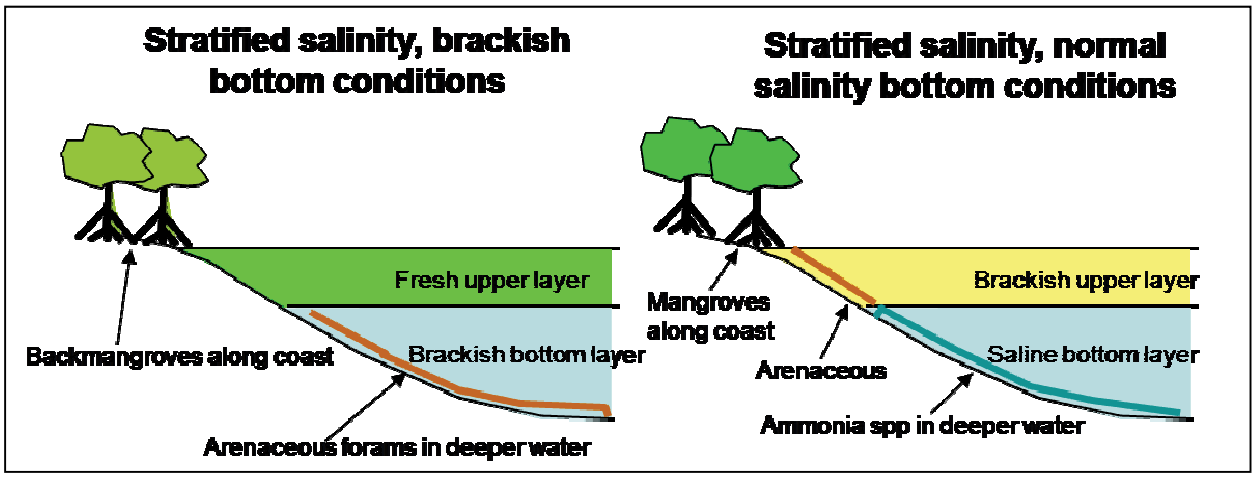

Figure 3: Two models with different stratified salinity

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POSTER 8

DEVELOPMENT OF NEW CORRELATIONS FOR PREDICTING BUBBLE POINT PRESSURE AND BUBBLE POINT OIL FORMATION VOLUME FACTOR OF MALAYSIAN CRUDE OILS

B. Moradi[1], S.J. Hosseini[1], Birol M.R. Demiral[1] & M.Amani[2]

[1]EOR Center, Universiti Teknologi PETRONAS, Bandar Seri Iskandar, 31750,Tronoh,Perak Malaysia

[2]Petroleum Engineering Department, Texas A&M University at Qatar, 23874, Doha, Qatar

ABSTRACT

One of the most crucial parts of the input data in petroleum engineering calculations is fluid properties data. From the exploration stage, these properties should be determined either by laboratory experiments or using some empirical correlations.

Although, no one can underestimate the accuracy of the experimental results but these results are highly tied to the quality of the sample taken from the reservoir fluid and also, the condition of the reservoir can affect the quality of the sample.

In addition, sometimes laboratory data is not available or maybe for double checking and comparison purposes, we need another source of dataset rather than experimental data. In this situation, empirical correlations can be a relatively reliable alternative. These correlations can predict physical properties of reservoir fluid under a wide range of pressure and temperature[1].

Among the properties of the reservoir fluids, Bubble point pressure (P_b) and oil formation volume factor (B_o) at P_b ,are essential in reservoir engineering calculations, since in improved oil recovery(IOR), if the reservoir pressure reaches to the P_b , the gas will start to evolve in the reservoir and due to the gas bubbles, the oil relative permeability will drastically decrease. Also, estimating B_o at P_b is quite challenging because this point is a inflection point in the curve of B_o vs. pressure and B_o is in its maximum value at P_b .So, it is very important to correctly predict it at P_b[2] .

In this study, the new correlations has been developed to estimate bubble point pressure and oil formation volume factor of Malaysian crude oils.

This correlation is applicable for crude oils of ranging between 26 to 54 ºAPI. The comparison of this new correlation with other published ones shows that it is much more accurate than the other ones.

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POSTER 9

SEDIMENTOLOGY OF CARBONATE BUILDUP IN CENTRAL LUCONIA, SARAWAK, MALAYSIA

Noor Alyani Binti Ishak[1], Zulfiqar Ali[1], Richard Bray[1] & Eswaran Padmanabhan[2]

[1] PETRONAS Carigali Sdn Bhd, Level 11, Tower 2, Petronas Twin Towers, KLCC, 50088 Kuala Lumpur Malaysia

[2]Universiti Teknologi Petronas, Bandar Seri Iskandar, 31750 Tronoh, Perak.

ABSTRACT

Carbonate rocks are usually complex and difficult to understand, because of the heterogeneity of fabric and depositional setup. Even though the carbonate platforms in the Luconia province contain numerous gas reservoirs; little is published about their geological evolution, lithofacies, depofacies, depositional environment and stratigraphy (Gartner, 2000; Epting, 1980, 1989; Vahrenkamp, 1996, 1998). Alpha and Beta field that are located in Luconia Province are appraisals cum development fields that need a geological study as an input data for the 3D static model. Hence, Alpha and Beta field were proposed by PETRONAS Carigali Sdn Bhd for detailed sedimentological and stratigraphic study based on conventional cores and wireline data.

Three major stratigraphic intervals were defined from the core to well log correlation that was done on the conventional core taken from Alpha and Beta field, which are Lower Transgressive Unit, Middle Aggradational Unit and Upper Drowning Unit. Four lithofacies were identified in well Alpha which are coral floatstone, skeletal packestone, skeletal foraminiferal rudstone and argillaceous limestone; while five main lithofacies were determined in well Beta, which are coral floatstone, skeletal packestone, skeletal rhodolith packestone, skeletal grainstone and skeletal foraminiferal packestone.

From the seismic profile, Alpha and Beta fusiform-shaped isolated carbonate platform shows similar backstepping stratal geometries pattern to other isolated carbonate platform in Central Luconia Province which developed on fault bounded structural highs. The main factor controlling the distribution of stratal geometries within the carbonate across the Central Luconia Province was the sea-level fluctuation and local and regional variations in subsidence.