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KEPPEL SHIPYARD SECURES CONVERSION CONTRACTS WORTH S\$103M

Keppel Shipyard has secured three conversion contracts with an initial combined value of S\$103 million. The contracts are from PTSC Asia Pacific Pte Ltd (PTSC Asia Pacific), Perenco Group (Perenco) and BC Petroleum Sdn Bhd (BC Petroleum).

The contract from PTSC Asia Pacific, a joint venture between PetroVietnam Technical Services Corporation (PTSC) and Yinson Holdings Berhad (Yinson), is to convert a tanker to a Floating Production Storage and Offloading (FPSO) unit. PTSC is a member of Vietnam National Oil and Gas Group (PetroVietnam) providing diversified technical services for the oil and gas industry inside and outside Vietnam. Yinson is one of Malaysia's premier integrated offshore services providers.

Keppel Shipyard's work scope for this FPSO project includes refurbishment and life extension works, fabrication and installation of the flare tower, helideck,

pipe racks and power generation module. It also includes installation and integration of topside process modules and external turret, and upgrading the accommodation facilities. The FPSO will be capable of producing 15,000 to 20,000 barrels of oil per day (bopd) and has a storage capacity of up to 650,000 barrels of oil.

Work on the FPSO for PTSC Asia Pacific will commence in third quarter 2012 and is scheduled to complete in third quarter 2013. When delivered, the FPSO will be deployed in the Thang Long and Dong Do oil fields located in Cuu Long Basin, offshore Vietnam.

The second contract is from Perenco to convert a tanker to a Floating Storage and Offloading (FSO) unit. The work scope includes refurbishment and life extension works and accommodation upgrading. It also includes tank coating and installation of new machinery, mooring structures and helideck.

Work on the tanker will commence in third quarter 2012 with completion scheduled for first quarter 2013. The converted unit will be named *FSO Mayumba*, and it will be stationed in the Lucina field, offshore Gabon. Perenco is a leading oil & gas company with expertise in onshore and offshore gas and oil operations.

The contract from BC Petroleum is for the modification and upgrading of a tanker to an Early Production Vessel, *EPV Balai Mutiara*. The scope of work includes refurbishment and life extension works, as well as fabrication and installation of flare tower and helideck. It will also include integration and modification of process module and upgrading of accommodation facilities.

When completed, *EPV Balai Mutiara* will be deployed in the Balai Cluster oil fields, offshore Malaysia.

KEPPEL FELS AND FLOATEL SIGN CONTRACT FOR A FOURTH ACCOMMODATION SEMI AT US\$315M

Keppel FELS and Floatel International Ltd (Floatel) have finalised a contract to build a new generation harsh environment accommodation semi-submersible (semi) worth US\$315 million. This follows the Letter of Intent announced by Keppel FELS and Floatel International earlier in March this year.

This will be Floatel International's fourth accommodation semi with Keppel FELS after the delivery of *Floatel Superior* and *Floatel Reliance* in 2010 and the order of *Floatel Victory* in 2011.

With delivery in early 2015, the new semi will be built to the Floatel Superior design, a DSS™ 20NS design developed by GustoMSC and Keppel FELS' Deepwater Technology Group. Equipped with Dynamic Positioning (DP) 3 capability, the semi will meet the most stringent rules and regulations for worldwide operations including the Norwegian Sector.

Well equipped with a host of modern facilities, the semi will have a large payload and deck area in combination with dual cranes, making it ideal for construction support during new construction, maintenance activities or for decommissioning projects of offshore oil and gas installations. It will be able to accommodate 440 persons in single bed cabins with ample recreation areas and office amenities.

Floating accommodation platforms or floatels are needed to provide additional living quarters for support personnel in exploration and production activities. Such support personnel are required during hook-up and commissioning in the development phase, for maintenance and upgrading during the production phase, as well as for decommissioning. Floatel International was established in 2006 to satisfy a market demand for a new generation of offshore floatels.

Floatel Superior and *Floatel Reliance* are chartered to Statoil in the Norwegian sector of the North Sea and to Petrobras in Brazil's Campos Basin respectively. *Floatel Victory* is scheduled for delivery in fourth quarter of 2013. It has already secured a charter with Chevron USA for its Jack St Malo field and with BP Exploration Operating Company for the Clair Ridge Development project on the UK Continental Shelf.



The new semi will be built to the proven Floatel Superior design, a DSS™ 20NS design developed by GustoMSC and Keppel FELS' Deepwater Technology Group.

