

Pemetaan unit aliran reservoir globigerina limestone di lapangan c Selat Madura berdasarkan analisa petrofisika, unit aliran hidrolik dan inversi seismik = A fully integrated approach thru petrophysical analysis, hydraulic flow units and seismic inversion to map good quality flow unit of globigerina limestone gas reservoir in c field, Madura Straits

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Abstrak

Karakterisasi reservoir merupakan tahapan yang sangat penting dalam memahami penyebaran heterogenitas reservoir secara vertikal dan lateral. Tujuan dari penelitian ini adalah untuk mengetahui penyebaran vertikal dan lateral dari *flow units* sehingga penempatan dan target sumur pengembangan dapat optimal. Pemahaman penyebaran heterogenitas reservoir secara vertikal umumnya berdasarkan hasil analisa petrofisika yang dikombinasikan dengan *hydraulic flow units*. Nilai *flow zone indicator* dari *hydraulic flow units* merupakan cerminan kualitas batuan yang dipengaruhi komposisi mineralogi dan tekstur batuan sebagai efek dari lingkungan pengendapan dan *facies* sebagai pengontrol. Sedangkan untuk memahami penyebaran heterogenitas reservoir secara lateral umumnya berdasarkan hasil inversi seismik *model based*. Hasil analisa petrofisika pada Sumur C-1 diperoleh karakter reservoir dengan ketebalan *gross* = 370.5 ftMD, ketebalan *net pay* = 346.0 ftMD, NtG = 93.4%, Vclay = 6.9%, Phie = 38.7%, permeabilitas = 22.6mD dan Sw = 46.6%. Sedangkan penyebaran heterogenitas reservoir berdasarkan hasil analisa *hydraulic flow units* pada Sumur C-1 diperoleh lima *flow units* dengan *flow unit* ke lima mempunyai kualitas yang paling bagus. Karakteristik *flow unit* ke lima mempunyai nilai FZI = 0.727, Vclay = 3.9%, Phie = 45.1%, Permeabilitas = 229.6mD dan Sw = 31.1% dengan dominan batuan yaitu *grainstone*. Pola persebaran lateral *good flow unit* yang mempunyai nilai AI 3600 – 4300 (gr/cc*m/s) berdasarkan hasil analisa inversi seismik mengikuti pola struktur pada Lapangan C yang relatif berarah barat laut – tenggara. Semakin mendekati puncak struktur ketebalan *good flow unit* akan menipis karena *truncated* oleh *fault*.

.....Understanding of vertical and lateral reservoir heterogeneity has always been crucial for reservoir characterization. The purpose of this study is to determine the lateral distribution of good flow unit so that the development well placement and targets can be optimized. Understanding the vertical reservoir heterogeneity generally based on petrophysical analysis result combined with hydraulic flow units. Hydraulic flow units is based on the flow zone indicator which reflect to rock quality that influenced by the mineralogical composition and texture of lithology. Whereas to understand the lateral heterogeneity, generally based on the quantitative analysis as results from model based seismic inversion. The petrophysical results obtain 370.5ft gross thickness with net pay = 346.0 ftMD, NtG = 93.4%, Vclay = 6.9%, Phie = 38.7%, permeability = 22.6mD and Sw = 46.6%. From hydraulic flow units results obtain five flow units with the fifth flow unit has best quality. Characteristics of the fifth flow unit has FZI = 0.727, Vclay = 3.9%, Phie = 45.1%, Permeability = 229.6mD and Sw = 31.1%, with grainstone as dominant lithology. The good flow units have AI value 3600 gr/cc*m/s - 4300 gr/cc*m/s and have lateral distribution relatively

northwest - southeast. Going to the crest of structure, the thickness of good flow unit will be thinner because it is truncated by the fault.