

# Predicting Centroid Depth as a Function of Mudstone Permeability

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We first use forward modeling to study how mudstone permeability controls the pore pressure in sand bodies. We show that when dipping aquifers are surrounded by constant permeability mudstone, the pore pressure of the sandstone equals the pore pressure of the mudstone at the midpoint. In contrast, when the permeability is a function of stress, the pore pressure in the sandstone is reduced relative to the constant permeability model. The reason for this is that mudstone is more compressed and has lower permeability at the down-dip end of the structure. As a result, less of the higher pressures present at deep depth contribute to the sandstone pressure. We then present an approach to predict the reservoir pore pressure if the mudstone properties are known. This static model successfully predicts in-situ pressure in reservoirs and results in a centroid depth approximately 1/3 the depth of the structure

Keywords: Overpressure prediction; Permeability; Centroid; Basin modeling

