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Mel Silberberg
Accident Source Term Program Office
Office of Nuclear Regulatory Research
Washington, DC 20555

Dear Mel:

I have reviewed the materials handed out at the Peer Review Meeting on January 26 and 27th, 1984, as well as my notes and wish to comment as follows:

1. Battelle Columbus Work. In listening to the Battelle presentations, I still get the feeling that they are so busy running calculations and preparing reports that they have not had a chance to reflect on their accomplishments. For example, it is difficult to tell whether changes in the source term are due to differences in models, in data or due to plant changes (e.g. the concrete composition problem).

I also had the feeling that many of the comments made at and following the October peer review were not considered.

Technically, the report on the Ice Condenser (Sequoyah) appears to be misleading with respect to the potential for the ignitor system causing failure. The report gives the impression that the ignitors will cause containment failure when hydrogen is generated. It is not clear from the report that this may only occur for rapid hydrogen generation and a particular range of hydrogen/air ratios. In short, it sounds like the ignitors do more harm than good.

With respect to the BWR-MARK III containment, I was pleased to see that pool-bypass is being considered, and I await the results.

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Lastly, Ed Wharman of Stone and Webster made a rather convincing argument concerning the presence of water during a PWR - "V" sequence. Battelle should address this issue and discuss its impact on their Surry and Zion work.

2. Sandia Work. The Sandia program (QUEST) has developed into a potentially important contribution since the October meeting. I still believe however, that it is a very well defined and executed sensitivity study and not an uncertainty analysis. Although it is difficult to assess the implications of the study without the final report, I have the following suggestion with respect to the code input uncertainty.

As I understood the presentation, this part of the study has as its focus the effect on the source term from "different, but reasonable, inputs to the codes". It would be helpful if the Sandia team could determine the "boundary" between reasonable and unreasonable input. For example, are there physical or chemical limits to the input data? And if so how do the source terms change at these limits. Alternatively, are there sets of input data that make the "source terms" non-physical, or some of the system variables (e.g. pressures, temperatures, etc.) non-physical. This approach would give some well defined limits to the range of outputs due to input "uncertainty".

With respect to phenomenological uncertainty, the ranges considered are not as clear cut. I am concerned with both neglected phenomena and uncertain phenomena. Phenomena change as a result of both input conditions and properties. A case in point is the transition from laminar to turbulent flow. If one has a code which only calculates laminar flow, you can change the input data, the conditions, vary system parameters etc., but still get the wrong results because some phenomenon is missing, and this approach won't uncover it. One has to know apriori that for a given set of conditions, the flow regime changes. I don't see this type of thinking reflected, as I listened to the presentations.

General

I recognize the various constraints placed on the program, including time and money. I urge you to allow your contractors some time for reflection on the work they have generated.

Thank you again for the opportunity to be a part of this effort.

Sincerely,

W. E. Kastenberg

W.E. Kastenberg,
Professor of Engineering and Applied Science

WEK/shm

cc: R. Benaroo, NRC (ASTPO)
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