



**Growing Deepwater Capability
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Introduction

The oil and gas industry has seen about 30 years of deepwater exploration and around 15 years of deepwater production. In SE Asia there were subsea trees installed in Brunei in the early 1970s, but the region has tended to be a follower of other regions such as North Sea and Gulf of Mexico, and at a relatively slow pace.

I will focus my talk on SE Asia and give the impressions of the region and try to paint a picture based on my experience in both a Supermajor and now in an independent.

1. SE Asia & Deepwater

Over the last 10 years SE Asia has had a relatively small deepwater business in comparison to North Sea, Gulf of Mexico, West Africa and Brazil. There were the occasional subsea tiebacks in Malaysia, Brunei and into production of West Seno mini-TLP and also Belanak FPSO in Natuna B Indonesia and deepwater developments like Laminaria/Coralina, Enfield, and more recently Angel etc in Australia's North West Shelf.

SE Asia Subsea Pipelines

Advancement of regional pipelines into deeper waters has lagged other parts of the world such as Europe, USA, Brazil or West Africa. There was fundamentally a lack of demand for such field developments or such gas transmission lines. This is changing steadily and will accelerate in the future. The Carigali –Hess operated Block A-18 in the Malaysia-Thailand Joint Development Area (JDA) produces gas which is transported through a new 42-inch 300 Km pipeline from JDA to Thailand. This pipeline will be around till 2050+ and will serve as part of the growing SE Asia interconnected gas pipeline network.

SE Asia deepwater developments are normally taking place in remote locations, with little infrastructure support or availability of specialist service vessels in comparison to North Sea or USA Gulf of Mexico. So projects have to overcome significant hurdles in terms of supply logistics and also governmental approvals.

New Development Projects in SE Asia

Woodmac estimates that there will be 190 new developments in SE Asia between end 2008 and 2012, which will result in about 1000,000 boe/d of liquids and 9 Bcf/d gas capacity. Volume involved is 4.5 Bbl BOE of reserves.

Today there is a great deal of energy around deepwater & subsea activities in Malaysia with the Kikeh, Gumusut-Kakap and Malakai developments, in Indonesia with the big , G-G-B (Gendalo, Gehem, and Bangka fields) in Kutei basin, the Abadi gas development, and the giant Natuna D-Alpha development. There is similar energy around South China Seas like in the Liwan Gas development and in India in the Krishna-Godavari Basin, as well as a renewed appetite in Australia for progressing North West Shelf gas to LNG developments in Pluto and other developments.

Exploration & Development is occurring because:

- there is access to the resources
- there is a willingness to embark on developments requiring significant technology development (FLNG, deepwater subsea technology, etc)
- Gas is seen as the fuel of the future and has many attractions
- Opportunities offer reasonable balance of risk and reward for players

The large scale deepwater developments throughout the region will provide a lot of opportunities for those who work in the deepwater & subsea related businesses.

The current period of lower prices will cause everybody to reflect on investment plans as deepwater developments are feasible only if oil prices are around US\$60 or \$70 a barrel. However there are generally long-term gas businesses which will still work at gas prices of around US\$5/MMBTU. As an industry, we have to reset the cost side of the equation following a significant period of cost inflation over the last 5 years.

2. Independent vs Supermajors

Independent companies have in last 5-10 years had significant successes in deepwater developments, and in this region we all talk of Murphy at Kikeh vs Shell at Gumusut-Kakap in terms of large DW developments. In the Gulf of Mexico we can see similar successes between Anadarko's Independence Hub vs Shell's Nakika development, where both are in water depths of over 5000ft. Similarly, there are a number of Woodside deepwater developments to match those by supermajors in Australia.

The independents have built some of the capabilities of the supermajors without the giant anchor of scale – it is easier to grow a production base of 400,000 boe/d by 3-5 % than it is in a 3 million boe/d business. Independents have the ability to move quickly and being entrepreneurial, are able to take risks in pursuing these opportunities.

3. The Hess Story

In the last 5 years, Hess has pursued a strategy of growing through the drill bit, and we see this as the route to maximum value creation.