JURONG SHIPYARD SECURES DEEP WATER CAPACITY OCEAN APEX PROJECT FROM DIAMOND OFFSHORE DRILLING FOR US\$135M

Jurong Shipyard has secured a rigbuilding contract worth US\$135 million from Diamond Offshore for the OCEAN APEX Project. Diamond Offshore provides contract drilling services to the energy industry and is a leader in deepwater drilling.

The rig is part of Diamond Offshore's fleet enhancement programme. Its drilling rigs consist of 30 semi-submersibles, seven jack-ups and one drillship. It has four ultra-deepwater drillships and two deepwater semi-submersible rigs under construction.

When completed, the rig, to be named the *Ocean Apex*, will add new capacity to Diamond Offshore's deep water rig fleet. The rig is scheduled to be delivered from Singapore in the second quarter of 2014.

Ocean Apex will be capable of operations in water depths up to 6,000 feet. Design specifications also include a variable deck load of 7,000 long tons and a maximum hook-load capacity of two million pounds. The rig will have crew quarters capacity for 140 personnel and a very large deck space.

KEPPEL SHIPYARD COMPLETED CONVERSION PROJECT FOR PERENCO

Keppel Shipyard has completed a new FSO conversion contract by repeat customer Perenco. This project is the third collaboration with Perenco. Perenco is an independent oil &

gas company with operations in 16 countries ranging from Northern Europe to Africa and from South America to the Middle East. Perenco is involved in operations both onshore and offshore.

The FSO was converted from a very large crude carrier. *FSO Massongo* will be deployed in offshore Cameroon. It will replace *FSO Kingsway*, operating in Rio del Rey Basin, and *FSO Moudi*, located at the Moudi Field. When converted, *FSO Massongo* has a storage capacity of two million barrels of oil.

The project achieved a perfect safety record of more than 1.35 million safe man-hours.

Keppel Shipyard's first conversion project for Perenco was *Fernan Vaz*, which was completed in 2005. The second conversion project, *Kalamu FSO*, was completed in 2008.

Perenco said that *FSO Massongo* will provide crucial support to Cameroon's aspirations for higher levels of oil production.



FSO Massongo is the third collaboration Keppel Shipyard has with Perenco.

ST MARINE'S GREEN INITIATIVE

Singapore Technologies Marine (ST Marine) set history as the first company in Singapore to have obtained the ISO 14064: 2006 Green House Gases Certificate of Assurance from Lloyd's Register Quality Assurance Limited. The certification awarded in April this year reaffirms ST Marine's commitment towards green house gases (GHG) reduction in line with global efforts to reduce global warming and extreme climate change.

The ISO 14064 standardises the measurement and reporting of an organisation's greenhouse gas emissions, otherwise known as its carbon footprint. Firms can use these guidelines to improve processes and slash energy bills. This initiative is expected to save the company an estimated S\$1.5 million and carbon

dioxide reduction of 959 tonnes per year over the next three years, and is expected to attract new global customers to the company.

In the past two years, ST Marine has implemented some GHG abatement projects including the conversion of acetylene to CNG in its Benoi and Tuas shipyards, upgrading the efficiency of plasma-cutting machines, and improving energy consumption for facilities in both yards. They also include green ship design for GNG and Environment Improvement, and improving energy consumption of lightings, air condition chillers etc.

ST Marine cited three drivers for reducing its carbon footprint in the years ahead. They are to improve efficiency and effectiveness of operations for GHG

emission reduction by improving energy consumption and using eco-friendly fuel, process and initiatives for green ship design and development. Secondly, to comply with GHG emission regulations and reporting requirements. The third driver is to better manage and meet the expectations of stakeholders that they are working with an environmentally conscious corporation.

ST Marine designs its own green features which also helps its customers cut costs such as a fuel efficiency system that lets the ship maximise fuel, a large component of operating costs. The shipyard has adopted environmental sustainability in its design philosophy and wherever possible, it will incorporate greenhouse gas abatement initiatives in its ship design.

KEPPEL FELS TO DELIVER ONE OF THE WORLD'S LARGEST MULTI-PURPOSE OFFSHORE WIND TURBINE INSTALLERS

Keppel FELS is on track to deliver *Seafox 5*, one of the largest and most advanced multi-purpose offshore wind turbine installers of its kind to the Seafox Group, ahead of time and with an impressive safety record. *Seafox 5* marks a significant milestone for Singapore as the first offshore wind installation vessel to be built in Singapore.

Built to Keppel's proprietary Multi-Purpose Self-Elevating Platform (MPSEP) design, *Seafox 5* is a new-generation offshore wind turbine installation vessel that can withstand harsh offshore environmental conditions all year round in the deeper waters of the North Sea. Designed by Keppel's research and development arm, Offshore Technology Development (OTD), *Seafox 5* is a self-propelled installation jack-up vessel utilising Keppel FELS' proven jacking technology. Equipped with Dynamic Positioning 2 (DP-2) capabilities, the vessel is elevated above sea level by four legs which provide 30 metres of clearance between the legs and crane for easy cargo access.



