
Tilt-Derivative Filtered Potential Fields Data Unravel the Paleozoic Structure Image in Tinat Field, Saudi Arabia

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The 3D seismic structure image of the Paleozoic reservoir in Tinat Gas Field southeast of Ghawar Field is enhanced to match with the basement shape map driven from the tilt derivative mathematic filtered gravity data that will guide future exploration and development of the field. The objective of this study is to enhance the Paleozoic reservoir structure image over Tinat Field to guide its future exploration and delineation. The study depended on integrating new seismic structure maps with the tilt filtered gravity data and the well data. The tilt filter technique tends to enhance mapping of the subtle magnetic and gravity anomalies, and maximizes characterizing the geometrical contrast of the internal basement structure that supports the seismic structure image. Results of the study indicated strong penetrative basement structure fabric at the Paleozoic reservoir level that might cause future semi-compartmentalization along the field. The structure setting of the field indicates set of north- south oriented push-up fault closures over a series of basement micro-blocks. Several east-west stress-partitioning faults dissect the field into different domains with a strike-slip transpression sense of motion. The basement shape map driven from tilt gravity filtered data of the Tint field, in the Eastern Province of Saudi Arabia, mimics to a great extent, the seismic structure image at the top of the Late Paleozoic Unaiyza reservoir
