One of the largest offshore gas fields in Asia Pacific, deepwater Myanmar is attracting widespread interest in the development of its gas prospects with new discoveries and drill-ready inventories. Together with other countries with deepwater capabilities in the region, Myanmar is on a transformational journey to elevate its expertise and understanding of the challenges of deepwater gas development.

With HSE and operational efficiency as priorities, industry players are now looking at ways to accomplish this goal by digitalising the approach to well planning and construction, and increasing the pace of collaboration and innovation in process, technologies and techniques. By sharing lessons learnt and best practices in the areas of field development planning, subsurface evaluation, drilling programmes, infrastructure, logistics and decommissioning, as well as increasing local authority awareness, this workshop provides a critical platform for technical education exchange and networking to support the fulfilment of the country’s aspiration.

Interactive sessions will cover critical and diverse topics including:

- Metocean conditions and uncertainties
- Logistics and infrastructure
- Permitting, regulation and operating environment
- Contracting procurement and import/export procedures
- Manpower requirements
- Security and emergency response
- Community relations and corporate affairs
- Subsurface
- Deepwater new technologies

Who Should Attend

- Contracting and Procurement Specialists
- Completion Engineers
- Drilling Engineers
- Exploration Engineers
- Geologist and Geoscientists
- Government Regulators and Stakeholders
- Logistics Specialists
- Metocean Scientists
- Project Managers
- Security Specialists
- Supply Base Specialists

GROUP REGISTRATIONS AVAILABLE!
Contact us at spekl@spe.org to arrange your group

www.spe.org/go/18WA06
Workshop Technical Programme

Monday, 26 February 2018

0800 – 0850 Arrival of Delegates, Registration and Welcome Refreshments

0850 – 0900 Safety Announcement by Hotel

0900 – 1000 Session 1: Welcome, Introduction and Keynote Address

Co-Chairpersons: Emry Hisham Yusoff, PETRONAS Carigali Myanmar, Ismail Aslam Abdullah, PETRONAS Carigali Sdn Bhd; Craig Ferguson, TechnipFMC

1000 – 1030 Group Photo / Coffee and Tea Break

1030 – 1230 Session 2: Panel Session – Regulatory and Contracting

Co-Chairpersons: Emry Hisham Yusoff, PETRONAS Carigali Myanmar, Ismail Aslam Abdullah, PETRONAS Carigali Sdn Bhd; Craig Ferguson, TechnipFMC

1230 – 1330 Networking Luncheon

1330 – 1530 Session 3: Logistics and Supply Base

Session Managers: Aung Kyaw Min, Schlumberger Oilfield Services

Myanmar Oil and Gas Enterprise (MOGE) has demarcated a total of 53 offshore blocks of which 10 DW blocks and 10 SW blocks have been awarded PSC contracts during the 2013 offshore licensing round. Prior to this, several legacy blocks were awarded in the past. There are 2 groups of offshore blocks. The first group of blocks are located in Bay of Bengal along the Rakhine coastline in the western part of Myanmar and the second group of blocks are located in the southern part in the Gulf of Matarban and Andaman Sea. Due to the relatively large size of the blocks, SW blocks also have deepwater zones where one of the operators had drilled a discovery well in 2016. Over the next several years, more exploration, appraisal and development drilling in Myanmar offshore are expected. Managing logistics is one of the most crucial aspects of offshore or onshore drilling in Myanmar and logistics cost can go as high as 30% of AFE.

This session will address challenges in terms of logistics and HSE faced by the industry for development drilling and will discuss how can these challenges be overcome and managed by sharing knowledge, experience and technology and collectively working to come up with valuable solutions for the industry.

1530 – 1545 Coffee and Tea Break

1545 - 1645 Session 4: Breakout Session

Session Managers: Michael Hlaing Myint, Schlumberger Oilfield Services; Christopher French, Enhanced Drilling

This session is a platform to discuss ways of improvement for Myanmar, from the perspective of oil companies, service providers and consultants. Topics to be discussed are:

Country-Specific Challenges (Logistics, Procurement, Regulatory, Infrastructure, Service Provider etc.)

The import and export of equipment and materials needed for the oil and gas industry in Myanmar is a long and complicated process, requiring permit applications months in advance. Due to the dynamic nature of oil and gas drilling, changes in drilling/completion programmes requiring different types of equipment or materials pose a challenge to companies and its contractors. A fit-for-purpose offshore supply base is a high priority for operators ahead of any deepwater developments.

- How can oil companies and service companies ensure import/export logistics are more efficient and cost-effective?
- How can MOGE and the host country help to ensure successful step changes in efficiency, while maintaining compliance to Myanmar laws and regulations?

Developing Myanmar Nationals

With potential development of deepwater discoveries, there would be further need for competent oil and gas workers and it is in the interest of Myanmar, MOGE, oil companies and contractors to develop Myanmar nationals to be part of the successful deepwater developments in the future.

