

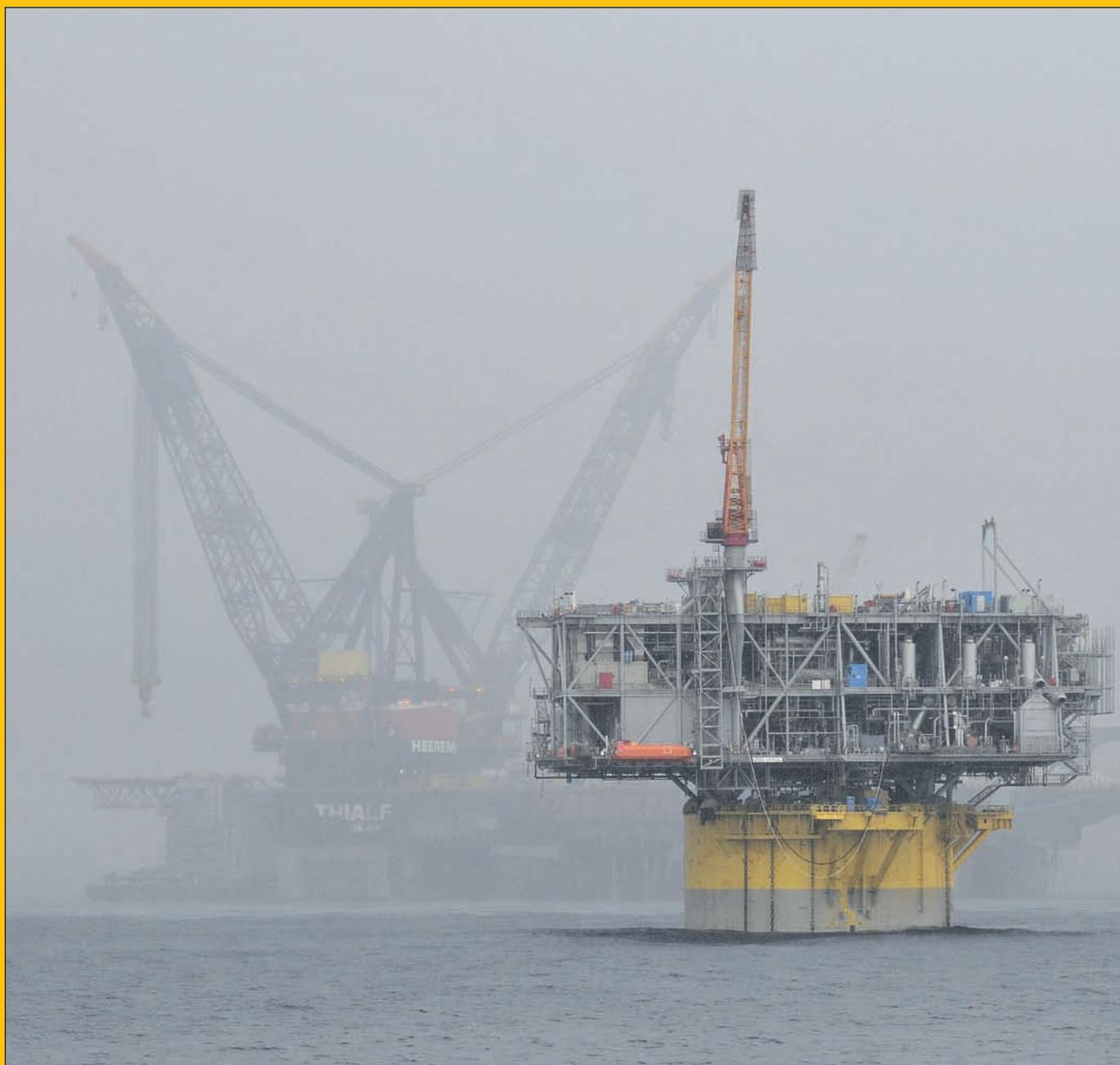
APRIL 2009

OE

OFFSHORE ENGINEER

**Telemedicine eyes
remote offshore
Marathon Brae's
digital mash-up**

**Perdido
steps out**



www.offshore-engineer.com

PLUS: WHY THE MARINE SEISMIC BUSINESS IS 'BETTER PRIMED' TO MEET THE MARKET CHALLENGE AHEAD

Forging a growing presence

The Asia Pacific region has become a key target for business growth among Nordic drillers, contractors and equipment suppliers over the years. **Morten Toennesen**, vice president of Roxar Software Solutions, Asia Pacific, explains why his company was attracted to the region and how it believes it can make a difference there.

