

SPE Thailand Annual E&P Award 2015

Fast Track Development of a Stranded Marginal Oil Field

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Page-1 : Innovation Feature

This is the first time that a Mobile Offshore Production Unit (MOPU) has been deployed in the deeper waters of the Gulf Of Thailand significantly reducing the time and expense of utilizing a conventional wellhead platform for oil field exploitation.

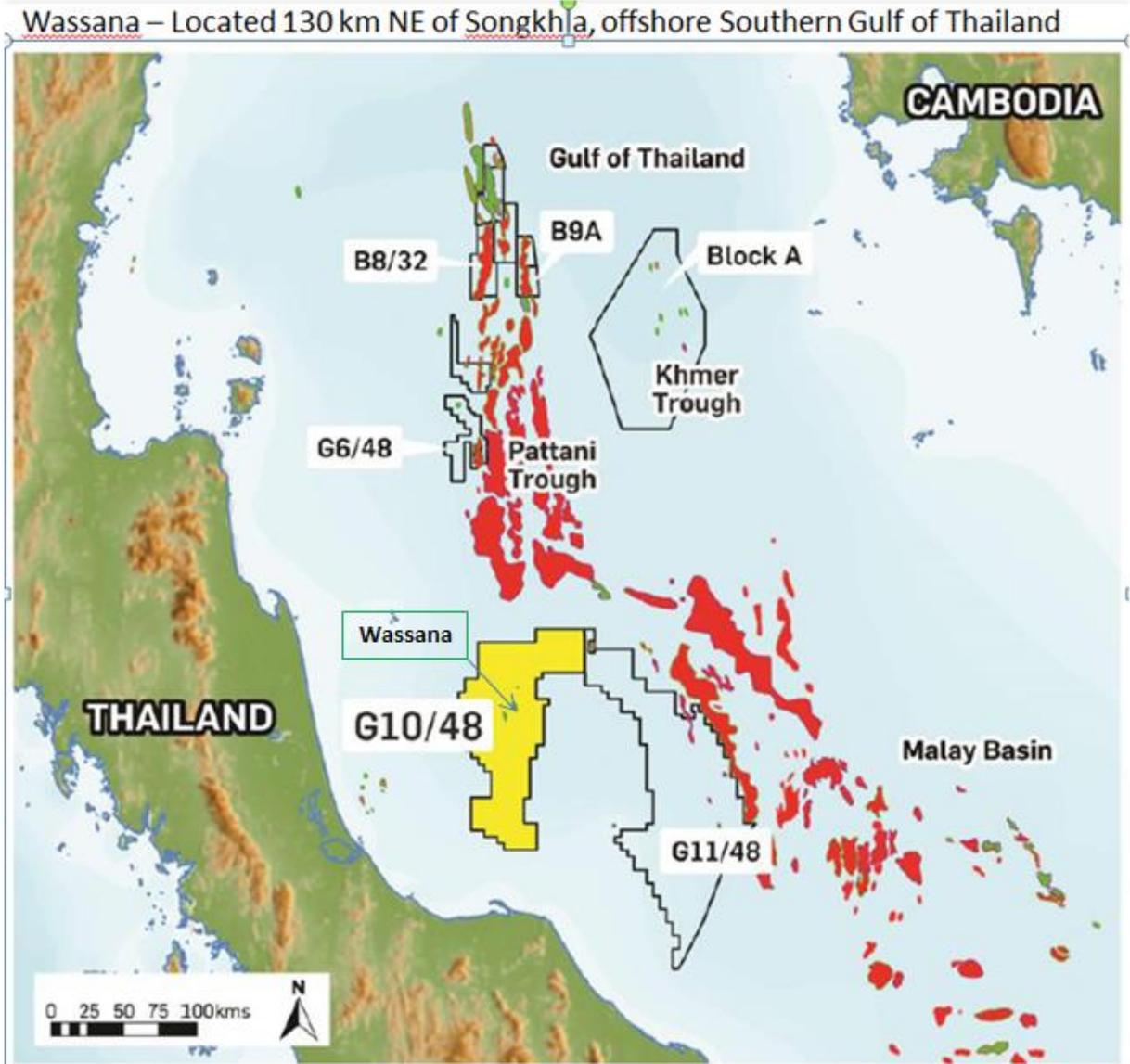
KrisEnergy has been able to achieve first oil production from the Wassana Oil field in block G10/48 in August 2015, 15 months after assuming sole control of the JV in May 2014 and 6 months after being awarded a production area license, without any lost time incident. Maximum production rate of 10,000 bopd will be achieved before the end of 2015.

During the days of high oil prices, the incumbent operator was unable to progress the project through a risk-averse project management system, despite the project passing minimum economic field size (MEFS) for most operators.

Summary of key elements in the project:

1. Rapidly assembled highly integrated, experienced, multinational management and technical teams.
2. Simultaneous EIA, PAA and MOPU modification.
3. Simultaneous operations with drilling and production with no LTA.
4. Flexible development scheme, total of 15 development wells (including 5 horizontal) plus one disposal / injection well.
 - a. Phase one of larger borehole diameter selective multistage slant wells with “Y” blocks and the capability of gaining individual reservoir characterization through production logging and selective zone well testing.
 - b. Second stage of geosteered HZ wells using advanced rotary steerable tools in selected more continuous reservoirs identified in first phase drilling.
 - c. Conventional design water disposal and injection wells
5. Discovery of incremental reserves in the western flank of the field early on in the development drilling meant the development well design and spacing from a limited number of well slots had to be completely reassessed. Additional fluid characterization and flow assurance in the newly discovered deeper Oligocene reservoirs was also

achieved by advanced pump through wireline sampling and Nuclear Magnetic Resonance mapping.



Page-2 : Thailand E&P industry impact and values

The main benefits to KrisEnergy from experience gained in the success of the Wassana project will be the application of this exploitation method to other stranded oil fields in the G10/48 block Mayura (Texaco 1994) and Niramai (Pearl Oil 2009) discoveries which are within the production area.

Currently KrisEnergy and partners are studying the feasibility of G6/48 Rossukon Field for MOPU development concept. This field has just received and production area approval.

This project and techniques are applicable to other smaller satellite discoveries in the Gulf of Thailand lessening the reliance of the Kingdom on imported oil.

Page-3 : Essay, Why this project should win the award?

This project clearly shows the value that smaller operators in the Gulf of Thailand bring to the Kingdom. Unhampered by expensive administrative overheads and project driven management systems, a smaller operator can drive down a lower cost per barrel, making viable, even at today's current lower oil prices, the ignored marginal oil fields of the Gulf of Thailand. At current oil prices and with service providers ready to come to the negotiating table faced with the prospect of shrinking work, MEFS should also be coming down making MOPU based development even more attractive.

Not only the rig time and operation cost can be saved using the MOPU technique, there are also environmental and health and safety benefits associated with this work. In addition, with the cooperative work between geoscientists, field engineers, reservoir engineers, operations geologist, petrophysicist and asset team, this work should lead to a number of technical papers to be presented at future AAPG, SPE and IPTC conferences. For example :-

- "Avoidance of perforating high permeability water-bearing sands sandwiched in between oil bearing zones through multi-DOI MR fluid mapping, a case study from the Wassana Field in the Gulf of Thailand", Chris Platt, ZhanGuo Shi, and Thiti Lerdsuwankij; IPTC, Bangkok November 2016.

Acknowledgements

The authors would like to express their gratitude to KrisEnergy and its partner Palang Sophon, for permission to present this work and for providing field data for this study.