- How can Myanmar oil and gas industry recruit, train and develop personnel (of both MOGE and non-MOGE) for current and future projects?

Challenges and Technologies Needed to Bring Deepwater Development into an Economically Viable Investment

With potential development of deepwater discoveries, one area of concern is the cost of development in deepwater environment.

- What has changed in the last few years that would allow the our industry to make deepwater development economically viable?
- What are the challenges and how can we overcome them?
- What are the latest technologies and thinking that would help accelerate deepwater development in Myanmar?

1645 – 1845 Session 5: Innovative Approaches to Optimise Subsurface Operations

Session Managers: Chong Zhou, Petronas Carigali Sdn Bhd

- Subsurface Optimisation - Modelling techniques for deepwater basins
- Subsurface Challenges Identification – Hydrates, shallow water flow/depth

1845 onwards SPE Group Dinner

SPONSORSHIP SUPPORT INFORMATION

Sponsorship support of the event helps offset the cost of producing workshops and allows SPE to keep the attendance price within reach of operation-level individuals, those who benefit most from these technical workshops. Supporters benefit both directly and indirectly by having their names associated with a specific workshop. While SPE prohibits any type of commercialism within the workshop room itself, the Society recognises that supporting companies offer valuable information to attendees outside the technical sessions.

SPONSORSHIP CATEGORIES

Sponsorship categories are offered on a first-come basis. Please contact SPE to enquire and verify the availability of categories. Existing supporters have the opportunity to renew the same level of support for annual workshops.

SPONSORSHIP BENEFITS

In addition to onsite recognition, SPE will recognise sponsors on the SPE website and in all printed materials for the workshop. Based on the category selected, supporting companies also receive logo visibility on promotional workshop items.

FOR MORE INFORMATION

For a detailed list of available sponsorship opportunities, including benefits and pricing, contact Hanna-Rose Abdul Jalil, Assistant Event Manager at hajalil@spe.org
As many operators are now more focused on deepwater oil and gas development, efforts have been taken to increase deepwater drilling technologies research and field testing to make drilling operations safer, more efficient and economically viable. This session will first discuss the HSE Risk Management for a frontier deepwater development project and how some advanced HSE tools can be deployed to de-risk development projects. An overview of the latest drilling rigs and supply vessels technologies and capabilities will be shared, which will provide tremendous insights into optimising deepwater drilling activities. Last but not least, drilling technologies that can help alleviate drilling challenges will also be discussed.

Topics to be discussed:
- HSE Risk Management
- Rig, supply vessel and intervention vessel
- Deepwater development drilling challenges and case studies
- Drilling technology enhancements

### Session 7: Development Concept for Myanmar’s Deepwater Facilities

**Session Managers:** Craig Ferguson, TechnipFMC, Frederic Lan Shun, Sadem

With continued low oil prices, operators and suppliers are under pressure to cut costs by reducing capital investment and operational costs over the life of the field. Reducing margins and process improvements alone cannot reduce capital investment and improve returns in a sustainable way. With a low cost mindset, this session explores various field development scenarios for existing deepwater projects, looking at the influence of decisions taken in the field development phase on overall project economics - as well as current technology and execution trends towards a true “field of the future”.

- Flow assurance and pipeline selection
- Subsea architecture and installation
- Fixed and floating facilities
- Processing and power
- Innovative execution models

### Session 8: Production and Operations Sustainability through Successful Well Interventions and Workover

**Session Managers:** Syazwan A Ghani, PETRONAS Carigali Myanmar; Bharathwaj Kannan, Halliburton; Steve Nas, Olango Consulting Limited

This session covers the challenges of producing and maintaining deepwater wells after the wells have been drilled and completed. With multiple operators vying for deepwater discoveries in recent times, several key decisions ranging from economic sustainability to operational efficiency and HSE need to be strategically planned to align with market outlook for the life of the well. Intervention and workover activities typically occur about five years after the installation of production equipment. In the current oil price scenario and with increasing integrity and well control regulations, innovative intervention and workover operations need to be considered to help reduce costs. This session will focus on:

- Challenges in a relatively small subsea market in Asia Pacific
- Well integrity challenges in deepwater
- Production optimisation challenges of deepwater assets
- Intervention assets being effectively utilised between countries in the region?
- Increased well control regulations for workovers
- Risks of well intervention with floating rigs or intervention vessels?
- Technical challenges of well intervention in the region: Do we go riserless or use light-duty intervention risers?
- Cost synergies across operators in resource management

### Session 9: Strategic Planning for Deepwater Well Abandonment and Decommissioning

**Session Managers:** M Yazdaan M Aris and Penny Chan Wei Chye, PETRONAS Carigali Sdn Bhd

Oil and gas assets decommissioning is becoming one of our industry’s focused activities of late. Apart from the cost of maintenance and depleted production, low oil price environment has significantly contributed to the non-favorable economic evaluation of an oil and gas field. While shallow water subsea asset and platform decommissioning activities are still relatively at its early learning curve for our industry, deepwater subsea wells and facilities decommissioning project is even rare. At present, there is limited knowledge and right experience among service companies, operators and regulators in managing such a complex operation. Besides deteriorating integrity of aging wells and subsea facilities, challenging and costly deepwater intervention activity has increased difficulty level of such project. All the mentioned factors have made project of such nature, unique.

