ECONOMIC COMPARISON STUDY BETWEEN RISK SERVICE CONTRACT AND PRODUCTION SHARING CONTRACT IN DEVELOPING MALAYSIAN MARGINAL FIELDS

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ABSTRACT

Since 1976, PETRONAS has gone through series of changes in its fiscal terms. As at 2012, PETRONAS has awarded three new Risk Service Contracts (RSC) for its marginal field development. In Malaysia, PETRONAS classifying marginal field as discovered reserve with recoverable less than 30 MMSTB and do not yield attractive return under current technical and economical conditions. The main objective of this study is to perform an economic study between PETRONAS Small Field Risk Service Contract and the Production Sharing Contract (PSC) 1997 in developing the Malaysian marginal fields. The framework of the new Small Field RSC and the fiscal terms of the PSC 1997 were obtained from literature reviews. The cash flows models were developed by using three hypothetical marginal field data of Field A (30 MMSTB), Field B (30 MMSTB with 0.75 TSCF) and Field C (0.75 TSCF) as the input. The NPV, IRR and payback period of the contractor economics were compared. The sensitivity analysis was also performed on the factors that will affect the NPV and IRR. From the results, it was found that the Small Field RSC gives higher NPV for Fields B and C compared to PSC 1997. For Field C, the NPV is negative under the PSC 1997. The RSC gives higher IRR and shorter payback period than the PSC 1997 in all fields. From the sensitivity analysis, it was found that the RSC is insensitive against the oil and gas price volatilities, but sensitive to change in OPEX, CAPEX and production rates. In conclusions, the new PETRONAS Small Field Risk Service Contract (RSC) provides better economic conditions for the marginal field development due to better tax incentives and capital allowances.

ABSTRAK

Sejak tahun 1976, PETRONAS telah melalui beberapa siri perubahan dalam terma fiskalnya. Sehingga 2012, PETRONAS telah menganugerahkan tiga Kontrak Servis Risiko (RSC) untuk membangunkan medan marginalnya. Di Malaysia, PETRONAS mengklasifikasikan medan marginal sebagai medan yang mempunyai rizab kurang daripada 30 MMSTB dan tidak menghasilkan pulangan yang menarik di bawah keadaan teknikal dan ekonomi semasa. Objektif utama kajian ini adalah untuk melaksanakan satu kajian perbandingan ekonomi di antara Kontrak Servis Risiko Medan Kecil (RSC) dengan Kontrak Perkongsian Pengeluaran (PSC) 1997 PETRONAS dalam membangunkan medan marginal. Rangka model RSC yang baru dan terma fiskal PSC 1997 diperolehi daripada rujukan. Model aliran tunai telah dibina dengan menggunakan data input andaian bagi tiga medan marginal iaitu Medan A (30 MMSTB), Medan B (30 MMSTB dengan 0.75 TSCF) dan Medan C (0.75 TSCF). NPV, IRR dan tempoh bayaran balik bagi setiap ekonomi kontraktor akan dibandingkan. Analisis sensitiviti juga dilakukan terhadap faktor-faktor yang bakal memberi kesan kepada nilai NPV dan IRR. Daripada hasil kajian, didapati bahawa RSC memberikan nilai NPV yang lebih tinggi untuk Medan B dan C berbanding PSC 1997. Untuk Medan C, NPV adalah negatif di bawah PSC 1997. RSC memberikan nilai IRR lebih tinggi dan tempoh bayaran balik yang lebih singkat daripada PSC 1997 untuk semua medan. Daripada analisis sensitiviti, didapati bahawa RSC tidak sensitif terhadap perubahan harga gas dan minyak, tetapi sensitif kepada perubahan dalam OPEX, CAPEX dan kadar pengeluaran. Sebagai kesimpulan, Kontrak Servis Risiko Medan Kecil (RSC) PETRONAS yang baru menyediakan keadaan ekonomi yang lebih baik untuk pembangunan medan marginal, disebabkan pelaksanaan cukai dan elaun modal yang lebih baik.