Built to Keppel's proprietary KFELS MPSEP design, *Seafox 5* is a new-generation offshore wind turbine installation vessel which will be able to out-perform existing similar vessels both on cost and efficiency in wind turbine installation.

Seafox 5 is a new generation vessel which will be able to out-perform existing marine assets both on cost and efficiency in wind installation. In addition, this state-of-the-art vessel has been specifically designed to meet all the requirements of both the offshore wind and the oil and gas industries in harsh environments. Demand for such vessels is expected to continue to rise with the commercialisation of 5MW wind turbines over the next few years.

Measuring 50 metres wide and 151 metres end-to-end, *Seafox 5* is able to operate in harsh environments and up to 65 metres water depth - the deepest for such vessels. The vessel will be among a handful of purpose-built jack-ups with a 1200-tonne heavy lift capacity. It can carry a wide variety of foundations and turbines and is capable of installing both turbines and large foundations exceeding 800 tonnes in weight. Together with its environmental capabilities, stability coverage, deck space of 3,600m² and a variable load of 7,000 MT, it is able to outperform most other jack-ups and be competitive with the floating heavy lift vessels.

It has been chartered to the joint-venture company of Aarsleff Bilfinger Berger (ABJV) Dan Tysk to install offshore wind foundations in the 288 megawatt (MW) Dan Tysk wind farm in the German Sector of the North Sea. ABJV DanTysk is a joint venture company between Bilfinger Berger Ingenieurbau GmbH, a world leader in major infrastructure projects, and Per Aarsleff A/S, a Danish infrastructure contractor.

Seafox 5 has a large carrying capacity of up to 12 3.6MW turbines, three jackets or four tripods at a time, which enhances the efficiency of constructing offshore wind farms. In addition to being well-suited for servicing offshore wind farms, it also meets the stringent operating regulations of

the offshore oil and gas industry. It can also support a wide range of related activities such as accommodation, hook-up, commissioning, well intervention, maintenance, construction and decommissioning.

The global offshore wind market is expected to reach nearly 95 gigawatts of installed wind energy capacity by 2025, according to IHS' *Global Offshore Wind Energy Markets and Strategies: 2012 - 2025* report. The report forecasts that global offshore wind investment between 2011 and 2025 is set to climb nine folds from US\$6 billion to US\$52 billion.

KEPPEL FELS DELIVERS JACK-UP RIG TO JAPAN DRILLING COMPANY

Keppel FELS delivered jack-up rig, *Hakuryu 10*, to Japan Drilling Company (JDC) three days ahead of schedule on 20 June 2012.

Arriving on 19 May 2012, *Hakuryu 10* was docked on Keppel FELS' Can-Do! Barge for upgrade and modification works. Built to Baker Marine Class (BMC) 375 design in 2008, the rig underwent blasting and painting of the hull, cleaning and inspection of spudcans and legs, fabrication and installation of diverter line supports and derrick cladding.

Keppel FELS did a survey for *Hakuryu 10* in March 2012 when the rig was in Spain to clearly define the workscope. Working closely with JDC, they were able to plan and prepare ahead of the rig's arrival and execute the works according to plan.



Keppel FELS delivered *Hakuryu 10* three days ahead of schedule.

SINGAPORE RIGBUILDERS WON MAJOR CONTRACTS FROM SETE BRASIL

Singapore's rigbuilding majors - Keppel Offshore & Marine and Sembcorp Marine - have between them, clinched contracts worth a total of US\$8.1 billion from Sete Brasil Participações S.A. (Sete Brasil). These contracts are for the design and construction of five semi-submersible (semi) drilling rigs and five drillships.

Sete Brasil is a Brazilian company established in 2010 by Brazilian and international finance investors, including banks and the four biggest Brazilian pension funds, besides Petrobras. The company specialises in the chartering of drilling rigs and other assets for Brazil's pre-salt exploration.

KEPPEL OFFSHORE & MARINE SIGNS CONTRACTS WORTH US\$4.1 BILLION FOR 5 SEMIS

Keppel Offshore & Marine secured the deal through its subsidiary Fernvale Pte Ltd for the contract of five semi drilling rigs worth about US\$4.1 billion. These rigs will be built based on Keppel's proprietary DSS™ 38E design. This rig design has improved capability and operability, making it well suited to meet the stringent requirements of the deepwater "Golden Triangle" region of Brazil, Africa and the Gulf of Mexico.

