South East Asia has a potential resource of 12 billion barrels of oil equivalent (boe), much of it undiscovered [WoodMackenzie - Robertson: Future of Deepwater, 2004]. This is comparable to the potential in the Gulf of Mexico. Some estimates suggest that most of this potential gas and oil will be found in deep water. West Seno and Kikeh are just two of a number of deep water projects that could be executed in this region in the next decade. CORE is pleased to announce a special workshop addressing the technology of deep water development. The topics will range from field development planning to subsea production, drilling and the design and construction of floating production systems. This workshop is intended for engineers and managers who want to know about the building blocks of deepwater development and how they inter-relate. Emphasis will be on issues affecting the selection of certain field development scenarios, subsea versus surface production and the attributes of the various floating concepts.

Presenters of this workshop include some of the world’s experts in their fields. Dr. John Halkyard of Technip will discuss deep water drilling and floater design. Dr. Stephen Balint of Shell Intl. E&P Inc will discuss TLP Design and Construction as well as Project Execution. Dr. Shan Shi of Houston Offshore Engineering will discuss risers and moorings. Mr. Warren Churchill, Business Unit Manager of Genesis Oil and Gas in Perth, will discuss Field Development Planning and Subsea Development. Mr. Aziz Merchant of Keppel Offshore & Marine will discuss on Semi-Submersible Design and Construction, and Mr. Christopher Davison of SBM Inc. will discuss FPSO Design, Construction & Installation.

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# PROGRAM

## Day 1: Deepwater Development, Field Development Planning, Drilling and Subsea

- **Welcome** [Prof. Yoo Sang Choo, Director (Research), Centre for Offshore Research & Engineering]
- **Introductions** [Mr. Charles Foo, Managing Director (Special Projects), Keppel Offshore & Marine]
- **Introduction to Deepwater Development** [Dr. John Halkyard]
- **Field Development Planning** [Mr. Warren Churchill]
- **Deepwater Drilling** [Dr. John Halkyard]
- **Subsea Systems** [Mr. Warren Churchill]

## Day 2: Risers, Intro to Floater Design, Tension Leg Platforms and Project Execution

- **Dry Tree Well Systems & Risers** [Dr. Shan Shi]
- **Introduction to Floater Concepts and Functions** [Dr. John Halkyard]
- **Basics of Stability, Hull Structure Design** [Dr. John Halkyard]
- **TLP Design and Construction** [Dr. Stephen Balint]
- **Project Execution** [Dr. Stephen Balint]

## Day 3: Floaters (cont): Global Performance, Mooring, Spar, Semi and FPSO Design. Wrap-Up

- **Global Performance and Mooring** [Dr. Shan Shi]
- **Spar Design and Construction** [Dr. John Halkyard]
- **FPSO Design, Construction & Installation** [Mr. Christopher Davison]
- **Semi-Submersible Design and Construction** [Mr. Aziz Merchant]
- **Discussion and Wrap-Up**
THE SPEAKERS

Dr. John Halkyard is Chief Research Advisor for the Fixed and Floating Facilities Group for Technip, Inc. in Houston, Texas. Technip is the world’s largest engineering and construction company in the oil and gas sector. Dr. Halkyard received his Sc. D. in Ocean Engineering from the Massachusetts Institute of Technology in 1972. From then until 1980 he served as Technical Director of the Deep Sea Mining Development project for an international consortium of companies led by Kennecott Copper Corporation. In this capacity he led a team of engineers and scientists to the successful testing of equipment to mine manganese nodules from 15,000 ft in the equatorial Pacific Ocean.

From 1980 to 1983 Dr. Halkyard managed his own consulting company which served primarily the offshore oil industry, where he assisted in the development of the Tension Leg Platform. From 1983 to 1988 he served as Vice President of Arctec, Inc., a research institution with world class hydrodynamic and ice testing facilities. He was responsible for performance tests for the Gulf of Mexico’s first floating production system, Placid Green Canyon 29. In 1989, Dr. Halkyard joined inventor and entrepreneur Ed Horton with Deep Oil Technology, Inc., where they successfully developed the spar deepwater production system. Since the first production spar was built by Oryx Energy in 1996, 14 more have been installed and three are on order. When Deep Oil technology was bought by Aker Maritime and J. Ray McDermott in 1999, Dr. Halkyard joined Aker as Vice President, Deepwater Production Technology. He held this position with Aker and its successor, CSO-Aker until 2002 when he became Chief Technical Advisor. CSO-Aker was bought by Technip in 2003, where Dr. Halkyard continues as Senior Research Advisor.

Recently Dr. Halkyard has been involved in the development and performance testing of the new Kikeh Spar with a Tender Assisted Drilling system scheduled for installation off of Sabah, Malaysia in October. He is currently serving a three-month assignment as Visiting Senior Fellow at the National University of Singapore.

Dr. Stephen Balint has Civil Engineering degrees from Virginia Tech and Tulane University, and has worked in the Offshore Oil and Gas industry for more than 25 years with various Shell companies. In that time, he has designed fixed and floating structures, managed projects and organizations. Steve was a designer and fabrication site engineer for the Auger TLP hull and the lead structural designer of the Mars TLP hull. He was a member of the Project Leadership Team for the Brutus TLP, and has spent the last 7 years managing the Civil/Marine organization for Shell's E&P Deepwater Projects. In this capacity, he has developed and applied resources, processes and tools for successful project execution of Shell's Deepwater portfolio. Within Shell, Steve is recognized as a Principle Technical Expert for Floating Offshore Structures. He sponsors a number of deepwater projects as well as the EP Projects Project Management Forum.

