



ORAL PRESENTATION

Exploring the DHI led Bampo sandstone gas play in the Andaman II block, Offshore Aceh, Indonesia

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The Andaman II PSC was signed by Premier Oil (now Harbour Energy), as Operator (40% interest) in April 2018, with Partners Kris Energy and Mubadala Energy, (30% each). The block was initially a Joint Study Area (JSA) in 2011 with Premier Oil and Serica (then Kris Energy) as operator; Premier Oil assumed Operatorship in 2014 when Kris Energy sold half of its stake to Mubadala Energy. In 2020 Kris sold its 30% interest to BP. Andaman II is a Gross Split PSC with a 30-year term, commencing with an exploration term of up to 10 years. The block is located 120km north of Lhokseumawe, Aceh Province, in the northern part of Sumatra Island. The northern boundary of the block is defined by the Indonesia/Thailand maritime boundary. The water depth varies from 900m to 1400m. A multi-client 3D seismic survey was acquired by PGS over the western part of the block in 2019 with processing to PSDM completed in December 2020. 2D seismic has been acquired by previous operators in the area: Mobil in the 1980's, Inpex in the early 1990's and two multi-client 2D surveys cover the area: the NS06 survey by PGS in 2006, and the MCG North Sumatra survey in 2012. One well had been drilled on the block: Bayu Laut Dalam-1 (BLD-1) by Inpex in 1994. The well was a dry hole with minor shows. Across the border in Thailand key offset wells are W9-E1 and W9-B1, a gas discovery in Bampo sands, both drilled by Esso in the 1970's. A drilling campaign was undertaken by Unocal, also in Thailand, in the 1990's discovering gas in Bampo equivalent carbonates at Kantang-1. More recent (post 2000) seismic has identified DHI/amplitude anomalies and flatspots, which have been increasingly enhanced with later vintages of seismic. In May 2022 the Timpan-1 well, targeting one such DHI flatspot on the most recent North Sumatra Multi-Client 3D dataset, was drilled by the Andaman II JV, discovering gas in the Bampo Fm clastics.

The geology of the Andaman II block is characterised by a north-south trending graben system, similar in age to many other Sundaland basins, with rift initiation in the late Eocene and active extension through the Oligocene. The basin is connected to the North Sumatra basin to the south, but also forms the southern part of the Mergui basin to the north in Thailand. The area has experienced numerous (at least six) tectonic episodes but can be more simply subdivided in to syn-rift, post-rift and passive margin megasequences. The syn-rift has not been fully tested by any offshore wells. Seismic data indicates the presence of a high reflectivity package in the lower syn-rift, believed to be coal/carbonaceous rich sediments. This is overlain by fluviodeltaic sands of the Parapat Fm the top of which marks the base of the post-rift megasequence. The onset of post-rift thermal subsidence in the upper Oligocene was accompanied by the deposition of the Bampo Fm, which is confirmed as a deep water deposit from biostratigraphy in surrounding wells, including Timpan-1. The Lower Bampo is sand prone and provides the reservoir at Timpan and across the block; the Upper Bampo is shale dominated and provides the regional top seal to the underlying clastics. The overlying Belumai, Baong and Keutapang Fms comprise the remaining part of the post-rift megasequence. This is conformably overlain by the Sereula Fm, which has been designated as a passive margin megasequence. The post-rift and passive margin sequences were also deposited in a deep water environment and consist almost entirely of pelagic shales. The Timpan prospect is a faulted 4-way structure that had been identified earlier on the pre-existing 2D seismic and together with some other structures, has become more robust on the recent 3D seismic data.

Timpan-1 was spudded in May 2022 and drilled to a total vertical depth of 13,818 feet subsea, utilizing the West Capella drillship. The well encountered a 390 foot gas column in a very fine-grained deep water sandstone Bampo reservoir. Sands are high net-to-gross with moderate porosity and relatively low permeability (1-2mD). On DST the well flowed at 27 mmscfd of gas and 1,884 bopd of associated 58 degrees API condensate through a 56/64 inch choke. The amount of non-hydrocarbon gas encountered is <1%.

Further E&A drilling on Andaman II is planned for 2023 and 2024 using the West Capella rig. It is hoped that this will identify sufficient resource to move forward with a gas development centred on the Timpan field. In the east of the PSC a 3400sqkm 3D seismic survey was acquired in Q4 2022 and is currently being processed. As a result, it is anticipated that further DHI supported prospects will be matured for drilling in 2025 and beyond.

SPEAKER BIOGRAPHY

Nick Comrie-Smith is Exploration Manager with Harbour Energy based in Jakarta. He has geoscience degrees from Leeds University and Imperial College in the UK and has been working SE Asia basins for the last 25 years with Conoco, Salamander Energy and Premier Oil. Most recently he has given up geology for paper shuffling, email management and meeting attendance.