

Integrated Structural and Geomechanical Studies: South East Gobe-11 Discovery and Development

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The Oil Search operated South East Gobe Oilfield lies in the eastern portion of the Papuan Fold Belt, Papua New Guinea. Since achieving first oil in 1998, oil production steadily declined from the initial peak rate of 18,475 BOPD. As a consequence of the overall reduced performance of the field, shut-in was expected to occur by 2011.

A prospectivity review in 2004 generated several near-field opportunities, most offering only incremental production increases. The most poorly understood area of the structure was in the vicinity of the Chevron Saunders-1 well drilled in 2002. This well experienced significant sand control problems limiting production to non-commercial rates. Previous interpretations of the Saunders-1 area inferred a small structural culmination with complex faulting and little commercial upside. A review of the original well data revealed that the key structural interpretation rested on a single palynology date in a nearby well. This key data point and the subsequent mapping on which it was based were found to be incorrect. A new interpretation extended the field a further three kilometers along strike.

A detailed geological model was constructed by integrating dipmeter and borehole image analyses with new structural and seismic interpretations. During drilling operations, the pre-drill target was updated in near real-time to enable critical geosteering decisions. The resulting South East Gobe-11 well encountered a 69m oil column with in-place estimates of 50MMBO. Post-drilling interpretation incorporated extensive use of geomechanical data to aid fault modeling for upcoming development well targets.