Paper 18

The integration of 3-D seismic and geological computer mapping in defining further development opportunities in a mature field

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The Baronia field is located some 40 km offshore Sarawak. Discovered in 1967 and producing since 1972, it is one of the largest fields in the Baram Delta Province. To date, it has a total of 47 wells drilled, of which 40 wells have been completed to drain some 10 major reservoirs.

The field comprises a series of multiple stacked deltaic to shallow marine sandstone reservoirs which contain oil and gas. The oil accumulations are found with both significant oil columns and thin oil rims with drive mechanisms consisting of a combination of gas cap expansion, water drive and natural depletion.

In 1991/92, a 3-D seismic survey was acquired with the objectives of providing a detailed structural interpretation for volumetric estimates as well as the prediction of fluid distribution and movement within the major producing reservoirs to support an infill drilling campaign.

This paper focuses on the use of state of the art interpretation techniques – an integrated geophysical and geological approach was applied in seismic interpretation, depth conversion, seismic amplitude studies and computer reservoir mapping in order to achieve these objectives. This has enabled the identification and optimisation of additional drainage locations which include horizontal wells as either oil-rim producers or downdip water injectors.

Further use of these results is being made in providing input to a full field reservoir simulation on the major reservoirs in the field.

This paper demonstrates the value of an integrated geophysical/geological approach in identifying further development opportunities in a mature field.

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