

A COMPARATIVE STUDY OF BIOSTRATIGRAPHY & MAGNETOSTRATOGRAPHY OF SIWALIK SUPERGROUP OF WESTERN HIMALAYA

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Abstract

The Siwalik Group consists of the fluvial molassic sediments forming outer Himalaya deposited between 18 to 1.5 million years ago. The basin was developed as a foredeep in the south of the newly elevated Himalayan Tectogen. In Pleistocene a part of this formation was uplifted forming the outer Himalaya bounded by Main Boundary Thrust in the north and Himalayan Frontal Fault in South leaving a portion below the Indo-Gangetic Aluvium.

The Siwalik rocks have been an excellent repository of mammalian fauna making it very valuable from biosratigraphic point of view. Lithostratigraphically also it represents an excellent progressively coarsening upward sequence with multistoried sand, clay alternation covered by boulder conglomerate. The Group has been divided into lower (Kamlial and Chinji), Middle (Nagri and Dhokpathan) and Upper (Tatrot, Pinjore and Boulder Conglomerate) Sub Groups. The divisions are characterized by typical biostratigraphic appearance- extinction markers.

The magnetostratigraphic studies in the Siwalik indicate the Gauss-Matuyama boundary at 2.6 Ma which correlated with Tatrot-Pinjore faunal boundary. The Dhokpathan-Tatrot boundary lies within Gilbert epoch. The magnetostratigraphic studies have also helped in interpreting rate of sedimentation and therefore rate of upliftment of the source area. The channel sandstones as also the fine grained, low energy, non pedogenic overbank facies characterizes Depositional Remanent Magnetization in single domain grains and are the ideal records of magnetic polarities for determination of sedimentation rates and tectonic impulses in the basin (Sangode and Kumar, 2003).

The supergroup is very prospective from petroleum aspect with gas shows such as that of Jwalamukhi already known. The presence of favourable structural stratigraphic controls is also encouraging.

The magnetostatigraphic data shall be of immense help in precise correlation and therefore age determination of various formations.