To: Norm Lauben
Office of Research
NRC

From: Richard Webb

Date: Jan. 23, 2006.

In my call to you I mentioned a thermal/hydraulics calculation which I made recently, related to a BWR LOCA without scram. I think I did not describe the calculation and result adequately. I fear that I gave you the impression that I calculated that the amount of water in the core coolant channels increases upon a steam line rupture. But if you recall carefully, I characterized the calculation as an "upper-bounding" calculation (for the purpose of gaining some in-sight as to the behavior of the coolant in the core channels). To be more descriptive, lest I mislead you, I assumed in my simple model that, as a result of a steam pipe rupture, there will be an increase in the mass flow from the core. I then assumed – the upper bounding assumption – that the core inlet pressure and inlet enthalpy of the reactor coolant remains constant; only the mass flow rate up the core coolant channels is increased; and I further assume that the core fission power remains constant; all assumption, only to get a feel for the change in the quantity (mass) of H20 in the core. My calculation is a stead-state calculation; so that the mass flow rate is a parameter.

I calculated that the mass of water in the fuel channel decreases with increasing channel flow, but very slightly, and that the density variation from inlet to outlet hardly changes, though I nearly doubled the mass flow. So, the calculation only provides some physical in-sight. I think that the core inlet pressure will also fall with the steam line break, so that there will probably be more steam formation in the channels. This would mean, a drop in the fission power, but then there might be a surge of water up the channels, when the heat flux falls off; and then a rise in the fission power; perhaps some kind of rapid and maybe divergent, power oscillation; though there is a time constant for heat transfer from UO2 to the coolant. Then there could be oscillations from one region of the core to another. It would be a very complicated, but interesting, calculation.

I send you this note, only to be sure that I have not misled you by my small report. I have to worry about high telephone expenses when I call, and I think I hurried too much.

Would you be interested in undertaken with Ralph Meyer, and Dr. Roger Mattson (I assume and hope that he is well, though retired from the NRC), a review of the actions performed on the reactor of TMI-2 reactor system after the first 16 hours of the TMI-2 accident, until say, June 30, 1979, and the recorded data of measurements and graph recordings, and also the log books, and other documents that recorded the actions taken, as well as the papers of proposed actions, and analyses of persons and groups, as the Industry Advisory Group, with the object of writing a full account of the reactor behavior and actions performed on the reactor after the 1st 16 hours of the accident? For an adequate scientific and engineering account of that also-critical period appears not be written down in a treatise. Since you and Ralph Meyer were involved in the TMI accident, as was also Dr. Mattson, you three would be right for making the needed written, official account.

With this fax, I am faxing you a copy of a letter I am sending to the PDR with a request for documents. Can you help me get this information/documents, inasmuch as you

started off the conference on January 9th, informing me that the thermocouple data is available, and that I can have it.

Sincerely yours,

Richard Webb