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Table 3.1 Spent Fuel Pool Cooling Risk Analysis Frequency of Fuel Uncovery (per year)

<u>INITIATING EVENT</u>	<u>Frequency of Fuel Uncovery (EPRI hazard) at 1 year</u>	<u>Freq of Fuel Uncovery (LLNL hazard) at 1 year</u>	<u>Freq of Fuel Uncover at 2 years</u>	<u>Freq of Fuel Uncover at 5 years</u>	<u>Freq of Fuel Uncover at 10 years</u>
Seismic Event <sup>3</sup>	less than $1.9 \times 10^{-06}$	less than $4.5 \times 10^{-06}$	same	same	same
Cask Drop <sup>4</sup>	$2.0 \times 10^{-07}$	$2.0 \times 10^{-07}$	same	same	same
Loss of Off-site Power - Events initiated by severe weather	$1.1 \times 10^{-07}$	$1.1 \times 10^{-07}$			
Loss of Off-site Power - Plant centered and grid related events	$2.9 \times 10^{-08}$	$2.9 \times 10^{-08}$			
Internal Fire	$2.3 \times 10^{-08}$	$2.3 \times 10^{-08}$			
Loss of Pool Cooling	$1.4 \times 10^{-08}$	$1.4 \times 10^{-08}$			
Loss of Coolant Inventory	$3.0 \times 10^{-09}$	$3.0 \times 10^{-09}$			
Aircraft Impact	$2.9 \times 10^{-09}$	$2.9 \times 10^{-09}$			
Tornado Missile	$< 1.0 \times 10^{-09}$	$< 1.0 \times 10^{-09}$			

<sup>3</sup>This contribution applies to SFPs that satisfy the seismic checklist and includes seismically induced catastrophic failure of the pool (which dominates the results) and a small contribution from seismically induced failure of pool support systems.

Both the EPRI and Lawrence Livermore National Laboratory (LLNL) hazard curves for reactor sites are considered reasonable by the NRC. The frequency of  $4.5 \times 10^{-6}$  per year (based on the use of Lawrence Livermore National Laboratory hazard curves) for seismic events bounds all but six sites (Diablo Canyon, San Onofre, Robinson, Pilgrim, Maine Yankee, and Vogtle). About half of the potential decommissioning sites have return periods less than  $1 \times 10^{-6}$  per year. The rest are clustered in the range of  $1 \times 10^{-6}$  per year to  $4.5 \times 10^{-6}$  per year. See Appendix 2b for details of the seismic analysis. If EPRI hazard curves were used, all sites east of the Rocky Mountains have return frequencies less than  $1.9 \times 10^{-6}$  per year with only one site identified as being greater than  $1 \times 10^{-6}$  per year.

<sup>4</sup>For a single failure proof system without a load drop analysis. The staff assumed that facilities that chose the option in NUREG-0612 to have a non-single failure proof system performed and implemented their load drop analysis including taking mitigative actions to the extent that there would be high confidence that the risk of catastrophic failure was less than or equivalent to that of a single failure proof system.

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