Scandinavia and the Asia Pacific upstream oil & gas sector have had a close relationship for many years, as the size of Norwegian pavilions at major oil & gas shows throughout the region these days amply testifies.

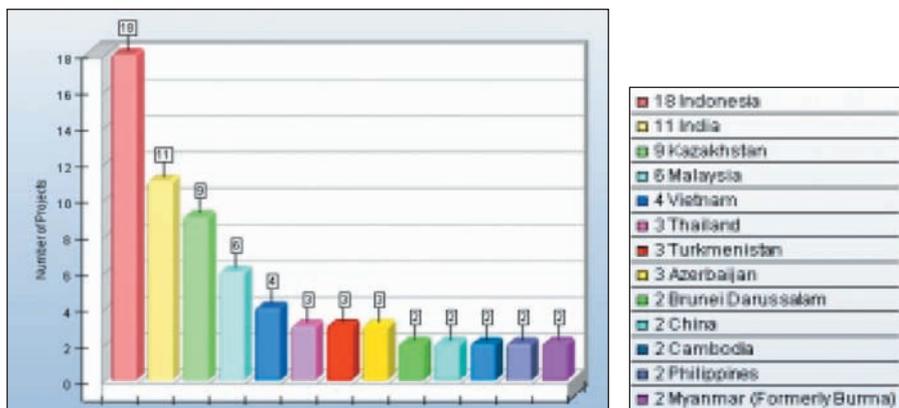
StatoilHydro has significant interests in oil & gas fields in Indonesia and China, and the recent China Oilfield Services acquisition of Norway's Awilco Offshore, creating the world's eighth largest rig fleet, reaffirms the close relationship between the two regions.

Other recent deals include a US\$7.5 million contract for Electromagnetic Geoservices (EMGS) to rank prospects offshore Malaysia.

Why has the Asia Pacific upstream become such a major attraction for Scandinavian offshore players?

Aside from the positive changes in investment policies, which has seen a shift away from red tape and a welcoming of foreign investment and partnerships with national oil companies, the two most important reasons have been, first, the growth in oil & gas opportunities – particularly offshore, and second the need for technological know-how in the cases of the more remote and complex fields.

The growth in offshore opportunities in the Asia Pacific has been well



Asia Pacific upstream offshore projects. SOURCE EICDATASTREAM

documented, with data analysts Infield Systems forecasting that Asia will be second only to Africa in terms of capital offshore expenditure up to 2012. China alone has brought 38 offshore fields online since 2000, with another 39 likely up to 2016.

According to the Energy Industries Council's EICDataStream, which tracks the 6500 most important projects in the global energy industry, Indonesia is currently leading the way in terms of upstream offshore projects with 18, followed by India with 11, Kazakhstan with nine and Malaysia with six (see accompanying chart).

With the increase in opportunities has come an increase in technological challenges too. Many of the new fields are in deepwater with analysts Douglas Westwood predicting that deepwater investment will total US\$14.6 billion in the five-year period 2009-2013. A number of deepwater facilities in harsh environments are currently planned for Indonesia, China and Malaysia.

And the fields are often complex as well. A large proportion of Vietnam's proven oil and gas reserves, for example, are found in naturally fractured reservoir rock, where fracture modelling and

reservoir simulation will be essential.

The key challenge for operators with these projects, often in their infancy, is to optimize production, and deliver greater economic value from the region's oil & gas assets to meet energy demand.

And this must be achieved, while at the same time, managing the deepwater challenges of high capital and high risk. Although this will result in increased demand for offshore equipment, drilling rigs and FPSOs, much of the reduction in risk for operators will be achieved through technological innovation and reducing uncertainty in reservoir management.

By better quantifying uncertainty, areas of the reservoir which require more detailed analysis can be determined and more accurate assessments and predictions of reservoir performance can be generated for the purpose of guiding development and operational decisions. The result will be reduced levels of financial risk.

