

06.04: Modified Centroid Model

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ABSTRACT

Mudstone permeability variation around reservoir has a great control on the centroid position in the overpressured reservoir. Previous steady flow model approach predicts the centroid position by establishing steady flow model, in which the mudrock permeability is evaluated at the mudrock-sandstone interface and assuming a linear variation in overpressure in mudstone. However, we find that numerical and analytical model show that there is much larger overpressure difference between the sandstone and mudstone around the reservoir crest and bottom locations (**Fig. 1**). This impacts how we calculate the flux through the reservoir and ultimately the reservoir centroid position. We propose a modified centroid modeling approach to take this impact into account. This study further our understanding of the fluid flow around overpressured reservoirs and provide a quantitative approach for trap integrity and seal assessment

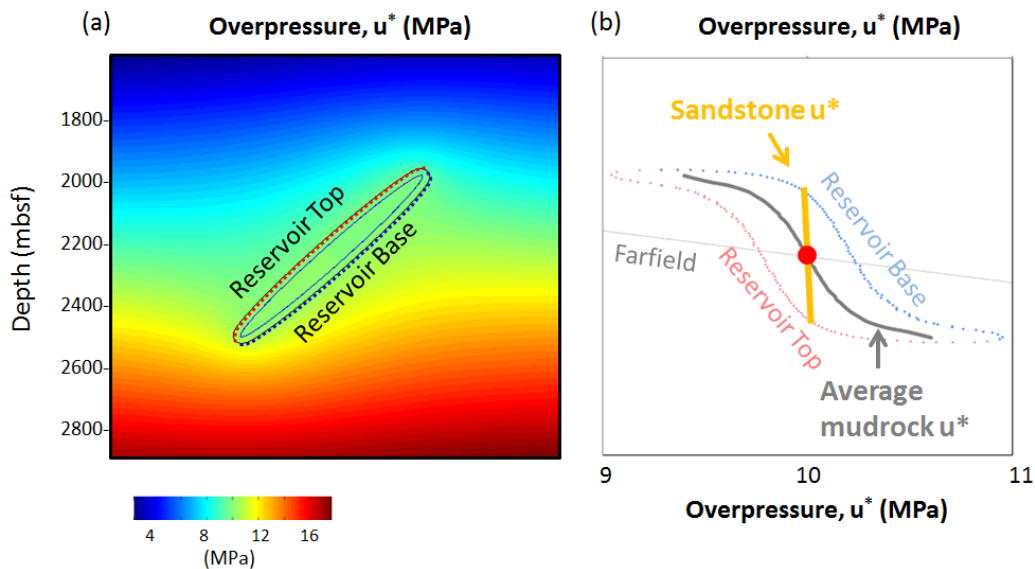


Figure 1: (a) Overpressure around a dipping reservoir. Red dot line and blue dot line are the tracking locations of mudrock overpressure. (b) Overpressure around a dipping reservoir. The thick grey line and yellow line represent the average mudrock overpressure and reservoir overpressure, respectively. The light blue dots and light red dots are the mudrock overpressure along the base and the top of the reservoir.