

Unlocking the CBM Potential in Sanga Sanga

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Abstract

Vico CBM has been actively exploring and appraising the coal bed methane potential in Sanga Sanga since the PCS award in November 2009. The PCS area is located onshore of the Mahakam delta, in East Kalimantan, overlaying the Sanga Sanga Conventional PSC which has more than 40 years of production history from 1000+ wells (Figure 1).

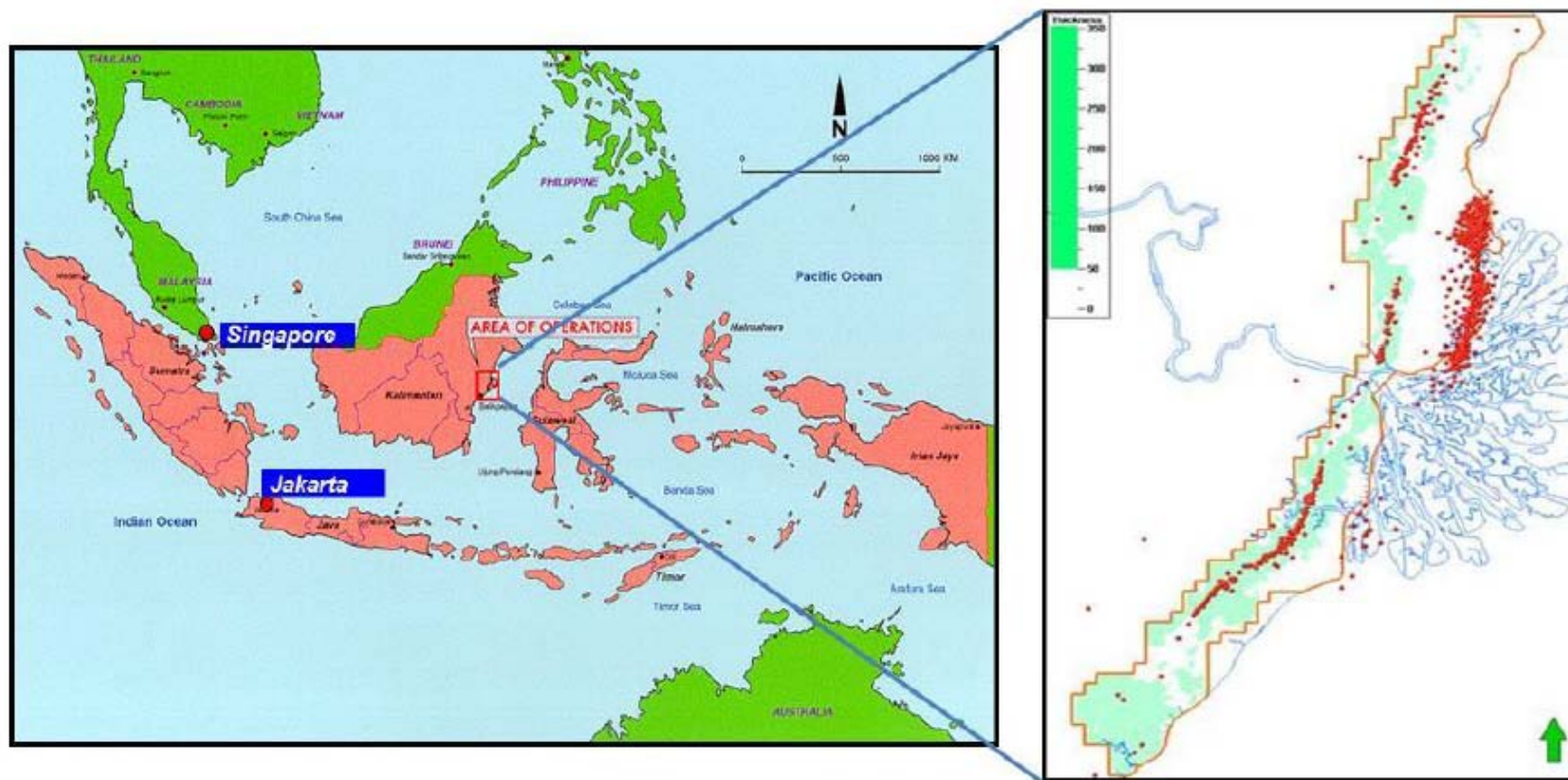


Figure 1: Map showing the area of operations and existing well locations

The coal-bearing interval in Sanga Sanga is part of the Balikpapan and Pulu Balang formation, dominated by deltaic sediment from middle to late Miocene. Total coal thickness in the area is up to 300ft with individual thickness varies from <3ft up to 35ft. As coal presence had already been largely mapped using the existing well data and seismic, the exploration and appraisal programs were focused to gather data on the gas quantity, gas quality and coal producibility. This talk will be focused on the gas quantity and quality aspect of CBM in Sanga Sanga.

In 2010, the first wells were completed, by converting old oil and gas wells into CBM wells. These early trials confirmed that gas production was possible in Sanga Sanga. Following this result, exploration and appraisal programs were lay out to further assess this CBM potential.

To date more than 1000ft of cores contains 640 ft of coal have been acquired from 30 wells covering the potential areas in Sanga Sanga. Almost 50% of the core holes were gathered in conjunction with the Sanga Sanga conventional drilling programs. This integration has helped the operator to achieve their coring targets in an efficient way.

Several highlights of the core analysis performed can be summarized as below:

- Coal content is sufficient, supported by the existing wells in the area
- Coal rank ranges from sub-bituminous to high volatile bituminous A
- Total gas content from desorption analyses show adequate gas content, with hydrocarbon gas content ranges from 40 – 350 scf/ton DAF
- Rich gas composition with C₂+ content up to 30%
- Adsorption isotherm analyses show the coal in the area is mostly fully saturated. This observation is supported by the early gas production from the CBM wells

Some cautions are also drawn from this core data acquisition as highlighted below:

- High CO₂ content observed in some local interval and area. This high CO₂ should be taken into consideration, as it will affect not only the gas heating value but also the well, artificial lift and surface facility design.
- Vitrinite reflectance suppression is observed, in-line with some previous studies regarding the vitrinite suppression in Kutei Basin. Calorific value has been found to be a more consistent coal rank indicator.
- Coal distribution is challenging. Several coals are interbedded with good quality sands. Completion technique should address this factor to avoid breaching into these high quality sands that could complicate the dewatering process.

Results of this core analysis have been used to update the CBM resources estimation in Sanga Sanga, which is one of the inputs for the company's development planning.