

Oil discovery in the Sepat Field

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Sepat Field is located about 200 km off Kuala Terengganu, offshore Peninsular Malaysia. The field was discovered in 1970 via Sepat-1 well. The crestally located well penetrated some 1,800 m of sediments and recorded gas with high level of CO₂ contamination (60-65%) in the B100, D34 and D36 Reservoirs. Subsequently, the field was appraised in 1998 via Sepat-2 well, located some 100–200 m downdip of Sepat-1. Sepat-2 reached a TD of 1,781 m and affirmed the gas extension of the shallower reservoirs but recorded water for the deeper sands (D60 and below). Both wells were TD'ed just at the onset of high overpressures.

PMU are currently undertaking drilling into HPHT (High Pressure, High Temperature) zones in the Malay Basin to open up new plays. Analysis of the hydrocarbon distribution in the nearby Inas Field, 20 km to the south indicated the presence of oil rims in D60 and E30 Reservoirs. In view of this and the Sepat-2 results, the exploration/appraisal Sepat Deep-1 well was positioned accordingly to test for the oil potential in the appraisal mode, and simultaneously meeting its exploration objectives in the HPHT zones.

Sepat Deep-1 was spudded on 11th September, 2003. It confirmed the gas deposits of reservoirs B100, D34 and D36. Reservoir B100 was production tested and the CO₂ contamination was recorded at 65%. Similarly, the deeper reservoirs encountered gas, but from Reservoir E6 onwards the CO₂ content from MDT samples remains at below 5%. Oil was intercepted in Reservoirs D60, D65 and possibly E30. The oil in D60 is waxy and has an API of 37 deg. This reservoir was production tested and flowed 2,300 bpd. However, D65 yielded non-waxy 40 deg. API oil. Sepat Deep-1 was TD'ed at 2,480 m in Lower F reservoirs, still in HPHT conditions.

The current drilling results indicated the presence of significant oil reserves in a 'contaminated gas' field in the Malay Basin and the CO₂ content becomes significantly low with depth. The excess CO₂ may aid in enhanced oil recovery in the same field and the clean gas may further enhance the production of the contaminated gas through blending. These findings may open new exploration concepts in the Central Malay Basin with respect for deep seated reservoir and low CO₂ gas contamination.