GEOLOGICAL MAPPING OF THE SIWALIK ROCKS IN THE VICINITY OF ZARKAI AND TAKHTI NASRATI AREA, DISTRICT KARAK, SURGHAR-SHINGHAR RANGE, KHYBER PAKHTUNKHWA, PAKISTAN

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Abstract

The stratigraphic mapping of the Siwalik rocks in the vicinity of Zarkai and Takhti Nasrati Area, Surghar-Shinghar Range has been carried out. The map has been constructed on 1:50,000 scale using northern and southern part of Survey of Pakistan topographic sheet No. 38 P/1 and 38 O/4 respectively. The Siwalik group formations encountered in the study area includes Dhok Pathan and Soan formations together with alluvium. The Dhok Pathan Formation consists of fine to medium grained, light grey to ash grey, gleaming white sandstone, coarse grained gritty sandstone in the paleochannel, light reddish brown to greyish shale and intercalations of very fine sand and silt within shale. Sedimentary and structural features such as scouring surfaces, cross beddings and plumose markings are noticed in the Dhok Pathan Formation. The lower contact of the Dhok Pathan Formation with the Nagri Formation is transitional while the upper contact with the Soan Formation is gradational. The Soan Formation is comprised of sandstone, mudstone, conglomeratic bed (having fragments of limestone, quartzite, andesite, rhyolite, granite and chert) and shale observed in Takhti Nasrati and Zarkai Algad. The sedimentary structures observed in the Soan Formation includes cross beddings and mud-cracks. The sandstones of the Siwalik group formations (Dhok Pathan and Soan formations) are prolific horizons for uranium deposits. ASTER Level 1B data was also used to differentiate between different lithologies in the study area. Band ratio combination 4/7-4/3-2/1 were very effective in differentiation of major lithological units.