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LIST OF ABBREVIATIONS

BBL	Barrel
CAPEX	Capital Expenditure
CEO	Chief Executive Officer
EIA	Energy Information Agency
E&P	Exploration and Production
EPP	Entry Point Project
ETP	Economic Transformation Programme
GNI	Growth National Income
IRR	Internal Rate of Return
MMBBL	Million Barrels Oil
MMBTU	Millions British Thermal Unit
MMSCF	Million Standard Cubic Feet
MMSCF/D	Million Standard Cubic Feet Gas per Day
MMSCF/Y	Million Standard Cubic Feet Gas per Year
MMSTB/D	Million Stock Barrel Oil per Day
MMSTB/Y	Millions Stock Tank Barrel Oil per Year
MROR	Minimum Rate of Return
MMSTB	Millions Stock Tank Barrel
MMUSD	Millions United States Dollar
NPV	Net Present Value
PDA	Petroleum Development Act
PETRONAS	Petroliam Nasional Berhad
PITA	Petroleum Income Tax
OPEX	Operating Expenditure
PSC	Production Sharing Contract
R/C	Revenue over Cost

RSC	Risk Service Contract
TSCF	Trillion Standard Cubic Feet
THV	Threshold Volume
USD	United States Dollar

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CHAPTER 1

INTRODUCTION

1.1 Background of Study

PETRONAS acronym to Petroliam Nasional Berhad today, is a Malaysian National Oil Company which was incorporated in 17th August 1974, under the Company Act 1965 (Bank Pembangunan, 2011). By the enactment of the Petroleum Development Act (PDA) in October 1974, PETRONAS was given the exclusive right and ownership of the national hydrocarbon resources, and as a national custodian to manage and conduct the exploration and exploitation of petroleum activities domestically as well as abroad (Fred and Troner, 2007).

Prior to 1975, the foreign oil companies received the concession contract from the state government which in return they will be paying royalty and tax to the state government (Mohd Razalli, 2005). After the introduction of the first PETRONAS Production Sharing Contract (PSC) in 1976, the previous legislation was replaced and also ceased the traditional concession system.

Since 1976, PETRONAS has gone through series of changes in its PSC terms to attract more foreign investment in exploring and producing the hydrocarbon resource in Malaysian region besides increasing the national hydrocarbon reserves (Md. Shah, 2010).

In January 2011, PETRONAS has awarded its first new Risk Service Contract (RSC) to a joint venture between Sapura Kencana Petroleum Berhad and Petrofac Energy Developments Sendirian Berhad for development of its Berantai marginal field (PETRONAS, 2011). In August 2011, PETRONAS has awarded the second Risk Service Contract for its Balai marginal field in Sarawak to a venture between Dialog Group Berhad, ROC Oil Company and PETRONAS Carigali Sendirian Berhad (PEMANDU, 2011c).

In July 2012, the third Risk Service Contract was awarded by PETRONAS to a collaboration between Thailand's Coastal Energy Company and Petra Energy Berhad for development of Kapal Banang Meranti (KBM) marginal field in Peninsular Off Coast, Malaysia (The Edge, 2012).

First time of its kind in Malaysia, the Risk Service Contract is said more encouragable in developing small marginal field as compared to the existing Production Sharing Contract (PSC) arrangement (Arulampalam, 2012).

In Malaysia, PETRONAS classifying the marginal field as discovered reserves with recoverable less than 30 MMSTB and do not yields attractive return under the current economical and technical conditions (CIMB, 2012). However, should the economical and technical conditions change, a marginal field may turn into a commercial hydrocarbon field.

According to PETRONAS Chief Executive Officer (CEO), Datuk Shamsul Azhar Abbas, Malaysia has about 106 marginal fields with approximate reserve around 580 MMBBL of oil and PETRONAS have confirm on its plan to develop 25% of its

marginal fields (Arulampalam, 2012). According to Dr. Peter Chin Kah Fui, development of marginal fields in Malaysia may increase the national oil production to 55,500 barrels per day by the year 2020, while at the same time will contribute almost RM5.5 billion into the Growth National Income (PEMANDU, 2012).

