

STRATIGRAPHIC EVALUATION OF THE SEMBAR-GORU FORMATIONS IN MIANO AREA, MIDDLE INDUS BASIN, PAKISTAN



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ABSTRACT

This document represents the subsurface structural and stratigraphic evaluation of the Upper Jurassic to Lower Cretaceous Sembar and Goru formations in Miano and adjoining area of the Middle Indus Platform. This evaluation is based on the 1500 line km of 2D seismic data integrated with two wells (A&B).

Thorough regional geological and petroleum geological aspects of the study area are reviewed. Acquisition and processing parameters of the seismic data are discussed. Six horizons (Top Chiltan, Top Semar-1, Top Sembar-2 Top Sembar-3, Top A and Sui Main Limestone) are picked and their TWT maps are prepared. Depth conversion is also attempted by linear velocity function (LVF). Amplitude and Isochrone are also prepared for selected horizons. Strike-slip fault pattern with horst and graben features are interpreted. Some of the blocks may be interpreted as tilted fault blocks. Structurally the Miano area lies within a depression while the adjoining areas in the east and west are uplifted.

On the suitable selected seismic sections, the Sembar and Goru (A-sand) strata are picked for every event to reveal the seismic geometries (onlap, downlap etc.). This picking is used to develop a seismic sequence stratigraphic model. Three higher order sequences (alternative TST and HST packages) and one complete third order sequences (LST, TST and HST packages) are identified within Sembar, whereas the Goru-A sand has one complete sequence comprising of LSW (Lowstand Wedge), TST (Transgression System Tract) and HST (Highstand System Tract). For the three Sembar sequences TWT maps were prepared.

Areas for the potential plays are identified within Sembar Formation, slope fans and shelfal sand bodies are interpreted as potential site for reservoir quality sands. One of the slope fan sand geobodies is mapped (TWT and amplitude) to highlight its hydrocarbon potential and volumetric.

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