GEOLOGICAL SURVEY OF INDIA
WESTERN REGION
15-16, Jhalana Institutional Area,
Jaipur – 302004.

PETROLOGY LABORATORY

REPORT

Name of the party	:	M/s Indus Planet Mineral Solutions
Type of analysis	:	Petrographic study
Type of samples	:	Rock sample
Number of samples	:	1
Samples No(s), if given	:	09

A. Megascopic Observation

1. Nature : Massive, hard and compact
2. Colour : Off white to creamy
3. Granularity : Fine to medium grained granularity

B. Observation under Microscope (Transmitted and reflected light)

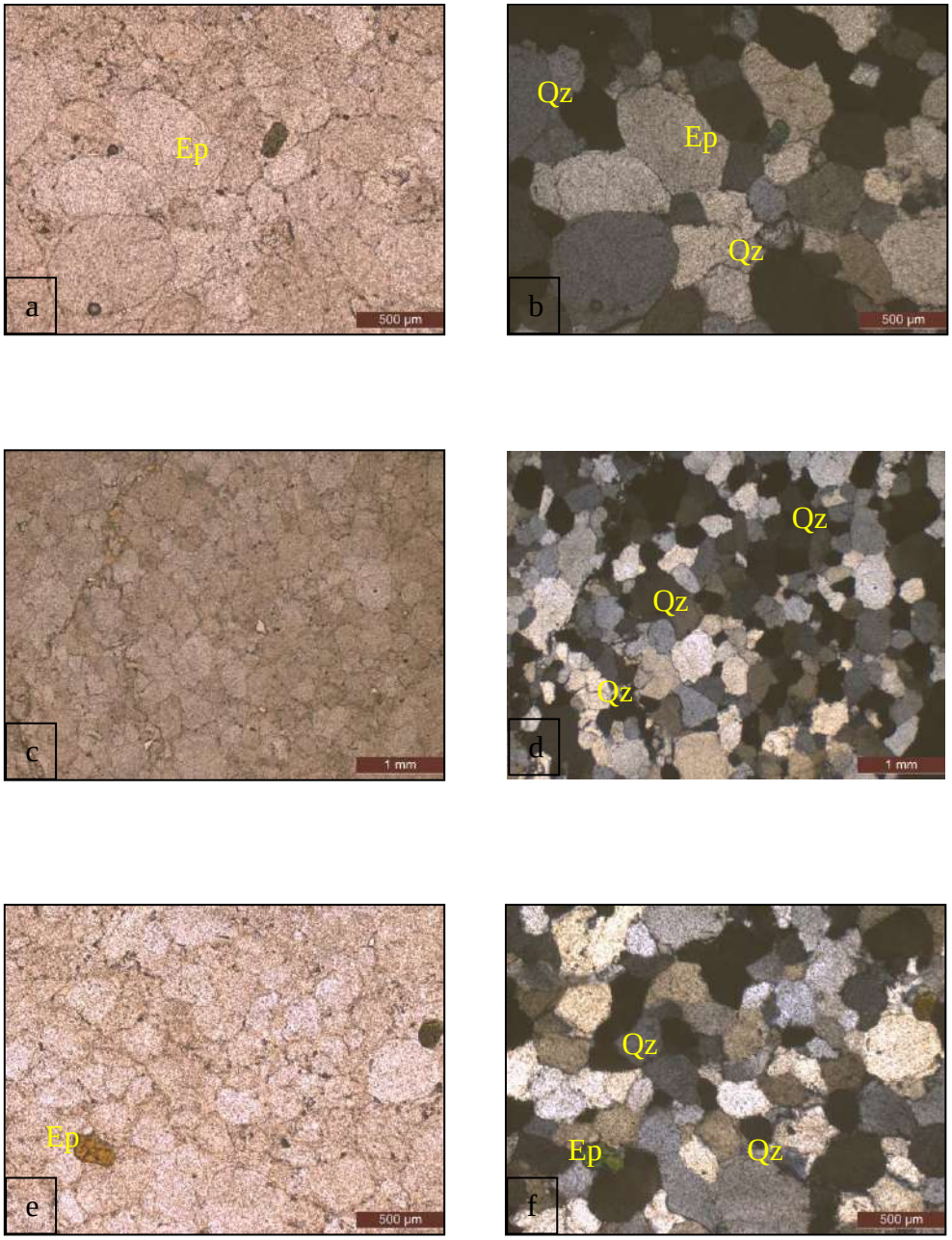
Under microscope, the rock composed predominantly of quartz grains forming more than 95% of the rock. In plane polarized light (PPL), quartz appears colorless, clear, and sub-angular to anhedral in shape. Grain boundaries are generally interlocking, indicating a recrystallized texture typical of metamorphic quartzite.

Under crossed nicols (XPL), most quartz grains show undulose extinction, suggesting strained quartz produced by deformation during metamorphism or tectonic stress. In several grains, sub-grain development and slight recrystallization may be observed, reflecting dynamic metamorphic processes.

Epidote occurs sporadically at some places as small grains or patches within the quartz matrix. In PPL, epidote shows pale yellow to pistachio-green color with moderate to high relief, while in XPL it displays high birefringence with bright interference colors. The epidote grains are generally rounded to sub-rounded and scattered within the rock.

A few opaque minerals are also present as small irregular grains, appearing completely black in both PPL and XPL due to their inability to transmit light. These may represent iron oxides such as magnetite or hematite.

Overall, the rock exhibits a granoblastic texture with recrystallized interlocking quartz grains, characteristic of metamorphosed sandstone (quartzite). The presence of strained quartz and minor epidote suggests metamorphism under conditions involving deformation and low to medium-grade metamorphic processes.



Photomicrograph shows strained quartz (Qz), minor epidote (Ep), and accessory opaque minerals**,** suggesting metamorphism accompanied by deformation. a, c & e viewed under ppl and b, d & f viewed under xpl in transmitted light.

C. Sample identified: Quartzite

Analysed By **Name : Mohd. Zuhaib Siddiqui** **Designation : Senior Geologist**	**Director/ Lab. In charge** **(Mamta V. Pal)** **Director**
Date : 13.03.2026 **Place : Jaipur**	