

**From:** Mark Kirk, *RES*  
**To:** Steven Long, *NRR*  
**Date:** 6/27/02 3:06PM  
**Subject:** MEB Analysis of Davis Besse

Steve -

I wanted to provide you with a brief run-down of our activities at ORNL supporting Davis Besse

1. On July 3 we expect to receive a report detailing a probabilistic analysis of DB in the "as found" condition. It is important to do this analysis first to (a) establish a baseline, and (b) to establish the software and analysis procedures to be used for follow on analyses.

The cavity geometry used in this analysis is based on drawings and data from the licensee's root cause report. The material property and failure characterization is based on our analysis of the Ricardello burst disk data ... scaled to 308SS properties. These inputs appear to be the best available the we can use now in order to turn out a result for you next week. It is our understanding that the licensee is currently making much more accurate measurements of the cavity geometry based on the dental mold, and that they also plan to test tensile specimens removed from DB cladding. Whenever this more definitive information becomes available we plan to incorporate it into our analysis.

2. After the July 4th holiday weekend ORNL will begin to focus on answering the question of how much more wastage would have been required to cause failure at the operating pressure, or slightly above. To do this analysis we will need to guess at (a) the overall exposed area of the cladding that would be needed to produce such a failure, and (b) the wastage area growth model (preferential along the long axis, uniform, whatever). For the (a) guess Paul Williams has already done an analysis of a burst disk to get an approximation. For the (b) guess we will be relying on **Bill Cullen's and Jim Davis'** best judgement. I know that they had previously favored the uniform growth model ... i don't know if this view has changed since directly examining the cavity.

The combination of the (a) & (b) guesses will give us a new geometry (or new geometries) to model. Once these models are built we will perform probabilistic analyses on them, as in Step #1. Since our guesses may or may not be so good (in terms of getting failure pressures around operating) it is difficult to say with a great deal of precision how long it will take to complete this step. I have asked Richard Bass to look into this, and he should be getting back to me soon with an answer.

3. Your third question regarded an estimate of the time it would take to reach grow the cavity from the condition analyzed in Step #1 to the "critical" condition analyzed in Step #2. To get a better assessment of the schedule for completing this work i am going to have to refer you to Bill Cullen. I might add, however, that my understanding is that this step will take somewhat longer than the first two due to the rather more substantial uncertainties involved.

Mark

**CC:** Bass, Richard - ORNL; Kirk, Mark - AOL; Niles Chokshi; Wallace Norris; William Cullen; Williams, Paul - ORNL

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