

# Earthquakes at Uranium Recovery Facilities

## Regulations:

10 CFR 40, Appendix A, Criterion 4(e):

(e) The impoundment may not be located near a capable fault that could cause a maximum credible earthquake larger than that which the impoundment could reasonably be expected to withstand. As used in this criterion, the term “capable fault” has the same meaning as defined in section III(g) of appendix A of 10 CFR part 100. The term “maximum credible earthquake” means that earthquake which would cause the maximum vibratory ground motion based upon an evaluation of earthquake potential considering the regional and local geology and seismology and specific characteristics of local subsurface material.

10 CFR 100, Appendix A, section III(g):

(g) A *capable fault* is a fault which has exhibited one or more of the following characteristics:

(1) Movement at or near the ground surface at least once within the past 35,000 years or movement of a recurring nature within the past 500,000 years.

(2) Macro-seismicity instrumentally determined with records of sufficient precision to demonstrate a direct relationship with the fault.

(3) A structural relationship to a capable fault according to characteristics (1) or (2) of this paragraph such that movement on one could be reasonably expected to be accompanied by movement on the other.

## Guidance:

Section 1.4 of NUREG 1620 - Standard Review Plan for the Review of a Reclamation Plan for Mill Tailings Sites Under Title II of the Uranium Mill Tailings Radiation Control Act contains guidance on seismicity and ground motion estimates. NUREG 1620 suggests that the staff and applicants review the earthquake history on both a regional and site specific basis. This information should be used to develop the expected peak ground motions at the site, which can then be used when analyzing the stability of the impoundment. The new guidance on conventional mill and heap leach facilities will include similar guidance on seismic issues. Regulatory Guide 3.11 - Design, Construction, and Inspection of Embankment Retention Systems at Uranium Recovery Facilities includes a discussion on performance of dynamic stability analyses for embankment retention systems. Regulatory Guide 3.11 identifies the embankment stability and liquefaction of fine grained materials as concerns in areas where seismic events may occur.