### Session 10: Workshop Summary and Closing Remarks

**Co-Chairpersons:** Emry Hisham Yusoff, PETRONAS Carigali Myanmar, Ismail Aslam Abdullah, PETRONAS Carigali Sdn Bhd; Craig Ferguson, TechnipFMC

### GENERAL INFORMATION

**DOCUMENTATION**
- Proceedings will not be published; therefore, formal papers and handouts are not expected from speakers.
- Work-in-progress, new ideas, and interesting projects are sought.
- Note-taking by attendees is encouraged. However, to ensure free and open discussions, no formal records will be kept.

**WORKSHOP DELIVERABLES**
- The committee will prepare a full report containing highlights of the Workshop and the report will be circulated to all attendees.
- Powerpoint presentations will be posted online and provided to attendees after the Workshop. Provision of the materials by Discussion Leaders will signify their permission for SPE to do so.

**COMMERCIALISM**

In keeping with the Workshop objectives and the SPE mission, excessive commercialism in posters or presentations is not permitted. Company logos must be limited to the title slide and used only to indicate the affiliation of the presenter.

**ATTENDANCE CERTIFICATE**

All attendees will receive a Workshop attendance certificate. This certificate will be provided in exchange for a complete Attendee Survey Form.
Post-Workshop Training Course
Deep and Ultra Deepwater Petroleum Development
Wednesday, 28 February 2018 (1-Day)

Course Description
This course will enable participants to have a better understanding, awareness and comprehension to upstream deepwater petroleum activities from how commercial hydrocarbons are licensed, assessed, explored, appraised, drilled, completed, and technologies currently being applied. The knowledge gained can be used to add value and sustain growth in deepwater petroleum and energy related business ventures. Each section is covered briefly as a module in traditional style, with the real learning experience found within the presenter discussions, based on global offshore, subsea and deepwater operating knowledge and experiences, illustrated further through, real drilling, completion and field development best practice examples self-tests etc.

Learning Objectives
The following has been identified as the program objectives, which upon completion of this training the participants will:

- Be instructed and presented using interactive formats, numerous deepwater case studies based on presenters global knowledge and industry accepted operating and best practice experiences.
- Gain a better understanding how deepwater upstream operations are conducted, implemented and the problems risks and technology challenges faced.
- Review the technical challenges of today’s deepwater projects.
- Understand project drivers of “Quality, Time, Costs and ‘HSE’ safety issues” how deepwater wells are managed, controlled and translated into measurable, sustained growth and added business value.
- Understand aspects of upstream deepwater operations from license acquisition to how best prospects are selected, explored, drilled appraised and developed through to production delivery.
- Gain a better understanding of upstream deepwater processes, techniques and application to better manage project problems, financial, operational and/or investment risks that exist.
- Review and understand aspects of deepwater regulatory safety and environmental standards and instructions to assure that compliant results are delivered in today’s changing socio-economic climates that exist.

Course Agenda

<table>
<thead>
<tr>
<th>Deepwater Well Life Cycle</th>
<th>Course Instructor</th>
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<tbody>
<tr>
<td>Exploration, appraisal and development</td>
<td>Peter Aird</td>
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<tr>
<td>Production</td>
<td>has involved in oil drilling, well engineering and operations specialist for 37 years. He has developed and presented upstream deepwater courses in his areas of expertise for a host of National Oil, Operating, Drilling Contractor and Service companies worldwide from 1998. After an initial career as a marine engineer he re-trained from 1980-86 with Shell International, thereafter supervising the drilling of oil &amp; gas wells globally for 17 years namely in new frontier exploration appraisal and development areas. E.g. He supervised for BP from 1987-93 through early offshore UK HPHT, deepwater wells and elsewhere in North America, SE Asia and West Africa. He then continued this role as a self-employed consultant working in several operating areas namely in deepwater operations until 2005. As a mature student he re-educated to gain a MSC. in Drilling Engineering at the Robert Gordon's University in 2003. Since 2005 he has been employed in more senior well planning, design, and engineering, specialist roles with Major Drilling Operators. Peter has developed technical and operational documents on Oil-well design, construction, engineering and drilling operations since 1993 and has hosted a knowledge sharing and interactive based website. He is a member of the SPE, UK Engineering Council, IMarEST, and actively participates in several industry forums.</td>
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<tr>
<td>Work-over, intervention, well services and Abandonment</td>
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<td>Case studies and examples</td>
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| Exploration | Deepwater petroleum systems | |
| Seismic technology importance | |
| Geo hazards, problems and risks | |
| Reservoir characterisation | |
| Deepwater data acquisition | |
| Case studies and examples | |

