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THE INSTITUTION OF ENGINEERS, MALAYSIA
Bangunan Ingenieur, Lots 60 & 62, Jalan 52/4, P.O. Box 223,
(Jalan Sultan) 46720 Petaling Jaya, Selangor.
Tel: 03-7968 4001/4002 Fax: 03-7957 7678
E-mail: sec@iem.org.my Homepage: http://www.iem.org.my

Sustaining the Future of Our Oil and Gas

By: Ir. Abd. Razak bin Abu Hurairah
Chairman
Oil, Gas and Mining Technical Division

The Malaysian oil and gas industry is experiencing an increase in exploration and development activities, which can offer engineers opportunities in this high technology industry. The increase in activities is the result of current high crude oil and gas prices that has made previously uneconomical marginal fields more economical to develop, and with a push by Petronas to increase production and to grow the oil and gas reserves.

Just a couple of years back, it was predicted that Malaysia would be a net importer of oil by the end of 2010. This was based on declining oil production from mature fields without the addition of new reserves, and on the projected increase in domestic demand for energy. The current increasing global demand for energy has also driven the development of new oilfields in Malaysia, which are expected to come on-stream from 2007 to 2010. This will sustain the current oil production levels and delay the onset of Malaysia becoming an oil importer.

An example of the new focus in the Malaysian oil and gas industry is the significant development in deepwater with Malaysia's first deepwater project to produce its "first oil" in 2007. This field, to be developed jointly by Murphy Oil and Petronas Carigali, is in 1,320 meter water depth and 120 km distance from shore (current fields are in shallow water typically in the range of 35-150 meter water depth). New technology for the production facility, fluid transfer lines, risers and sub-sea production systems for deepwater operations are being introduced to this project. More deepwater fields have been identified for future development.

One of the papers in this month's Bulletin is on EOR (Enhanced Oil Recovery) which is a process to improve percentage of oil recovery from the reservoir. EOR has grown into significance as the industry faces the challenge to grow its reserves base and to sustain the production over a longer term. Generally, the amount of oil recovered from the reservoir is about 35 to 45%. However, to produce the additional unrecovered oil from the existing reservoirs would be more challenging in terms of technology application and the high cost associated with it.

A paper on Risk-Based Inspection is to introduce the concept of providing a more accurate assessment of the risks, failures and downtime associated with equipment, and how the methods can be used to safely and economically extend turnaround maintenance plans beyond the periods prescribed by a time-based plan. More than 50% of the oil field facilities in Malaysia are over 15 years old, hence it is imperative that we expect reliable performance of the oilfield, equipment and processes.

The need to minimise environmental impact has influenced product development in the industry as illustrated by the paper on Flare Application. Flaring is required during the oil and gas operation to control process conditions by venting gases and/or liquids. Safety and environment protection has always been of the highest priority in all aspects of the oil and gas industry.

We hope that the articles in this special issue will highlight to the engineering community, some opportunities to be explored in the Malaysian oil and gas industry, in various disciplines to find and produce the additional oil and gas from deeper water and from mature fields. The industry is facing a shortage of skilled specialist in all engineering practices due to the highly technical nature of the industry and the current high level of activities in Malaysia and globally.

With high crude oil and gas price, there is an increasing risk to other economic activities and with other energy substitution driven by both government policy changes and market choice. Malaysian energy policy should continue with the direction to diversify the energy resources to Renewables and Hydrogen Technology. ■