

## See, Kenneth

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**From:** Goutam Bagchi  
**Sent:** Tuesday, October 07, 2008 9:55 AM  
**To:** Jon Thompson; Jeff Circle; Mike Franovich; Leonard Olshan; Kamal Manoly; Raman Pichumani; Kenneth See; Gary Demoss; Don Marksberry; James Vail  
**Cc:** Jon Ake; Melanie Galloway; Nilesh Chokshi  
**Subject:** RE: Oconee Flood Response Review punch list

To all:

As we discussed in yesterday's meeting, I need to talk to Jon Ake on the latest seismic hazard curve for Oconee. The 2007 report from ARES Corp discusses the seismic fragility, but does not present any argument about the failure probability. They present a number for 50% HCLPF value of the PGA, not the 1% value which is the value corresponding to 5% probability of failure with 95% confidence. There are at least a few important points that need to be clarified. After I had a chance to talk to Jon Ake, I will fix the items needing further clarification. My points are listed below:

- Scale factors for demand (multiplier for motion time history,  $F_{eq}$ ) and the displacement scale factor (accounts for variability in material properties for initiating sliding,  $F_{sl}$ ) are considered independent. They get  $F_{eq} \times F_{sl} = 3.0 \times 2.84 = 6.84$ . However, the slope instability could be triggered by a motion that could be only 4 times the earthquake motion, i.e., they should not be multiplied. The seismic probability of failure should be based on the mean value, not the median.
- A failure surface that cuts through the top of the inner core was not considered. A slope failure surface starting on the upstream surface and going through the filler material at the top the inner core and ending on the down stream side can have worse consequence.
- At the base of the dam, large areas of liquefiable material should not be precluded without any documented evidence of their absence. Post earthquake investigation of similar dams show significant slumping of the top of dams. The Chang Dam and dams studied after the Bhuj earthquake of January 21, 2001 are examples.
- The reservoir upstream of the dike to protect the Oconee site, can be subject to earthquake induced seiche and thus, flooding the site.

*Thank you,*  
*Goutam Bagchi*  
301-415-3305

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**From:** Jon Thompson  
**Sent:** Monday, October 06, 2008 1:48 PM  
**To:** Jeff Circle; Melanie Wong; Mike Franovich; Leonard Olshan; Kamal Manoly; Raman Pichumani; Goutam Bagchi; Kenneth See; Gary Demoss; Don Marksberry; James Vail  
**Subject:** Oconee Flood Response Review punch list

please see attached action list for the review team for discussion today