

**SEISMIC INVERSION AND ROCK PHYSICS MODELING OF
ZAMZAMA AREA, LOWER INDUS BASIN, PAKISTAN**



By

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ABSTRACT

The Zamzama Gas Field (ZGF) within the Zamzama block, the research area, lies in Dadu district, Sindh. The area of investigation is situated in the Kirthar foredeep of the Lower Indus basin. The stratigraphic sequence is composed of Jurassic to recent. The Zamzama structure comprises of a large north-south oriented, eastward verging thrust anticline. The degree of thrusting and folding intensifies westward of Zamzama as progressively older sediments of the Lower Indus Basin are exposed in the Kirthar foldbelt. Keeping in view the target objectives, the research work covered 2-D seismic data interpretation followed by seismic inversion and rock physics modeling. The interpretation of the 2-D seismic data unfolded the thrust anticlinal structure for the Zamzama area whereas the seismic inversion confirmed the presence of sand bodies in the Pab sandstone by means of a trend of lower impedance intervals bounded by higher impedance intervals. The Rock physics template generated by Rock physics modeling gave a general overview of the lithologies lying therein in the area under research. The lithologies unearthed in this template included limestone, shale, brine and gas sands. The variation in certain properties like pressure, porosity and clay content on the identified lithologies in the template were also studied in the course of this research. The research work was helpful in bringing out the facts like structure, faulting mechanism and various lithologies encountered in the given area, Zamzama.

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