Whereas traditional approaches to reservoir uncertainty have tended to focus on, first, either a single base case model then taken through to flow simulation or, secondly, on reservoir simulation based on the understanding

About the author



Morten Toennesen is vice president of Roxar Software Solutions, Middle East and the Asia Pacific, and has led Roxar's business development activities in the two regions since 2003. He has been based in Kuala Lumpur, Malaysia, since 2006. Toennesen began his career at Norsk Hydro – now StatoilHydro – where he worked in various positions including senior geologist and subsurface IT manager for the E&P division. He gained an MSc in Petroleum Geoscience in 1988 from Luleå University of Technology in Sweden.

that only the dynamic analysis of the reservoir can fully quantify uncertainties, we believe that reservoir uncertainty requires a completely integrated approach.

By an integrated approach, we mean a seamless modelling workflow where uncertainty is evaluated across the entire reservoir model from the initial development of an accurate structural model through to both a static and dynamic modelling workflow, reservoir simulation and history matching.

Uncertainty management should extend to include all uncertainties and scenarios within the reservoir, such as structure, faults and fractures through to porosity/permeability, water saturation, fluid contacts and flow assurance. It should also cover such crucial activities as building a high-resolution geological model around the wellbore which will be able to link through to the target and trajectory planning process.

In this way, geometrically accurate models can be built up and then created into simulation models, consistent with all known geological information.

In this context, Roxar has been working with some of Asia's leading oil & gas companies to help them better understand and manage their reservoirs,

resulting in increased production and maximum reservoir performance.

One key client, for example, is Petronas Carigali, exploration arm of Malaysian state oil company. It has access to Roxar's reservoir modelling solution, IRAP RMS, its fracture modeling solution, Fracperm, its reservoir simulation solution, Tempest, and its history matching and production forecasting software, EnABLE.

In Vietnam, Roxar has also been working with two joint ventures – Hoan Vu Joint Operating Company and Hoang Long Joint Operating Company – to supply reservoir simulation solutions. With much of Vietnam's production coming from fractured, offshore basement reservoirs, it is essential that accurate and robust models are fully simulated to reduce risk and uncertainty.

Australia is another key market. Here, a leading E&P company operating out of Australia's east coast, is using Roxar's history matching software. In addition, Chinese companies PetroChina, Sinopec and CNOOC are all using our reservoir management software.

The net result for all these Asian companies is reduced uncertainty when it comes to making economic decisions, such as bid valuations, new field

development and operational plans, production estimates or divestments.

However, challenges remain. One such challenge to the Asian oil & gas sector's long-term development is the need to reduce the reliance on foreign expertise and increase local capacity.

In a bid to bolster the number of young people and graduates entering the Asian oil & gas industry, we have been working with local academic institutes to help pass on our expertise. Late in 2008, we signed an agreement with the Hanoi University of Mining & Geology (HUMG) in Vietnam, which will see the establishment of a laboratory at the university with Roxar donating its software for academic use.

Similar academic partnerships have also been initiated with Universitas Padjadjaran (UNPAD) in Bandung, Indonesia, the Vietnam Petroleum Institute, the University of Adelaide in South Australia and Curtin University in Western Australia.

Asia remains today one of the world's most exciting oil & gas markets and a centre for innovation in the sector. As one of many Nordic companies investing in the region, we look forward to seeing continued success in the sector and region over the coming years. **OE**

io

INTEGRATED OPERATIONS

IN OIL AND GAS 2009

Dates: 19th – 20th May 2009
Post-conference workshops: 21st May 2009
Venue: Marcliffe, Aberdeen UK

Transforming E&P through integrating People, Processes & Technology

Yesterday it was about the future of digital oilfields, today it is about enhancing their efficiency

PEOPLE: Effectively incorporate change and knowledge management into your integrated operations for effective collaboration and optimised operations

PROCESSES: Improve decision making and boost operational efficiency by effectively linking each component of your digital oilfield

TECHNOLOGY: Lower your OPEX and improve your long term recovery rates by implementing advanced strategies to digital oilfield technology and data management

Speaking organisations include:

Chevron	Knoco Ltd
PIPC	OLF
BP	PPDM
OMV	Association
Pakistan	SINTEF
Marathon Oil	Sillimanite
BG GROUP	Gurteen
Shell	Knowledge
Repsol	Troika

More discount for 2009! Save up to \$200

T: +44 (0) 207 368 9300 F: +44 (0) 207 368 9301 E: enquire@iqpc.co.uk
Don't forget to quote priority booking code **OEAD** to receive the best possible discounts!

www.integrated-operations.co.uk