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Fracture characterization using diffraction attributes in tight sandstone reservoirs: A case study from Keshen Gas Field, Tarim Basin

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Abstract

Reservoir characterization is indispensable in the development of the Cretaceous structural fractured Bashijiqike tight sandstone reservoir formation, which is the main production zone and known to exhibit high structural variability imparting on production at different scales. We performed an improved workflow based on diffraction extraction and analysis to characterize the fractures especially in locations proximal to the wellbore. Diffraction attributes significantly provide more details in the area, which are proven by three well FMI images and dipmeter logs. The results show that structural fractures in the study area are dominated by the upright shearing stress forming fractures with medium to high angles. The trending direction is also delineated to be similar despite the significant well offset, which is an indication of the underlying tectonic framework responsible for the overall architecture of this section of the basin. We opine due to our success that the proposed approach may be helpful to describe the distribution and direction of fractures in naturally fractured reservoirs tied by the well logs.

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