

Cambodia has the geological potential for petroleum accumulation: onshore natural oil seepages, presence of sedimentary rocks in several basins, geological structures that may trap and hold oil and gas in reservoirs, interpretation of regional geology, similarity of the geology of Cambodia to adjacent areas in Viet Nam and Thailand, where oil and gas is being produced. Cambodia has eight sedimentary basins, divided in 19 blocks onshore and 6 blocks offshore.



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EXPLORATION AND PRODUCTION

Sedimentary Basins



Cambodia has the geological potential for petroleum accumulation. This is evidenced by: onshore natural oil seepages; presence of sedimentary rocks in several basins; geological structures that may trap and hold oil and gas in reservoirs; interpretation of regional geology; similarity of the geology of Cambodia to adjacent areas in Vietnam and Thailand, within which oil and gas has been found and is being produced.

Cambodia has eight sedimentary basins that are divided into six offshore and nineteen onshore blocks in the undisputed territory of Cambodia, and a further four areas (27,000 sq km) in the overlapping claims area with Thailand.

Continued Interest in Development

The CNPA sees the discovery, development, production and processing of oil and gas within Cambodia as a vital step in contributing to the country's sustained economic development.

The CNPA aims at opening new inland frontier acreages for exploration, development and production, as well as for acquisition, processing and interpretation of new 2-D and 3-D seismic data by professionally qualified investors.

Evaluation of the petroleum prospectivity requires detailed geological and geophysical surveys, interpretation of survey data assessment of conditions for petroleum accumulations. The CNPA's primary strategy is to obtain a better understanding the petroleum geology of Cambodia, and, in particular its sedimentary geology

- stratigraphy
- structural geology, and
- tectonic history

Read more

A detailed presentation of the current exploration status by H. E. Ho Vichit, Vice Chairman of the CNPA, at the Cambodia Forum, Phnom Penh, 24 April 2010.

[Petroleum Development in Cambodia \[PDF\]](#)

A presentation by H. E. Ho Vichit, Vice Chairman of CNPA, at the Oil and Gas Asia Investment Congress, Singapore, 3-7 November 2008.

[Sector Outlook \[PDF\]](#)

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


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BLOCK MAPS AND SEISMIC PROFILES

Cambodia's territory is divided into six Offshore Blocks (A to F) and nineteen Onshore Blocks (I to XIX) in the undisputed territory of Cambodia, and a further four areas in the overlapping claims area (OCA) disputing with Thailand.

Cambodia and Thailand signed a Memorandum of Understanding in 2001 in relation to joint management of the petroleum resources located in the OCA. This agreement was put on hold by Thailand in November 2009.

Cambodia is currently determined to amicably resolve the dispute area with the government of Thailand. Meanwhile, Government in Bangkok also wishes to continue negotiations with Cambodia based on the 2001 Memorandum of Understanding which consistent for the both governments interests. **Click on the above slides to see full screen maps.**

Geological Settings

- Main plays are channels and stacked channel sandstones
- Lying adjacent to faults in the Miocene and Oligocene sequence
- Complex faulting and deposition geometry
- Reservoir units discrete and small
- Possible early oil expulsion prior to some trap closures
- Difficult basins for finding accumulations of petroleum

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OFFSHORE

Production Sharing Contracts (PSC)

Block A: awarded to Chevron Overseas Petroleum (Cambodia) Limited (COPCL) and Moeco Cambodia Co., Ltd. on 18 March 2002; it covers 6,278 square kilometers over the Khmer Trough. Chevron acquired 2,500 sq km of 3-D seismic data in 2004.

Chevron Overseas Petroleum (Cambodia) Limited, which is the Operator, has currently 30% interest in Block A. The remaining interest is with Moeco Cambodia Co. Ltd. (30%), KRIS Energy (25%) and GS Caltex (15%).

Chevron announced in 2005 that it had discovered oil in four exploration wells and gas in one well. To date, total 24 wells have been drilled in Block A.

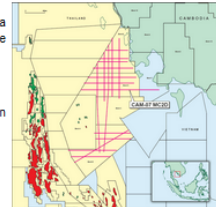
The Contractor declared commercial discovery on 31 August 2010. The Royal Government of Cambodia is expecting to grant a permit of production nearer. ([Read more on the advantage of Block A](#))

- Block B: 6551 sq km awarded to PTT Exploration and Production (33.34%), Singapore Petroleum (33.33%), and Resourceful Petroleum Corporation (33.33%) in August 2005; operator is PTTEPI. 650 sq km of 3-D seismic acquired; one exploration well drilled in Vimean Morodok MahaNorkok-1 (VMM-1) and stopped at 2,930 meters in 2008, as hydrocarbon shows were non recoverable oil. A second exploration well of AT-1 drilled in 2010 with non commercial gas shown in the Miocene. In December 2011, PTTEPI has conducted geophysical site survey for another pre-exploration drilling well of Baphuon Sireymongkol-1 (BPS-1) where drilling operation will take place in the 1stQ of 2012. BPS-1 is proposed as the third commitment well to be drilled by PTTEPI in Block B, offshore Cambodia.
- Block C: awarded to Polytec Petroleum Hong Kong; at the stage of seismic acquisition.
- Block D: 5506 sq km awarded to China Petrotech Holdings Limited (CPHL) in 2006; 3 exploration wells planned for 2013.
- Block E: 5559 sq km awarded to Medco Energi (60%), Kuwait Energy (30%), and JHL Petroleum (10%) on 1 October 2006; operator is Medco Energy. 1760 sq km of 2D-seismic data acquired in 2007 and 363 sq km of 3-D seismic acquired in 2008; drilling of one appraisal well planned.
- Block F: awarded to Chinese National Offshore Oil Corporation (CNOOC) (100%) in 2007, acquisition of seismic data started in 2008. Offshore Block F Cambodia covers 7026.7 square kilometers over the Kampongson Basin where the Company is currently drilling its first exploratory well in December 2011.

