

Penentuan prognosis kestabilan sumur berdasarkan model geomekanika dengan menggunakan inversi data seismik 2D multivintage, lapangan X = Geomechanical model using multi vintage 2D seismic inversion for wellbore stability in the X field

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Abstrak

Studi pemodelan geomekanika telah dilakukan pada target Formasi Cibulakan Bawah, Baturaja, dan Talang Akar. Model geomekanika tiga dimensi 3D memberikan data sifat elastis seperti modulus bulk, poisson ratio, young modulus untuk setiap lokasi sumur bor. Tujuan dari penelitian ini adalah untuk mengkarakterisasi sifat mekanika batuan, dan tekanan juga memprediksi stabilitas sumur bor untuk sumur eksplorasi berikutnya. Daerah penelitian terletak di daerah pesisir Sub-Cekungan Jatibarang, Cekungan Jawa Barat Bagian Utara. Daerah penelitian ini dibentuk oleh beberapa formasi, yaitu Formasi Cibulakan, Formasi Baturaja, Formasi Talang Akar dan Formasi Jatibarang. Penelitian ini terdiri dari tinjauan geologi dan tekanan regional, pengkondisian data log dan seismik, model satu dimensi 1D geomekanika, dan pembentukan kubus 3D geomekanik dengan mengintegrasikan data inversi sumur dan seismik. Hasil penelitian ini menunjukkan bahwa target formasi memiliki jendela tekanan berkisar 3000-5000 psi dengan kisaran berat lumpur yang akan digunakan sekitar 8,5 ndash; 10,7 ppg. Rekomendasi berat lumpur pengeboran yang didapat akan digunakan untuk sumur eksplorasi berikutnya berdasarkan penilaian stabilitas geomekanik dan stabilitas sumur pengeboran.

Geomechanical model has been carried on Lower Cibulakan Formation, Baturaja Formation and Talang Akar Formation in the onshore of Northwest Java Basin. The three dimensions 3D geomechanical model provides elastic properties data such as bulk modulus, elastic modulus, young modulus. The objective of this study is to characterize mechanical rock properties, and pressure also to predict wellbore stability for next exploratory well. Geomechanical model of an area is necessary for the drilling trajectory design so it would reduce the drilling operation cost. The study area is located in the onshore area of Jatibarang Sub basin, North West Java Basin. This field is formed by several formations, which are Lower Cibulakan Formation, Baturaja Formation, Talang Akar Formation and Jatibarang Formation. This study contents of several works such as regional geological and pressure reviews, log and seismic data conditioning, geomechanical one dimensions 1D model, and establish geomechanical 3D cube by integrating well and seismic inversion data. The optimization of limited exploration data based on well log and the different vintage of 2D seismic is one of the problems that would be discussed. The problems could be solved by leveling amplitude seismic and conditioning well log. The recommended drilling mud weight from pressure and stress analysis has range about 8.5 10.7 ppg from Lower Cibulakan Formation MMC to Talang Akar Formation. The recommended drilling mud weight is used for next exploration well.