Steve recently moved to Kuala Lumpur, where he is establishing Shell's new Deepwater Office. As the Floating Systems Engineering Manager, he is bringing the deepwater expertise from the Gulf of Mexico, Nigeria, and Brazil to an expanding Far East portfolio.

Through his career, Steve have been actively involved in industry organizations. These include chairing ASCE's OTC Program committee, chairing API group 6 on stiffened plates and shells, co-authoring API-FPS, chairing COPRI's Deepwater Infrastructure Forum, acting as a technical reviewer for ISOPE, and founding the FPSO Research Forum. He's published extensively on technical and project issues and hold 3 patents related to spar designs.

Steve is married and has 3 children.
**Dr. Shan Shi** is currently the Manager of Riser Systems for Houston Offshore Engineering, LLC in Houston, Texas. HOE is recognized worldwide for its Tension Leg and Semi-Submersible Platform engineering expertise. Dr. Shi has degrees in Naval Architecture, Ocean Engineering, and Civil Structural Engineering. He received his PhD in Civil Engineering from the University of Illinois at Urbana-Champaign in 1997. Since then, Dr. Shi served in Deep Oil Technology, Inc., and Aker Maritime. In 2002, Dr. Shi became the chief engineer at Offshore Dynamics, Inc., where he provides engineering and consulting services to the offshore industry and specializes in the design and analysis of riser systems, mooring systems, and global performance of floating platforms. Dr. Shi is highly experienced with TLPs such as West Seno, Magnolia, Marco Polo and Spars of Neptune, Horn Mountain, Genesis, Boomvang/Nansen, Medusa and Front Runner. Dr. Shi is capable of solving special riser analytical problems associated with deep water development.

Dr. Shi also has a joint venture with Texas A&M University in the development of a state-of-the-art fully coupled global performance analysis software package: HARP. The program has been widely used by offshore engineering companies and has produced reliable results for many challenging projects including the analysis of the Kikeh Spar and FPSO coupled system.

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**Mr. Warren Churchill** is the Business Unit Manager for Genesis Oil and Gas Consultants in Perth. Genesis is a Technip subsidiary which specializes in front end and conceptual studies for new field developments. Genesis Perth employ a team of predominately process engineers and offer flow assurance and specialized process simulation expertise as well as field development planning capability.

Mr Churchill graduated from Auckland University in 1987 with a Degree in Chemical and Materials Engineering. After working in onshore chemical and gas processing plants for four years he moved to the UK where he joined a leading offshore engineering consultancy. For the following nine years he worked on major front end and detailed design projects in London, Aberdeen, Kuala Lumpur, Muscat, Jakarta and Perth. He then returned to his home country of New Zealand where he was involved in design and operation of methanol plants for five years before returning to Australia where he took up his current position with Genesis in 2005. Recently Mr Churchill has been working on and leading studies for a number of projects ranging from small, oil field, subsea tie-backs to large, deep water, gas developments.

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**Mr. Aziz Merchant** is General Manager of Design & Engineering at Keppel Offshore & Marine and also the General Manager of Engineering at Keppel FELS. He also heads the R&D activities for the Keppel Deepwater Technology Group. He has more than 15 years of experience in Design and Construction of Offshore vessels such as Drilling Semisubmersibles, Drilling Semi Tenders, Jack-ups and FPSOs.

He also has over 3 years of experience in Classification, Regulatory and Statutory Approvals with American Bureau of Shipping while he worked in the London office of ABS Europe as a Principal Engineer. He is a Member of Society of Naval Architects and Marine Engineers, Singapore and also of Royal Institution of Naval Architects, UK. He is also a Member of the ABS and Bureau Veritas South East Asia Technical Committee. He has several publications on the above-mentioned subjects to his credit. He holds a B.Eng (First Class Honours) in Naval Architecture & Ocean Engineering from University of Glasgow and MSc in Naval Architecture from University College London (UCL) – University of London.
Mr. Christopher Davison is Project Manager with Single Buoy Moorings Inc., the leading contractor in leased Floating Production and Offloading Systems (FPSOs).

After graduating from Imperial College, University of London in 1969 with a degree in Mechanical Engineering, he spent 9 years on onshore petrochemical plant design and construction, and offshore submarine pipeline projects. In 1978 he joined SBM Inc., and his 28 years with the company has included responsibilities as Project Manager for several major SBM projects, including 8 FPSOs of which the 2 most recent are currently under design and construction for ExxonMobil for installation in the Kizomba C field offshore Angola.

Mr. Davison is a Fellow of the Institution of Mechanical Engineers.

Registration Details

For enquiries, please call Ms Lilian CHOONG at Tel: 6516 5113
Alternatively you can drop an email at engcll@nus.edu.sg

To register, mail or fax the completed registration form to:

Professional Activities Centre
NUS Faculty of Engineering
Blk EA #05-34, 9 Engineering Drive 1
Singapore 117576
Fax: (65) 6874 5097

Payment: Payment is required prior to the workshop. Crossed cheques should be made payable to “National University of Singapore”.

Discount: A 10% discount will be given for companies/organizations sending 3 or more participants for the workshop. NUS Alumni will also enjoy the 10% discount off the registration fees.

Refunds and Cancellations: A 50% refund will be given for withdrawals (received in writing) ten working days before the commencement of the workshop. No refunds will be made thereafter. However, a replacement will be accepted upon prior arrangement at no extra cost. Please inform us of the changes, if any, by fax.

The Organizer reserves the right to cancel the workshop and fully refund the participants, should unforeseen circumstances warrant it. Every effort will be made to inform participants of any changes.
Registration Form

DEEPWATER DEVELOPMENT WORKSHOP
9th – 11th October 2006, Faculty of Engineering, National University of Singapore

Registration Fees:
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* Course registration fees include course materials, refreshments and lunches

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