

## **Geomechanical Modeling for Field Development - A Case Study from Offshore Myanmar**

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### **ABSTRACT**

This article presents a case study on the use of geomechanical evaluations for reducing drilling risks and costs in a brown gas field, offshore Myanmar. The field has been producing for many years from different sandstone reservoir units of Lower Miocene age overlain by thick claystones with interbedded siltstone and sandstone from Mid-Miocene and younger sediments. A number of geomechanical studies have been carried out throughout since 2003. These studies were done for this field at several stages of the field life from exploration, appraisal, and early development to recent infill development wells. The key objective of these geomechanical evaluations was to understand the state of in-situ stresses, pore pressure regime and rock mechanical properties of the target formations, and the overburden rocks, and their spatial variations across the field. The model was then mainly used for wellbore stability analysis for mud weight and casing design. In this study, daily drilling reports and end of well reports from all the available offset wells were reviewed to document drilling experiences and to extract relevant information for building the geomechanical model. Based on the analysis, it was observed that initially the vertical exploration and appraisal wells were drilled more or less trouble free in both overburden and reservoir section. However, in the later phases significant wellbore instability issues were reported in the overburden section as more high angle wells were drilled. The problem becoming more pronounced as the safe drilling window is gradually reduced because pressure depletion induced reductions in in situ stresses within the depleting reservoirs. Hence, understanding the initial in-situ stresses and their evolution during the field life and changes in formation pressures with production become very critical for safe and successful drilling of new infill wells.