

RINGKASAN

EVALUASI PENANGGULANGAN *PROBLEM LOST CIRCULATION* PADA PEMBORAN SUMUR “MRZ-06” LAPANGAN “MF”

Oleh
Muhammad Mirza Al Farrosy
NIM: 113190127
(Program Studi Sarjana Teknik Perminyakan)

Sumur “MRZ-06” merupakan sumur migas dari lapangan “MF” yang terletak pada cekungan Sumatera Tengah dengan total kedalaman 811 ftTVD. Pada saat pemboran berlangsung terjadi *lost circulation* pada trayek 8 1/2” di kedalaman 339 ftTVD dengan tipe *total loss loss rate* sebesar 5 bpm dan tidak ada aliran balik ke permukaan terjadi pada Formasi Bekasap dengan litologi batupasir.

Analisa yang dilakukan yaitu dengan menganalisa faktor tekanan formasi dan faktor batuan formasi. Analisa tekanan formasi dilakukan untuk membuktikan jika *problem lost circulation* tidak disebabkan oleh faktor tekanan formasi, melainkan akibat dari faktor batuan formasi. Pemboran dilakukan dengan metode *blind drilling* menggunakan *fresh water*. Evaluasi faktor hidrolik dilakukan meliputi perhitungan tekanan hidrostatik *re-design*, *bottom hole circulating pressure* (BHCP) *re-design*, *equivalent circulating density* (ECD) *re-design*, tekanan pompa *re-design*, dan *mud weight* (MW) *re-design*.

Berdasarkan perhitungan diketahui bahwa pada kedalaman 339 ftTVD didapatkan nilai tekanan formasi sebesar 146,31 psi, tekanan hidrostatik sebesar 151,60 psi, dan nilai tekanan rekah formasi sebesar 210,54 psi. Berdasarkan analisa disimpulkan bahwa penyebab dari *lost circulation* bukan dari faktor tekanan formasi, melainkan dari faktor batuan formasi karena menembus formasi *sandstone* yang *coarse permeable formation* memiliki nilai kekuatan formasi sebesar $0,1 \times 10^{12}$ psi² dari uji porositas, menurut Tixier termasuk kedalam formasi yang tidak kompak. Evaluasi faktor hidrolik dengan menggunakan metode *blind drilling* diperoleh nilai tekanan hidrostatik *re-design* 150,31 psi dan *bottom hole circulating pressure* (BHCP) *re-design* sebesar 150,54 psi. Selisih antara tekanan hidrostatik (Ph) dan tekanan formasi (Pf) aktual maupun *re-design* tidak melebihi 200 psi sehingga masih dalam batas wajar dan tidak mengindikasikan terjadi *differential pressure sticking*.

Kata Kunci: *Lost circulation*, metode *blind drilling*, *differential pressure sticking*.

ABSTRACT

EVALUASI PENANGGULANGAN *PROBLEM LOST CIRCULATION* PADA PEMBORAN SUMUR “MRZ-06” LAPANGAN “MF”

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The "MRZ-06" well is an oil and gas well from the "MF" field located in the Central Sumatra basin with a total depth of 811 ftTVD. At the time of drilling, there was a lost circulation on the 8 1/2" route at a depth of 339 ftTVD with a total loss loss rate type of 5 bpm and no return to the surface occurred in the Bekasap formation with sandstone lithology.

The analysis carried out is by analyzing the formation pressure factor and formation rock factor. Formation pressure analysis is carried out to prove that the problem of lost circulation is not caused by formation pressure factors, but due to formation rock factors. Drilling is carried out by blind drilling method using fresh water. Hydraulic factor evaluation was carried out including the calculation of hydrostatic pressure re-design, bottom hole circulating pressure (BHCP) re-design, equivalent circulating density (ECD) re-design, pump pressure re-design, and mud weight (MW) re-design.

Based on calculations, it is known that at a depth of 339 ftTVD obtained a formation pressure value of 146.31 psi, hydrostatic pressure of 151.60 psi, and a formation fracturing pressure value of 210.54 psi. Based on the analysis, it was concluded that the cause of lost circulation is not from the formation pressure factor, but from the formation rock factor because it penetrates the sandstone formation which coarse permeable formation has a formation strength value of 0.1×10^{12} psi² from the porosity test, according to tixier included in the formation that is not compact. Evaluation of hydraulic factors using the blind drilling method obtained a re-design hydrostatic pressure value of 150.31 psi and bottom hole circulating pressure (BHCP) re-design of 150.54 psi. The difference between the actual hydrostatic pressure (P_h) and formation pressure (P_f) or re-design does not exceed 200 psi so it is still within reasonable limits and does not indicate differential pressure sticking.

Keyword: lost circulation, blind drilling method, differential pressure sticking.