

**Mitman, Jeffrey**

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**From:** Khanna, Meena *MR*  
**Sent:** Monday, March 29, 2010 4:03 PM  
**To:** Mitman, Jeffrey  
**Cc:** James, Lois; Uribe, Juan; Ferrante, Fernando  
**Subject:** RE: OFI Backfit Documented Evaluation

Jeff, this is very helpful...thank you so much!

Meena

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**From:** Mitman, Jeffrey *MR*  
**Sent:** Monday, March 29, 2010 4:00 PM  
**To:** Khanna, Meena  
**Cc:** James, Lois; Uribe, Juan; Ferrante, Fernando  
**Subject:** OFI Backfit Documented Evaluation

Meena, below are my responses to your questions on the subject document.

1) The Documented Evaluation states: "The industry failure data on dams is well-documented." The below listed references document that statement.

Baecher, G. B., M. E. Paté, and R. De Neufville (1980), "Risk of Dam Failure in Benefit-Cost Analysis," Water Resource Research, 16(3), 449-456.

Martz, H.F., and M.C. Bryson (1982), "Predicting Low-Probability/High-Consequence Events," Proceedings of the Workshop on Low-Probability/High-Consequence Risk Analysis, June 15-17, 1982, Arlington, Virginia.

Donnelly, R. (1994), "Issues in Dam Safety, ACRES International Innovations Autumn Edition": <http://www.hatch.com.cn/Hatchenergy/Innovations/autumn2004/feature.html>

ICOLD (1995), "Dam Failures Statistical Analysis," Bulletin 99, International Commission on Large Dams.

WCD (2000), "Dams and Development: A New Framework for Decision-Making - overview," The Report of the World Commission on Dams.

Foster M, Fell R, Spannagle M (2000a), "The statistics of embankment dam failures and accidents," Canadian Geotechnical Journal, 37, 1000-1024.

Foster M, Fell R, Spannagle M (2000b) "A method for assessing the relative likelihood of failure of embankment dams by piping," Canadian Geotechnical Journal, 37, 1025-1061

2) The reference for the DRA Generic Failure Rate Evaluation for Jocassee Dam is ML 100760108. Note this is still showing draft in ADAMS. I expect it to signed by DRA management imminently.

3) Regarding the probability of damage to spent fuel in the spent fuel pool. As I indicated in our telecon, to my knowledge neither Duke nor DRA has calculated a probability of either spent fuel pool boiling or fuel damage. An accurate answer depends on the timing of the dam failure with respect to the units' fuel cycle. An event that occurs immediately after a full core offload to the spent fuel pool will progress much faster than a dam failure event that occurs immediately prior to a refueling outage. After a quick look through Duke's correspondence and reports, I've found no easy language to quote. However, it is obvious that without spent fuel pool cooling, given sufficient time, the water in the spent fuel pools will boil off and the spent fuel will be

damaged. It should also be noted that the Oconee spent fuel pools are located in the auxiliary building, outside of containment.

To clarify the existing language in the documented evaluation, I suggest replacing the phrase "is assumed to occur" with "will occur" and deleting the phrase "regardless of the containment status." Thus the revised paragraph would read:

In addition, boil-off of the spent fuel pools ~~is assumed to~~ will occur ~~regardless of containment status~~ resulting in an immediate radionuclide release as the spent fuel pools are outside containment.

Jeff