

**From:** Goutam Bagchi *NRB*  
**To:** John Hannon *NRB*  
**Date:** Thu, May 4, 2000 11:11 AM  
**Subject:** Re: Fwd: VB: Draft Final Technical Study SFP Risks at Decom NPPs

John,

Please look at the statement from SKI again, I excerpted it at the bottom of my email. They say that 0.5 g US spectrum has an annual frequency of  $1E-7$ , but they do not say what the frequency is for 0.1 g. My guess is it is in the order of  $2E-3$ . Now I hope that the point I made in my initial email is clearer to you.

>>> John Hannon 05/04 9:44 AM >>>

Goutam, maybe some time you can explain to me over a cup of coffee why it is that if we can accept the premise that a 0.1 g earthquake has a  $10 E -7$  likelihood, why can't we conclude that a higher strength earthquake capable of damaging a SFP would be expected to occur less frequently, to the point that we can say it is incredible (on the order of  $10 E -8$  or less)? That's the question I interpreted from the Swedish input. Maybe there is no good answer to this, but I am curious.

Thank you,  
Goutam  
301-415-3305

>>> Goutam Bagchi 04/27 2:30 PM >>>

It should be noted that seismic contribution to risk from decommissioned reactors. The use of a design value of 0.1 g earthquake for evaluation of seismic risk does not seem to address the issue. At 0.1 g there should be hardly any damage to the pool structure; consequently, there should be no risk of a zirc fire. The pools are not likely to fail in a catastrophic manner at 0.1 g unless the spent fuel structures in Sweden are constructed very differently. Although they should consider amplification of ground motion for pools located in higher elevations in reactor building etc. Our risk threshold in the report was  $3X10^{-6}$  per reactor year. Perhaps they could perform a calculation of high confidence in low probability of failure (HCLPF) value of their spent fuel pools using 0.2 g as the evaluation level earthquake. The HCLPF value would give them a rough estimate of the probability of catastrophic failure of spent fuel pools. I just cannot see dismissing seismic contribution without doing any evaluation. I have copied their Question# 5 for convenience:

5. An US earthquake response spectra 10-5/year (0.5g) is considered as a  $10^{-7}$  in Sweden. Does this justify exemption from further consideration, due to low yearly frequency for Zr-fire? The SFP at the Swedish plant is calculated with an earthquake 0.1g, see response spectra Figure 1, and found to comply with the Swedish standard design standard (Boverkets Konstruktionsregler 94, BKR94).

Thank you,  
Goutam  
301-415-3305

>>> George Hubbard 04/27 1:49 PM >>>  
FYI

George Hubbard  
2870

**CC:** George Hubbard, Richard Barrett

9/1/78