SEAPEX Exploration Conference 2001
Orchard Hotel, Singapore
4th – 6th April 2001

Abstract No : 3C8/2001
Author(s) : Chris B Newton
Company Affiliation : Fletcher Challenge Energy Brunei

THE DEEPWATER TRACK RECORD BENCHMARKING GLOBAL EXPLORATION PERFORMANCE AND IMPLICATION FOR THE BRUNEI DEEPWATER

The petroleum industry has long awaited the opening of the Brunei deepwater and expectations of the area's prospectivity are high. While the presence of large toe thrust anticlines was recognised, an almost total lack of accessible data on the area prior the release of 2D seismic data in late 2000 made quantifying this potential difficult. Industry expectations as to the potential of the Brunei deepwater are based on the exploration track record of potentially analogous deepwater provinces around the world which have over the last decade yielded billions of barrels of oil and gas equivalent. This presentation briefly reviews the global deepwater business before moving on to examine the deepwater exploration track record and determine the basis for the industry interest in the Brunei deepwater.

More than 50 billion boe have been found in five major deepwater provinces of which 80% is oil. These provinces are the Gulf of Mexico, Brazil, Aptian Salt Basin (Angola), Niger Delta and the North Sea / West of Shetland. Southeast Asian deepwater exploration activity has lagged behind the major provinces, yet some three billion boe have been found to date although this is predominantly gas.

Sandstone turbidites are the principal hydrocarbon reservoirs in global deepwater plays and the discovery of giant turbidite fields is yet to peak whereas the discovery of non-turbidite giants peaked decades ago. The principal reasons for this are the technological advances that allowed drilling and development to progress into ever deeper waters and improvements in seismic technology. The primary habitat of giant turbidite fields is Tertiary deltas in passive margin settings with significant reserves in shallow water facies charged from the same source rocks as the turbidites.

Brunei's Baram delta deepwater fits this description and a more detailed review of the global deepwater provinces has been undertaken to determine the likely analogues for Brunei as well as their key characteristics such as gas / oil mix, field size distributions and the deepwater contribution to the total reserves base. Creaming curves and success rates for various deepwater provinces are presented and examined to determine how the Baram delta creaming curve may evolve as deepwater exploration progresses.

The presentation suggests that the high profile deepwater oil provinces such as Angola, Brazil and the Gulf of Mexico differ in some key geological elements from the Brunei Deepwater. Instead the Niger Delta and Mahakam Delta (Kutei basin) are more likely analogues, with significant implications for the gas / oil mix.

Field size distributions in deepwater provinces are remarkably similar and this, together with insights from other deepwater trends and characteristics, has enabled a

prediction of the hydrocarbon potential of the Brunei deepwater and an assessment of the key technical issues facing operators.