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<th>Deepwater Drilling</th>
<th>Deepwater completions</th>
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<td>Deepwater essentials</td>
<td>Formation damage prevention</td>
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<td>Drilling technologies</td>
<td>Deepwater well testing</td>
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<td>Deepwater rigs and equipment systems</td>
<td>Completion techniques</td>
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<td>Drilling operations</td>
<td>Case studies and examples</td>
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<td>Advanced techniques</td>
<td>Deepwater Technologies</td>
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<td>Case studies and examples</td>
<td>Drilling technologies</td>
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<th>Deepwater Technologies</th>
<th>Deepwater Management, Metrics and Controls</th>
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<td>Drilling technologies</td>
<td>Managing deepwater projects.</td>
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<td>Completion technologies</td>
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<td>Loss control management</td>
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<td>Learning from things that go wrong</td>
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<td>How to translate and sustain learning</td>
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<td>Feedback and close-out</td>
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<td>Case studies examples</td>
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REGISTRATION FORM

SPE WORKSHOP: Frontier Deepwater Development
26 - 27 February 2018 | Yangon, Myanmar

SPE Member □ Yes □ No

Membership No. ____________________________________________
First/Forename ___________________________ Middle ___________________________ Last/Family Name ___________________________
Position ____________________________________________
Company ____________________________________________
Address ____________________________________________ Zip/Postal Code ____________ Country ____________
Tel ____________________________ Fax ____________________________ Email ____________________________

Would you be willing to give a brief (10-15minutes) presentation? □ Yes □ No
If yes, please attach the topic with a short abstract of your proposed presentation.
One of the Programme Committee members will contact you to discuss your presentation.

*IMPORTANT: REGISTRANTS FOR SPE WORKSHOPS ARE ACCEPTED ON THE BASIS OF INFORMATION SUBMITTED BY EACH REGISTRANT.

Technical Disciplines (Check One)

☐ Drilling ☐ Completions ☐ Management and Information
☐ Health, Safety, Security, Environment, and Social Responsibility ☐ Production and Operations
☐ Reservoir Description and Dynamics ☐ Projects, Facilities and Construction

Primary Responsibility (Check One)

☐ Drilling ☐ Operation ☐ Economics
☐ Geology ☐ Geophysics ☐ Reservoir
☐ Surveillance ☐ Other □ Management

Listing background and experience. (Use additional paper if required)

List your expectation for the Workshop, so that the committee can tailor a portion of the Workshop to answering attendees’ concerns.
(Use additional paper if required)

Registration Fees (Please tick appropriate box)

REGISTRATION FEES

<table>
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<tr>
<th>SPE MEMBER</th>
<th>NON-MEMBER</th>
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<tr>
<td>☐ USD 2,060.00</td>
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Group Registration Available - Please contact us at spekl.org

Note: Fee includes workshop sessions, workbook, certificate, daily luncheons and coffee breaks. Registration fees do not include accommodation. If attendance is not sufficient for training course by 26 January 2018, SPE reserves the right to cancel the course.

Payment by Telegraphic Transfer
☐ Telegraphic Transfer (Bank details will be provided on the tax invoice)

Payment by Credit Card

Credit Card Payment will be in U.S Dollars only
☐ American Express ☐ Master Card ☐ Visa ☐ Diners Club

CARD NUMBER ____________ EXPIRY DATE (MM/YY) ____________

Security code (3 digits on back of card/4 digits on the front of Annex)

Credit Card Billing Address & Zip/Postal Code

Name Of Card Holder ____________________________ Signature ____________________________

Note: Forms will not be processed and space cannot be guaranteed unless accompanied by payment for total amount due.

Cancellation Policy

• A processing fee of USD150.00 will be charged for cancellation received thirty (30) days prior to the first day of the workshop.
• 25% refund will be made for cancellation received between twenty nine (29) - fifteen (15) days prior to the first day of the workshop.
• No refund on cancellation received fourteen (14) days prior to the first day of the workshop.
• No refund will be issued if a registrant fails to show up on-site.

This form may be used as a company invoice.

Mail completed registration form with remittance and any supporting material to:

Society of Petroleum Engineers
Suite 12.01, Level 12, Menara IGB, Mid Valley City
Lingkaran Syed Putra, 59200 Kuala Lumpur, Malaysia

T 60.3.2182.3000 F 60.3.2182.3030 E spekl@spe.org