

ABSTRAK

Formasi Plover, Formasi Frigate dan Formasi Echuca Shoals Cekungan Bonaparte bagian utara terbukti menghasilkan hidrokarbon. Objek penelitian pada Formasi Plover, Formasi Frigate dan Formasi Echuca Shoals. Formasi Plover diketahui memiliki shale rata-rata 32%, Formasi Frigate 65% dan Formasi Echuca Shoals 81%. Di Formasi Plover, Formasi Frigate dan Formasi Echuca Shoals dilakukan analisis batuan induk, analisis pemodelan_1D dan penentuan potensi minyak dan gas bumi di batuan induk menggunakan model *Quantitative (Volumetric)* dari Moshier dan Waples, 1985. Kajian ini menggunakan data primer dan data sekunder dari tujuh titik bor eksploitasi, data seismik 14 line, data kajian pustaka peneliti terdahulu dan geologi regional. Analisis batuan induk meliputi: kuantitas, kuantitas dan tingkat kematangan batuan induk. Formasi Plover, Formasi Frigate dan Formasi Echuca Shoals memiliki batuan induk yang berpotensi dan dilanjutkan dengan analisis pemodelan kematangan_1D pada ketujuh titik bor yang telah dilakukan untuk mengetahui umur pembentukan minyak dan gas bumi di batuan induk. Batuan induk Formasi Plover, Frigate dan Echuca Shoals pada saat ini berada dalam jendela kematangan minyak dan gas mulai dari matang awal hingga lewat matang. Berdasarkan penentuan potensi minyak dan gas bumi pada batuan induk Formasi Plover, Frigate dan Echuca Shoals dengan model *Quantitative (Volumetric)* dari Moshier and Waples, 1985 yaitu: Total volume oil Formasi Plover yang terperangkap sebesar 11.125,4 milion barels oil. Total volume gas yang terperangkap sebesar 11.257 bilion cubic feet gas. Total volume oil Formasi Frigate yang terperangkap 6.993 milion barels oil. Total volume gas yang terperangkap sebesar 4.486 bilion cubic feet gas. Total volume oil Formasi Echuca Shoal yang terperangkap 7.758 milion barels oils. Total volume gas yang terperangkap sebesar 4.976 bilion cubic feet gas.

Kata kunci: analisis batuan induk, pemodelan kematangan_1D dan potensi minyak dan gas bumi di batuan induk.

ABSTRAC

The Plover Formation, Frigate Formation and Echuca Shoals Formation of the northern Bonaparte Basin are proven to produce hydrocarbons. The object of research is the Plover Formation, Frigate Formation and Echuca Shoals Formation. The Plover Formation is known to have an average shale of 32%, the Frigate Formation 65% and the Echuca Shoals Formation 81%. In the Plover Formation, Frigate Formation and Echuca Shoals Formation, source rock analysis, 1D_modeling analysis and determination of oil and gas potential in the source rock were carried out using the Quantitative (Volumetric) model from Moshier and Waples, 1985. This study used primary data and secondary data from seven exploitation drill points, 14 line seismic data, literature review data from previous researchers and regional geology. The source rock analysis includes: quantity, quantity and maturity level of the source rock. The Plover Formation, Frigate Formation and Echuca Shoals Formation have potential source rocks and continued with maturity_1D modeling analysis at the seven drill points that have been carried out to determine the age of oil and gas formation in the source rock. The source rocks of the Plover, Frigate and Echuca Shoals Formation are currently in the oil and gas maturity window ranging from early to late ripening. Based on the determination of oil and gas potential in the source rock of the Plover Formation, Frigate and Echuca Shoals with the Quantitative (Volumetric) model from Moshier and Waples, 1985, namely: The total volume of trapped oil of the Plover Formation is 11,125.4 billion barrels of oil. The total volume of trapped gas is 11,257 billion cubic feet of gas. The total volume of trapped oil for the Frigate Formation is 6,993 billion barrels of oil. The total volume of trapped gas is 4,486 billion cubic feet of gas. The total volume of trapped Echuca Shoal Formation oil is 7,758 billion barrels of oil. The total volume of trapped gas is 4,976 billion cubic feet of gas.

Keywords: source rock analysis, maturity_1D modeling and oil and gas potential in source rock.