PGS Survey Blocks B, C, D and E

PGS Survey Blocks B, C, D and E

Blocks B to F are all in early stages of exploration. Contractors are honoring their obligations according to their exploration programme and seismic surveys being conducted.



Overlapping Claims Area

The Eastern flank of the Pattani Trough in the Gulf of Thailand extends into the Overlapping Claims Area (OCA) with Thailand. The overlapping claims area (OCA) consists of an estimated 26,000 sq km offshore. The Royal Governments of Cambodia and Thailand signed a Memorandum of Understanding (MoU) in 2001, in relation to the joint management of the petroleum resources located in the OCA.

Geology in these disputed marine area shows similarities with the undisputed Pattani Basin offshore Thailand, where significant gas reserves have been discovered

The following areas have been awarded to international companies:

- Area I : Idemitsu & Conoco Phillips
- Area II : Idemitsu & Conoco Phillips
- Area III : Total
- Area IV : Bid Closed

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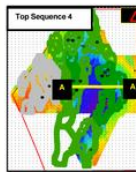
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BLOCK A

Most Advanced Development: Block A



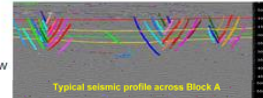
Top Sequence Block A

The most advanced development in Cambodia's oil and gas sector is Block A, in the vicinity of the Apsara Trend of the Gulf of Thailand, where most of the oil discoveries have been found in 2004. Block A is held by Chevron, Moeco, GS Caltex and Kris Energy. Chevron is the operator. A production permit is expected shortly.

Block A is 6,278 sq km primarily over the Khmer Trough. Chevron acquired 2,500 sq. km of 3-D seismic data and drilled 15 wells. Two wells were tested: ~ 400 to 800 BOPD & 0.1 to 0.4 MMSCFD; low GOR of between 250 to 500 SCF/BO. Chevron wells are consistent with the results of the earlier drilling, 180-1,180 BOPD @ 300-1,000 SCF/BO.

In the Block A Khmer Trough area:

- 7 out of 9 prior exploration wells had hydrocarbon shows
- 3 of the Premier and Idemitsu wells tested gas, condensate, and oil flow rates: < 5 MMGCFD & 225 barrels of oil per day, 4 had shows



Typical Seismic Profile Block A

Initial Development

Initial Phase 1a development in the North Apsara area of the Apsara Trend in Block A:

- Single 24-slot platform (Apsara Platform "A")
- Permanently moored Floating Storage & Offloading (FSO) vessel
- Platform maximum capacity 25,000 barrels fluid/day
- Platform off-take through 1-kilometer 8" crude oil pipeline
- Apsara Platform "A" is estimated to reach nearly 10 million barrels (at p50 – 50% level of certainty)

Phased Development

Phase 1a objective is:

- To demonstrate commercial viability
- To test fit-for purpose engineering design, and
- To establish reservoir production performance

Phase 1b will expand the oil field development throughout the Apsara Core Development Area (ACDA) with possibly 3 platforms producing directly to the FSO.

Phase 1c may extend development to Apsara Full Field. Phase 1c will have another 6 Wellhead platforms so that to make 10 Wellhead Platforms in total in the phase 1 alone.

Phases 2 and 3 are planned to expand Block A oil development to other oil bearing trends in Block A -Poulo Wai, Basit, Angkea Sel, Rotanak and Bokor.

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ONSHORE OPERATIONS

Production Sharing Contracts (PSC)

Onshore exploration covers 19 Blocks, of which three Blocks (12, 15 and 17) are currently awarded to international oil companies for exploration and prospect study (prospecting license). New airborne gravity and magnetic survey will start in Block 15 end of 2010.

- Block 12: Medco and JHL Petroleum

- Block 15: PetroVietnam

- Block 17: JOGMEC (technical agreement only)

The Japanese Oil, Gas and Metals National Corporation (JOGMEC) which known as Japan National Oil Corporation (JNOC) has conducted airborne magnetic & gravity survey in 1996. JOGMEC has signed the Basic Agreement with CNPA on May 04, 2010. JOGMEC then sign a Corporate Agreement with its counterpart MOECO in conducting the oil & gas exploration in this Block.

MOECO accordingly carried out exploration program culminating in seismic in acquisition operation in 1stQ of January 2012.