

Pengaruh sistem pengendapan fluvial terhadap keterdapatannya hidrokarbon pada formasi Toolachee lapangan Meranji cekungan Cooper Australia = Impact of fluvial system on hydrocarbon entrapment in Toolachee FM Meranji field Cooper basin Australia

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Abstrak

[ABSTRAK

Formasi Toolachee memiliki penyebaran yang sangat luas di Cekungan Cooper. Padahal ketebalan Formasi Toolachee tidaklah begitu tebal dengan rata-rata ketebalan berkisar hingga 300 m. Proses sedimentasi Fm. Toolachee secara regional berupa fluvial (meandering) dengan urutan batuan berupa batupasir, batulempung, batulanau, dan batubara. Batupasir Fm. Toolachee memiliki porositas yang sedang hingga bagus, sehingga dapat bertindak sebagai reservoir yang terbukti mengalirkan gas pada Sumur Meranji-1. Dengan asumsi bahwa penyebaran Fm. Toolachee luas dan terendapkan di semua daerah penelitian, seharusnya ditemukan juga kandungan hidrokarbon pada dua sumur lainnya, yaitu Cooba-1 dan Pelican-5. Kenyataannya, Cooba-1 dan Pelican-5 tidak ditemukan kehadiran hidrokarbon, sekalipun Fm. Toolachee masih terbentuk disana. Hipotesis yang diangkat adalah bahwa ada kontrol stratigrafi yang berpengaruh terhadap akumulasi hidrokarbon pada Fm. Toolachee. Dari hasil analisis sumur dan seismik yang dibantu dengan atribut seismik dan inversi seismik ditemukan adanya perubahan fasies pada zona reservoir di Meranji-1. Zona reservoir terlihat tidak memiliki kemenerusan antara Meranji-1, Cooba-1 dan Pelican-5. Penelitian ini menghasilkan penyebaran fasies secara lateral dan vertikal pada Fm. Toolachee. Oleh karena itu, sumur-sumur selanjutnya diharapkan mengikuti pola penyebaran fluvial dari batupasir zona target.

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ABSTRACT

Toolachee Fm has widespread deposition which is formed widely in Cooper Basin. Although, Toolachee Fm is thin bed formation with thickness averaging 300-400m only. Sedimentation process in Toolachee Fm is controlled by fluvial system which is formed in meandering depositional environment with lithology consists of sandstone, shale, siltstone, and coal. Sandstone of Toolachee Fm has moderate to good porosity, therefore it can act as reservoir which is proven by flowing gas in Meranji-1 well. Based on assumption of widespread depositional of Toolachee Fm, hydrocarbon accumulation shall be found in two wells, Cooba-1 and Pelican-5. In fact, Cooba-1 and Pelican-5 do not encounter significant hydrocarbon in Toolachee Fm. Hypothesis were made that stratigraphy has an important influence of hydrocarbon accumulation in Toolachee Fm. Study result,

from integrated study well and seismic interpretation which is supported by seismic stratigraphy, attribute seismic and seismic inversion, show facies change in Toolachee resulting truncated sand body. This study produces a comprehensive facies distribution both laterally and vertically. Therefore, next well should be drilled along channel geometry, Toolachee Fm has widespread deposition which is formed widely in Cooper Basin. Although, Toolachee Fm is thin bed formation with thickness averaging 300-400m only. Sedimentation process in Toolachee Fm is controlled by fluvial system which is formed in meandering depositional environment with lithology consists of sandstone, shale, siltstone, and coal. Sandstone of Toolachee Fm has moderate to good porosity, therefore it can act as reservoir which is proven by flowing gas in Meranji-1 well. Based on assumption of widespread depositional of Toolachee Fm, hydrocarbon accumulation shall be found in two wells, Cooba-1 and Pelican-5. In fact, Cooba-1 and Pelican-5 do not encounter significant hydrocarbon in Toolachee Fm. Hypothesis were made that stratigraphy has an important influence of hydrocarbon accumulation in Toolachee Fm. Study result, from integrated study well and seismic interpretation which is supported by seismic stratigraphy, attribute seismic and seismic inversion, show facies change in Toolachee resulting truncated sand body. This study produces a comprehensive facies distribution both laterally and vertically. Therefore, next well should be drilled along channel geometry]