The DSS™ 38E design is an innovative and cost-effective design, rated to drill to depths of 10,000 metres below the rotary table in 3,000 metres water depth. Its operational displacement is approximately 45,000 tonnes. Each rig will have accommodation facilities to house a crew of up to 160 men. The vessel is designed to stay in position via eight Azimuthing thrusters and the configurations comply with the American Bureau of Shipping Dynamic Positioned System (DPS-3) requirements. This design is jointly developed and owned by Keppel's Deepwater Technology Group and Marine Structure Consultants.

The rigs are scheduled for delivery in the fourth quarter 2016, third quarter 2017, second quarter 2018, fourth quarter 2018, and third quarter 2019 respectively. They will be constructed at Keppel's BrasFELS yard in Brazil. BrasFELS, located in Angra dos Reis, was set up in 2000.

When completed, the rigs will be chartered to Petrobras for 15 years for drilling activities in the pre-salt areas of Southeast Coast of Brazil, offshore Brazil. Three rigs will be operated by Queiroz Galvão Óleo e Gás SA, two by Petroserv SA and one by Odebrecht Óleo e Gás SA.

SEMBMARINE SECURES US\$4.032 BILLION CONTRACT TO BUILD 5 DRILLSHIPS

SembMarine won the contract to design and construct five drillships worth approximately US\$4.0 billion through Jurong Offshore Pte Ltd's wholly-owned subsidiaries. The drillships will be constructed based on Jurong Shipyard's proprietary Jurong Espadon drillship design. Jurong Offshore is a subsidiary of SembMarine.

SembMarine had earlier on in February 2012, secured a US\$792.5 million contract for the design and construction of a drillship with Guarapari Drilling B.V., Netherlands, a subsidiary of Sete Brasil through its wholly-owned Brazilian shipyard Estaleiro Jurong Aracruz Ltd.

All six drillships will be built based on the Jurong Espadon design, which represents the next generation of high-specification drillships with advanced capabilities for operational efficiency and ultra-deepwater operations worldwide. Each drillship will be equipped with state-of-the-art drilling facilities, a larger deck area, efficient deck arrangement and a large moon pool for enhanced drilling operations as well as DP-3 (Dynamic Positioning Class

3) capabilities and superior motion. The drillship will be capable of operating at 10,000 feet water depth and drilling to depths of 40,000 feet. It will have accommodation facilities for a crew of 180 personnel.

The drillships are scheduled for deliveries between second quarter 2015 to second quarter 2019. When completed, these six drillships will be among the first in a series of drillships to be built in Brazil to cater to the oil and gas discoveries in the offshore giant pre-salt fields of the Santos Basin. On delivery, all six drillships will be chartered to Petrobras for 15 years. Three of the drillships will be operated by Odfjell and the other three by Seadrill.

The series of orders will provide impetus for SembMarine to accelerate its shipyard building programme in Brazil. The Estaleiro Jurong Aracruz Ltda is SembMarine's first overseas integrated new yard facility. The 82.5-hectare yard is located in the municipal of Aracruz in the state of Espírito Santo, Brazil.



Keppel will be building a total of six DSS™ 38E semis for Sete Brasil.

SINGAPORE MARITIME GALLERY SHOWCASES DIVERSITY OF MARITIME INDUSTRY

The Singapore Maritime Gallery (SMG) was officially opened today by Mr Lui Tuck Yew, Minister for Transport on 12 September. Housed on the second storey of Marina South Pier, this modern and interactive gallery was developed by the Maritime and Port Authority of Singapore (MPA).

Occupying a total floor space of 1,000 sqm, the SMG showcases the diversity and vibrancy of Singapore's maritime industry. The SMG was developed with the support and assistance of key partners from the maritime industry, including ASMI. The latter was involved mainly in the offshore and marine engineering section of the gallery.

One of the gallery's innovative offerings is a giant ship console. Using interactive screens, videos and moving ship models, this innovative exhibit showcases maritime services of the Port of Singapore to the public in a fun and engaging way.

SMG is home to the first publically-accessible ship-bridge simulator that

is comparable to those used in the training of professional seafarers, giving visitors firsthand experience of steering and berthing vessels.

Another exciting offer is the Vessel Traffic Information System (VTIS) display. Not unlike control towers in

airports, the system oversees all the vessels operating in Singapore-waters. Even though the actual Singapore VTIS is kept off-limits to the public, the gallery houses a simulated VTIS display that enables visitors to get an idea of how the system is used to manage vessel traffic in our busy port waters.



The Offshore and Marine Engineering section of the Singapore Maritime Gallery.



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