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Crustal Structure and Tectonic Study of Shillong Plateau – Inferences from Aeromagnetic Map

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Regional aeromagnetic mapping has been considered a vital input not only for mineral exploration but also for tectonic studies and crustal investigations of an area. The aeromagnetic map studied and presented here is part of an aeromagnetic map over the Shillong plateau that was flown with a line spacing of 2 kms in a N 30^{o} W line direction and at a flight height of 2100 mts a.s.l. The Shillong plateau consists mostly of Archaean Gneissic complex with Proterozoic intracratanic quartzite and phyllite of Shillong group intruded by acid and basic igneous rocks. During the Jurassic Cretaceous period the plateau rifted along its southern margin by the E-W Dauki fault system through which Sylhet trap extruded. The Mikir hills is detached from the Shillong plateau by the NW-SE trending Kopili-North Dhansiri fault which seismically active. The different tectonic domains present in this area exhibit different seismicity patterns.

The aeromagnetic lineaments inferred from the Shillong plateau reflect the local tectonic settings. However, the N-S oriented magnetic lineaments and signature with remanant magnetization suggests the impacts of North-South movement of the block. Some of the aeromagnetic anomalies are associated with ultramaffic-maffic alkaline carbonatite complexes around Sung valley and Jasra are interpreted in terms of crustal tectonic activity. Spectral analysis of the aeromagnetic data along the selected lines has been carried out and the results are interpreted in terms of crustal tectonics. These inferences are discussed and presented.