

RINGKASAN

EVALUASI *PROBLEM LOST CIRCULATION* PADA PEMBORAN TRAYEK 8 ½” SUMUR “DHY-01” LAPANGAN “JM” PT PHR ZONA 1

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Sumur “DHY-01” merupakan sumur pengembangan yang terdapat pada Lapangan “JM”. Pemboran sumur ini dilakukan pada cekungan semuatera tengah dengan pemboran vertikal mencapai kedalaman 811,03 ftTVD. Pada pemboran Sumur “DHY-01” didapati *problem* pemboran berupa *lost circulation* dengan tipe *total loss* yang terjadi pada pemboran trayek 8 ½” kedalaman 339,02 ftTVD Lapisan BK-500 Formasi Bekasap.

Pada analisa penyebab *lost circulation*, dilakukan melalui analisa faktor tekanan dan analisa faktor formasi. Pada analisa faktor tekanan dilakukan perhitungan tekanan formasi, tekanan hidrostatik, tekanan rekah formasi, *bottom hole circulating pressure* (BHCP), *equivalent circulating density* (ECD), dan analisa SBHP *survey*. Pada analisa faktor formasi dilakukan perhitungan faktor kompaksi, faktor sementasi, analisa korelasi data *sample cutting* dan juga korelasi geologi sumur sekitar pada Lapangan “JM”. Hasil analisis ini kemudian dilanjutkan untuk mengevaluasi dan memberikan rekomendasi terkait metode penanggulangan *problem lost circulation*.

Berdasarkan hasil analisa, dapat disimpulkan *bahwa problem lost circulation* pada pemboran Sumur “DHY-01” Lapisan BK-500 dengan litologi dominasi *sandstone* disebabkan oleh faktor formasi. Pada perhitungan faktor kompaksi menunjukkan hasil sebesar $0,54 \times 10^{12} \text{ psi}^2$ (tidak kompak), dan faktor sementasi sebesar 1,5 (*very slightly cemented*). Kondisi formasi yang tidak kompak dan tidak terkonsolidasi dengan baik akan berimplikasi pada terbentuknya celah-celah batuan yang menyebabkan kenaikan permeabilitas yang berujung pada peristiwa *lost circulation*. Penanganan menggunakan LCM terbukti kurang efektif, sehingga disarankan untuk mengaplikasikan metode *blind drilling* atau *underbalance drilling* pada pemboran berikutnya.

Kata kunci: *lost circulation*, faktor kompaksi, faktor sementasi, *high permeability*, *blind drilling*, *underbalance drilling*.

ABSTRACT

EVALUASI PROBLEM LOST CIRCULATION PADA PEMBORAN TRAYEK 8 ½" SUMUR "DHY-01" LAPANGAN "JM" PT PHR ZONA 1

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The "DHY-01" well is a development well located in the "JM" Field. The drilling of this well was carried out in the Central Sumatera Basin with vertical drilling reaching a depth of 811.03 ftTVD. During the drilling of the "DHY-01" well, a drilling problem was found in the form of lost circulation with the type of total loss that occurred during the drilling route 8 ½" with a depth of 339.02 ftTVD BK-500 layer of the Bekasap Formation.

In analyzing the causes of lost circulation, it is carried out through analysis of pressure factors and analysis of formation factors. In the pressure factor analysis, formation pressure, hydrostatic pressure, formation fracture pressure, bottom hole circulating pressure (BHCP), equivalent circulating density (ECD) and SBHP survey analysis are carried out. In the formation factor analysis, the calculation of the compaction factor, cementation factor, correlation analysis of the sample cutting data and also the geological correlation of the surrounding wells in the "JM" Field were carried out. The results of this analysis are then continued to evaluate and provide recommendations related to methods for mitigating lost circulation.

Based on the results of the analysis, it can be concluded that the problem of lost circulation in the drilling of the "DHY-01" Well BK-500 layer with sandstone-dominated lithology is caused by formation factors. The compaction factor calculation shows a result of 0.54×10^{12} psi² (not compact), and a cementation factor of 1.5 (very slightly cemented). Formation conditions that are not compact and not consolidated properly will have implications for the formation of rock crevices which cause an increase in permeability which leads to lost circulation events. Treatment using LCM proved to be less effective, so it is recommended to apply the blind drilling or underbalance drilling method in the next drilling.

Keywords: lost circulation, compaction factor, cementation factor, high permeability, blind drilling, underbalance drilling.