Thus, under the new tax incentives and capital allowances after the Petroleum Income Tax (PITA) Bill Amendment in June 2011 cost recovery for marginal field development is said can be improved. In the long run, it is estimated that by developing 25% of marginal fields in Malaysia will reverse the decline in hydrocarbon domestic recoverable reserve besides contribute to the growth national income (PEMANDU, 2012).

In addition, it was also reported that PETRONAS is planning to offer another ten Risk Service Contracts for its marginal fields in Bunga Pelaga, Rompin, Endau, Lada Hitam, D41 and A21 field in offshore Sarawak, Rusa Timur, Mutiara Hitam and Kuda Terbang in offshore Sabah, and Ophir marginal field in offshore Peninsular Malaysia (CIMB, 2013).

Thus, it is expected in the future that the success in developing the small marginal field under the RSC will not just shifting the paradigm of the oil and gas industry in this region towards the small field development but will also as a beginning step to encourage more exploration of the unconventional area such as in deepwater, high pressure high temperature (HPHT) and high carbon dioxide (CO_2) field under a better petroleum contractual terms.

1.2 Problem Statement

Under the new tax incentives offered after the amendments of the Petroleum Income Tax Bill in 2011, the implementation of the Risk Service Contract in Malaysia for small or marginal field development is viewed as an initiative solution to arrest the long-term declination in local hydrocarbon reserves for the next 10 to 15 years from now besides will giving contribution the Growth National Income (PEMANDU, 2012).

Thus, by performing intensive study on the framework of the new PETRONAS Small Field Risk Service Contract, and by doing the economic comparison study between the PETRONAS Small Field Risk Service Contract and the existing PETRONAS Production Sharing Contract 1997 for (R/C) Index below Threshold Volume (THV below 30MM STB or 0.75 TSCF), it is expected that the concept of the new PETRONAS Risk Service Contract for marginal field development can be understand more deeply especially on how it may assist in turning a small or low recoverable field with uneconomical conditions into a more commercial area.

In addition, by the doing the sensitivity on project economics under the Risk Service Contract and Production Sharing Contract, the factors that will affect the Net Present Value (NPV) and Internal Rate of Return (IRR) of the contractors economic such as variability of changes in oil and gas prices, productions rate, capital expenditure (CAPEX) and operating expenses (OPEX) can be determined.

1.3 Objectives

The objectives of this study are:

1) To analyze the economic implications of implementing the new PETRONAS Small Field Risk Service Contract by using three hypothetical marginal field data of Field A (30 MMSTB), Field B (30 MMSTB with 0.75 TSCF), and Field B (0.75 TSCF gas).

2) To compare the values of NPV, IRR and payback period obtained from the cash flow models developed by using the PETRONAS Small Field Risk Service Contract to the value obtained by using the PETRONAS Production Sharing Contract 1997 for (R/C) Index below Threshold Volume (THV below 30 MMSTB or 0.75 TSCF).

3) To determine the factors that will affect the NPV and IRR of the contractor economics such as variability of changes in oil and gas prices, hydrocarbons production rate, CAPEX and OPEX.

1.4 Scope of Work

The scopes of the work include:

1) Developing the cash flow models for contractor economics, PETRONAS economics and government economics under the new PETRONAS Small Field Risk Service Contract and under the PETRONAS Production Sharing Contract 1997 for (R/C) Index below Threshold Volume (THV below 30 MMSTB or 0.75 TSCF) by using three hypothetical marginal fields data of Field A (30MMSTB oil), Field B (30MMSTB oil with 0.75TSCF gas), and Field B (0.75TSCF gas).

2) Determine the NPV of the contractor economics by using discount rate factor at 15%.

3) Determine the IRR of the contractor economics and comparing it with Minimum Rate of Return (MROR) at 15%.

4) Determine the payback period for contractor economics.

5) Performing sensitivity analysis on the factors that will affect the NPV and IRR values by using variability changes of oil & gas prices, hydrocarbons production rates, CAPEX and OPEX.

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