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Dear Mel:

I was pleased to be able to attend the LWR Source Term Peer Review meeting on January 25 and 26. I look forward to continuing participation in the review process which you have initiated. I believe that you successfully established a sense of scientific "openness" concerning the basic source term issues which should help in future months to resolve at least some of them.

I would like to add my comments on two issues which I see to be fundamental to evaluation of the radioactivity release rates from containment:

Early Versus Late Containment Failure

The timing of containment failure is the single most critical determinant of the quantity of radioactivity released to the environment, as predicted by the Battelle calculations. In the context of risk to the public, therefore, methods will have to be developed to evaluate the probabilities of early versus late failure.

Containment loadings which could lead to early failure involve the phenomena of steam spikes and hydrogen burns. Objective quantitative assignment of probabilities will, in my opinion, have to be made on the basis of extremely limited data bases, i.e., our knowledge of the physical behavior of the systems will be incomplete. The real question is, will our knowledge be adequate enough to put numbers to the probabilities? In my opinion, it appears unlikely.

I raise this now so that perhaps alternate strategies can be planned to perhaps circumvent the real uncertainties in physical phenomena that will probably persist.

Attenuation in Containment

For sequences with late containment failure, the expected release attenuation due to holdup is a function of rather complex physical processes which would occur in a complex 3-D flow field. The model being used by Battelle assumes no convective flow patterns in containment. The simplicity introduced by this assumption will have to be verified by relatively large-scale experiments. In addition, the individual models used to compute the agglomeration and deposition of aerosols and vapors in containment must also be assessed.

From your comments at the meeting, I gather that you are going to be considering the issue of containment loadings due to various mechanisms. Please keep me informed as to developments here, so that I may contribute towards development of a position on the "steam spike" issue.

Best regards,

Theodore Ginsberg
Group Leader
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