

GEOLOGICAL INVESTIGATION ON THE SEISMIC RISK OF ULAANBAATAR, MONGOLIA

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Ulaanbaatar in Central Mongolia has been regarded as located in a seismically stable area, while 1906 Bulnay, 1957 Gobi-Altay, and 1967 Mogod earthquakes left great surface ruptures in Western Mongolia. However, several lineaments have been recognized by high-resolution satellite images within 200 km from Ulaanbaatar. With 1/32000 aerial photographs and field survey, we identified four active strands in the field. The Khustain fault runs along the foot of Khustain range on the right bank of Tuul Gol 50 to 100 km southwest of Ulaanbaatar. The fault juxtaposes eroded higher terrace with glacial and Post Glacial lower surfaces by straight scarp of 10 to 20 m high. There are possible right-lateral strike slip offset and very subtle evidence of Holocene activity. Deren fault and Deren west fault are about 30 km long dip-slip faults that are located about 180 km south of Ulaanbaatar near the town of Deren. Both faults have very distinct scarps 5 to 10 m high, with several sag ponds. Batu Khan fault, 190 km southwest of Ulaanbaatar, coincides with a high-angle geologic fault. About 10 km portion was reactivated downthrowing the upper part of an alluvial fan of the Last Glacial period and the up-slope-side of Batu Khan Mountain. All of these four strands show quite clear topographic evidence of Late Quaternary and possibly Holocene faulting. Quantitative study of the rupture history and seismic hazard assessment is crucial for the totally unprepared city of Ulaanbaatar.