

Experience on Earthquake Safety of Large Embankment Dams Constructed In Turkey

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Abstract - Strong ground shaking results in the instability of the embankment and loss of strength at the foundations. Earthquakes can result in damages or failures for dam structures, while dams with large reservoirs can induce to earthquakes. Earthquake safety assessment is an important phenomenon in dam engineering and requires more comprehensive seismic studies for understanding the seismic behavior of dams subjected to severe earthquakes. Seismic hazard and seismic design are important aspects for large dam projects. Case studies about the seismic performance of dams under large earthquakes are available in the literature. Especially active faults on or near dam sites can cause to damaging deformation of the embankment. Turkey has so many dams, which are under the influence of near source zone. This study outlines stability analyses of large embankment dams located on active seismic area, discusses the experience on behavior of large embankment dams located on or near active faults in Turkey and introduces results of total risk analyses of the case studies including large embankment dams, namely Ataturk, Altinkaya, Catalan, Ilisu, Keban, Kilickaya, Menzelet, which have structural heights of 70 to 207 m.

Keywords: Embankment dam, earthquake, seismic hazard, total risk