



MECHANICS AND STRUCTURES DEPARTMENT  
SCHOOL OF ENGINEERING AND APPLIED SCIENCE  
LOS ANGELES, CALIFORNIA 90024

February 21, 1984

Malvin Silberberg  
Accident Source Term Program Office  
Office of Nuclear Regulatory Research  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Dear Mal:

Following my attendance at the NRC/IDCOR meeting on Fission Product Release and Transport (February 7-8, 1984), I have the following comments which may be relevant to the NRC Source Term Program.

1. As I mentioned in my letter following the October peer review, I have some concern over the important fission products beyond cesium, iodine and tellurium; in particular ruthenium, strontium, barium and lanthanum. I still question the approach of lumping these into the "other" category. There is also the recurring question of the treatment of silver, as well as a host of other elements that ultimately go into the aerosol (e.g. Mg, Cd, Ni). I believe these considerations are important for both the Battelle work, as well as the NRC Staff report which will integrate the results, and provide a risk perspective.

2. The question of the re-evolution and resuspension of fission products plated out in the primary system is still open. At present, Battelle does not consider this phenomena. For some scenarios, this can be an important contribution to the source term. The relative timing of vessel failure with respect to containment failure is important. I would recommend a limited, but well thought out, set of calculations by Battelle which could put a perspective on this.

3. The degree to which the vessel is pressurized at failure is an important consideration in aerosol and pressure generation in the containment. The influence of the Sandia work (under D. Powers) on the BMI reports is not clear. More importantly, it will be important in providing input to the Staffs' risk perspective.

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4. One of the most important uncertainties is in describing the core melt-down and vessel penetration processes, since this drives the rest of the calculations. This uncertainty should be a major focus of the Sandia QUEST program.

5. There is still much uncertainty regarding containment failure. The BCL work considers structural failure. Others place this third behind failure of seals and penetrations, and equipment hatches. It is still not clear how the two containment working groups (failure and performance) will feed information into the source term project. In addition, their work should feed into the QUEST program. Battelle still has not made an effort to determine the sensitivity of containment failure on the "source terms".

In summary, there are several areas of uncertainty which should be dealt with in greater detail by the Source-Term Program.

Sincerely,

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WEK/shm

cc: R. Benaro, NRC (ASTPO)  
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