

## FRACTURE ANALYSIS OF KHAUR ANTICLINE AND ITS IMPLICATIONS ON SUBSURFACE FRACTURE SYSTEM

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A comprehensive study on the fracture system was carried out around Khaur Oilfield, Potwar Plateau. The Potwar plateau is a broad foreland fold-thrust belt of the lesser Himalayas, internally deformed due to southward migrating deformation. Most of the deformation is concentrated in the northern part of the plateau, known as the 'North Potwar Deformed Zone' (NPDZ). Khaur structure is located at the southern boundary of NPDZ in the form of a broad, doubly plunging, open anticline defined by gentle limbs.

The Khaw- Oilfield is the only field, which has produced oil from the Murree Formation of the Miocene age. The formation exposed in the core of the anticline and is producing oil from variedly spread sandstone lenses at depths ranging from 300 to 5100 ft. The sandstone beds of the Murree and younger formations exposed in the anticline are fractured and at least four sets of fractures are interpreted from the sandstone bodies. Length, widths and number of fractures in samples (inventory circles) were measured, counted and then summarized. This data is combined using Monte Carlo techniques to estimate fracture porosity and permeability. Trends of fracture porosity were plotted on the fracture isoporosity map. Fractures in Khaur anticline rocks are classified as open; iron filled and quartz filled sets. These fractures represent three different stress regimes, favoring open fractures for preferential use for subsurface oil exploration. Distribution of fractures is related with probable subsurface structures for future exploitation work.

There is probably not much difference in the behavior of fractures in various sandstones of the Siwalik and Rawalpindi groups exposed on the Khaur anticline because of fairly similar Lithological and cementing characteristics. However, structural position, movement along individual faults and northward movement of the Indian plate as a whole plays a role in the fracture character and density.