GEOLOGICAL MAPPING AND TECTONIC EVOLUTION OF PART OF SULAIMAN FOLD AND THRUST BELT, EAST OF ZIARAT, BALOCHISTAN.

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Abstract

The Sulaiman Fold and Thrust Belt (SFTB) is one of a broad lobate feature developed in the north-western Himalayas in Pakistan. The lobate geometry of the SFTB is construed by transpression as a result of the left-lateral strike-slip motion along the Chaman fault zone and southward thrusting along the western boundary of the Indian Plate. The Structural evaluation and the stratigraphic setup of a part of Western SFTB has been examined in this study incorporating the Chautair, Shirin, Ghunza and surrounding areas. The Quetta Syntaxis lies in the southwest, the Zhob-Ghazaband Thrust in the north whereas, the Sulaiman Ranges confines the eastern boundary of the study area. The rocks exposed in this area range from Jurassic to Eocene with three major unconformities present at the top of Jurassic, Cretaceous and Eocene rocks. The lithologies are comprised of shales, mudstone and limestones, which makes low to high topographic relief and rugged mountainous landscape. The only Eocene (Shaheed Ghat Formation) rock unit is exposed in the southern part of quadrangle, demarcating the footwall block of the Khilafat Thrust, whereas, the Shirinab Formation of Jurassic is limited to the northern flank exposed along a major fault. There are several igneous intrusions (mostly sills) intruded at various locations in the Shirinab Formation. The hand specimen study of these sills shows that these are basaltic in nature. Structural analysis and field mapping together with collection of rocks fracture data interpreted that the area is mainly influenced by thrust tectonics of the regions. The major structural trend is WNW-ESE with alternating anticlines and synclines bounded on either side by thrust faults. The structures are fault-related folds having asymmetrical axial planes, close to tight interlimb angle and mono to doubly-plunging fold axis. At places, particularly in the central part of study area, the folds are slightly to moderately overturned. The faults are thrust to reverse in nature with their fault planes dipping (30-75°) towards the north. The fracture study at 50 discrete locations leads to the conclusion that the major tectonic transport direction is from north.