

GENETIC ASPECTS OF REGIONAL FAULTS IN THE ARAVALLI MOUNTAIN RANGE, INDIA.

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The seismic reflection and magnetotelluric profiles across the Aravalli Mountain Range (AMR) in Northwest India have highlighted the subsurface tectonic elements in the region. In south-eastern part of the AMR, three regional thrusts namely Jahazpur Thrust (JT), Great Boundary Thrust (GBT) and Chambal Thrust (CT) are indicated by these subsurface data. The JT forms boundary between high grade (Mangalwar Group) and low grade (Hindoli and Jahazpur Groups) metamorphic rocks, GBT separates the Proterozoic Vindhyan Group and older rocks and, CT defines boundary of deformed and undeformed Vindhyan rocks. The CT extends to a depth of about 18-20 km with significantly different (resistivity of 2000ohm-m to west and 150ohm-m to east) nature of basement on either side of it. The Vindhyan basin opened due to inversion of Precambrian rift basins in AMR and GBT acted as eastern margin thrust during inversion. On deep seismic reflection data JT and GBT join at a depth of about 36km. On surface, JT indicates dextral sense of movement (z-shaped rock outcrops) and GBT indicates sinistral sense (s-shaped outcrops). Due to this differential movement the rocks lying between these two faults have undergone rotation producing overall z-shaped outcrops. MT, seismic reflection data and surface observation indicate GBT as main thrust. JT and CT were evolved during inversion (the Delhi orogeny, ca. 1.4 Ga).