Today, our global portfolio of assets is comparable to a supermajor's portfolio, and this includes a large accumulation of potential deepwater positions in exploration, development and production that offer the best risk-reward balance for us.

We produce about 400,000 boe/d from 4 broadly equal regions: Europe/Eurasia, Americas, Africa, SE Asia.

We have steadily built up understanding in the deepwater and subsea business since the days of Baldpate (first-ever compliant tower) in the Gulf of Mexico. At the same time, we gained deepwater experience as both non-operator in the UK North Sea (Schehallion, Clair) and operator (Triton, Ivanhoe Rob/Roy). In the Gulf of Mexico in the late 1990s, we were early developers of 15 K psi pressure rated subsea Xmas trees for High Pressure/High Temperature high-rate wells at Conger; and we have extended that experience to the Llano field. We acquired subsea expertise as an operator at the Okume Complex in Equatorial Guinea in West Africa, which came onstream in early 2007 utilizing mini-TLPs and tender rigs, FRAMO sub sea pumps for boosting and a number of innovative technologies.

We are also building our experience in TLPs development and operation, through our interests in the Shenzi Development by BHP in the Gulf of Mexico.

Hess Exploration

Turning to exploration, Hess is highly active in large deepwater exploration opportunities in the SE Asia region, namely in the North West Shelf Australia (WA-390 & WA-404), and in Indonesia (Semai V and South Sesulu). The objective here is to discover large gas accumulations for potential LNG developments; or in the case of the Brunei Block J, large oil accumulations on geological trends. We continue to look at new exploration acreage opportunities in the region.

In the last 5 years, we have built up our capabilities in the region almost from scratch, with new developments at Sinphuhorm, Thailand; Chess JDA Phase II and Pangkah in Indonesia. The exploration planned will extend our capabilities further and build on our existing gas business in the region where we are a significant gas provider in Thailand, Indonesia and Malaysia.

Beyond the region, we are active in deepwater exploration in the Americas - both in the Gulf of Mexico and in Brazil's Santos Basin (BMS-22), and also in Africa - Libya's Area 54, and Ghana's Tano/Three Points Block.

Hess Developments

We are busy with both West Med in Egypt and also the Pony Development in the Gulf of Mexico. At current commodity prices, coupled to the current costs of goods and services most deepwater developments are challenged, and we certainly don't have a monopoly position on that challenge today!

4. What is required for Deepwater/Subsea Success in SE Asia?

The industry needs to take the existing deepwater/subsea systems and technologies gained in the Gulf of Mexico, North Sea and West Africa, and adapt them to the different conditions in SE Asia.

In simple terms the big rules of thumb for deepwater still apply....

- 60 % of most DW developments are well costs, while 40 % are facilities & structure
- So we must seek to reduce the well numbers & individual well costs and maximize the well productivities and ensure our production systems are reliable.

Fewer, Larger, Better Placed Wells : maximising ultimate recovery per well

- Achieve high rate reliable wells through suitable completions, Xmas trees whilst achieving desired ultimate reserves recovery per well
- Accurate & optimal well placement (appraisal, seismic, res modeling)
- Optimal well layouts

Innovation in terms of development concepts – the contracting community has always developed technically excellent solutions to many of the industry's challenges. We need to find cheaper ways to develop and produce from deepwater environments. I realize I'm preaching to the choir here in this room:

- Subsea Boosting, Separation, Compression, Metering
- Subsea multiphase boosting is working
- Subsea pumping still slowly developing (Okume Complex – Framo Pumps)
- Subsea Separation still rare
- Subsea Compression – it's evolving
- Subsea Metering is resolved and considered a standard technology.

Innovation in terms of commercial solutions – how do we make FLNG work?

Subsea solutions have to compete with alternative development concepts, with current rig rates for floaters there is a lot of energy to look at non subsea (or dry tree) solutions.

5. Conclusion

SE Asia is an under-explored and growing market for deepwater and subsea services, but considerations should include the region's PSC environment, remote locations and the relative lack of infrastructure support.

Hess has an exciting future in the region and is building strong capabilities in deepwater. I wish you an exciting conference