

# **Deep Water Sedimentary Structures in Flysch of Chakrata Formation of Uttarakhand Lesser Himalaya\***

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## **Abstract**

The Chakrata Formation (earlier called Morar-Chakrata Beds, Saknidhar Formation or partly Simla Slates) consist of purple, dark green, greyish-green and grey greywacke and siltstones interbedded with dark green or black shales and slates. It is characterized by sedimentary structures like graded bedding (partly following Bouma-Cycle), different types of tool and scour marks, flute and load casts, intraformational minor folds and penecontemporaneous deformation features. The arenaceous/argillaceous component ratio, the thick rhythmic shales alternating with comparatively thin sandy turbiditic facies, absence of carbonate precipitation and conglomeratic rocks are additional evidence the formation has been recognized as a typical flysch deposited in a tectonically unstable rhythmically subsiding basin. These sedimentary structures, the texture of the arenaceous facies and the presence of purple and maroon shales indicate its deposition in a turbidite environment. Shallow water features such as large scale cross-bedding, mud cracks, beach and dune features are generally absent. The rocks show very poor sorting and angularity of particles indicative of textural and mineralogical immaturity. All these characteristics are comparable with present day deep sea sediments.

Up to now the formations of the Lesser Himalaya have not been considered important from the petroleum prospect point of view owing to their complex tectonic setting. But of late the attention of the scientific community is drawn to them and it will be interesting to analyze the organic carbon content of the dark shale facies which may prove to be a good source rock. The overlying Rautgara and Deoban formations, consisting of dominantly arenaceous and calcareous facies, may serve as good reservoir rocks.

## **References**

Thakur, V.C., and B.S. Rawat, (eds.), 1992, Geological map of western Himalaya: Wadia Institute of Himalayan Geology, Dehra Dun, India, scale 1:1,000,000, separate insert 22 p.

Valdiya, K.S., 1980, Geology of Kumaun Lesser Himalaya: Wadia Institute of Himalayan Geology, Dehradun, India, 291 p., 2 maps.

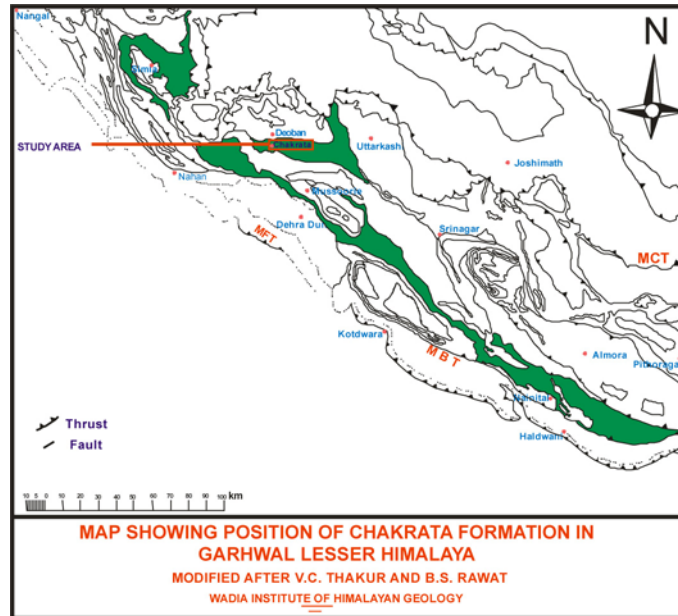


Figure 1. Map showing position of Chakrata Formation in the Garhwal Lesser Himalaya. Modified after V.C. Thakur and B.S. Rawat, Wadia Institute Of Himalayan Geology.

GROUP	FORMATION	AGE
SIRMUR	SUBATHU	LOWER EOCENE
	SINGTALI	PALAEOCENE
MUSSOORIE	TAL	CAMBRIAN
	KROL	LATE PROTEROZOIC
	BLAINI	
JAUNSAR	NAGTHAT	
	CHANDPUR	
	MANDHALI	
	DEOBAN	
DAMTHA	RAUTGARA	
	CHAKRATA	

After Valdiya, K.S., 1980; Geology Of Kumaon Lesser Himalaya, Wadia Institute Of Himalayan Geology 291P

Figure 2. Lithostratigraphic chart of Kumaun Lesser Himalaya.