past has been active in the NRC Standard Problem Program, but recent experiences have caused us to re-evaluate the benefits associated with our participation in this program, in particular with regard to the necessity of performing pre-test analysis as presently defined. We would like to take this opportunity to express our concerns regarding the NRC's Standard Problem Program and would welcome further discussions with the staff on this subject.

Our concerns are directed toward the ability of the pre-test prediction to perform its intended function. It is our understanding that the purpose of the NRC Standard Problem Program is computer code verification and we believe that this goal can be attained through a slight redirection of the manner in which vendors participate in this program. The recent difficulties which have occurred on the Semiscale and LOFT facilities during the actual performance of the tests, have resulted in an inability of the industry to achieve the goal of code verification. These tests were successful in that no detrimental results were obtained but the actual test history varied from the assumptions used to perform the pre-test analysis; therefore, a direct comparison of the analytical predictions to the actual test results is not possible.

We acknowledge the immense difficulty associated with performing LOCA tests. We also believe that the overall intent of these programs and the effort being directed towards these programs by those involved in the experiments and the NRC staff is exceptional. In an effort to better achieve the intended goal of this program and to more efficiently use the manpower resources available, we would like to recommend the following revised approach to pre-test predictions of Standard Problems:

1. The experimenter and the NRC perform the necessary analyses to insure that a proposed test can be conducted in a safe manner by predicting the expected test facility performance.

2. Perform the test.

3. The experimenter, NRC staff and any consultants hired by the staff would analyze the test data, determine the actual performance of the test facility, establish an accurate and complete sequence of events and resolve any discrepancies discovered during the testing and analysis phase.

4. Upon satisfactory resolution of the previous step, the NRC would provide the Standard Problem participants the data package required for performing the analysis. This data package would include the actual initial conditions for the test and the actual sequence of events identifying any equipment malfunctions and unexpected events which may have occurred during the test.

5. The Standard Problem participants could then perform the analysis and submit their results to the NRC staff.

It should be noted that the Standard Problem participants would be performing a "pre-test" analysis since the NRC staff would not be required to release the actual test results until after the participants submitted their analyses.

We believe that in today's tight resource environment strong efforts are required to maximize the efficiency of the manpower available to the nuclear industry. It is also our belief that this alternative approach to the Standard Problem Program would aid all participants in achieving the intended goal of the program. We therefore request that you seriously consider this alternative approach to the Standard Problem Program.

If you have any questions or comments regarding this matter please call me or G.O. Geissler (Ext. 2536) of my staff.

Very truly yours,

J. H. Taylor
Manager, Licensing

JHT/dsv

cc: E. Throm - Analysis Branch, NRC
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bcc: G.F. Glei
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