

Offshore Marine

Keppel

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Offshore
Gaining a new touch
of Class

One extraordinary
'son' – P-52

Marine
Sunrise at Keppel



First drilling rig for Brazilian waters

FEATURES



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First drilling rig order for Brazilian waters

Keppel FELS has secured a groundbreaking contract to design and build its first drilling rig for deployment in Brazilian waters.

The contract from Brazilian drilling contractor, Queiroz Galvão Perfurações (QGP), is to build a semisubmersible (semi) drilling platform, with the owner supplying the drilling and subsea equipment.

The rig will be built based on a fifth generation deepwater solution, the DSS™38.

The semi which will be delivered in the third quarter of 2009, is expected to support Petrobras' aggressive plan to improve its hydrocarbons production and reserves in Brazil and elsewhere in the region. The national oil company of Brazil has just upped its capital expenditure by 66% to US\$87 billion over a five-year period ending 2011, with E&P accounting for 56% of the expenditure.

Tong Chong Heong (CH Tong), MD/COO of Keppel Offshore & Marine (Keppel O&M), said, "I am glad that QGP finds the DSS™38 rig design a suitable solution for Petrobras after due diligence studies. I am confident that this rig will deliver on its promise, and pave the way for more drilling rig orders from the region."

Keppel O&M's projects operating for Petrobras comprise floating production units that produces around 700,000 bopd for Brazil. The company is currently carrying out three other projects for Petrobras directly and indirectly, that will add up to another 540,000 bopd by mid 2008 (see page 24).

CH Tong commented, "This is the first time Keppel is building a drilling rig for Brazil. The new contract represents a milestone in the

deepening confidence of Brazilian contractors and operators in Keppel's ability to deliver quality products and services on time and on budget."

An innovative and highly cost-effective new design, the DSS™38 semi drilling rig has been developed to meet operational requirements in the deepwater "Golden Triangle" region, comprising Brazil, Africa and the Gulf of Mexico. The region accounts for 85% of the world's deepwater E&P expenditure over the next five years, according to Douglas-Westwood.

Continued on page 4 ►

The DSS™38 design is an innovative and highly cost-effective semi design developed for the deep waters off Brazil, Africa and the Gulf of Mexico



◀ Continued from page 3

Commenting on Keppel O&M's strategy in meeting rising demand for deepwater rig solutions, CH Tong said, "We expect deepwater E&P to continue unabated in this region as major oil companies push ahead with their plans to increase and replace capacities. Rigs required to support such deepwater searches have to be technically more sophisticated and cost-effective."

"As a shipyard with an in-depth understanding of the requirements, we have developed a series of rig solutions, with the DSS™38 being one of the latest designs created. The feedback received from the owners, operators and the building experience gained from the construction of the DSS™20, DSS™21 and DSS™51 semis have gone into the

technology and design of the DSS™38."

The DSS™38 is rated to drill to depths of 30,000 feet below mud line in just over 9,000 feet water depth. It is 99.5 metres in overall length, with a main deck size of 69.5 metres wide by 69.5 metres breadth. Its maximum operational displacement is approximately 40,000 tonnes at a draft of 20.5 metres.

The maximum variable deck load of the DSS™38 is 5,500 tonnes, with accommodation facilities for up to 130 men. It has both vertical and horizontal riser storage. The eight 3000kW Azimuthing thrusters configuration are designed to keep the vessel in position. All configurations comply with the American Bureau of Shipping Dynamic Positioned System (DPS-2) requirements.

The DSS™20 rig, *Maersk Explorer*, is currently operating in the Caspian Sea for Maersk Contractors, and its performance has led the drilling operator to order two more rigs, the DSS™21. GlobalSantaFe picked the DSS™51 rig, presently under construction, for their requirements. The DSS™21 and DSS™51 designs have Dynamic Positioning systems.

The DSS™ series of semisubmersible rigs is jointly designed by Keppel O&M's Deepwater Technology Group (DTG) and Marine Structures Consultants of The Netherlands.

Queiroz Galvão Perfurações is one of the largest Brazilian private groups. The DSS™38 will be its fourth semi drilling platform, which will perform a seven-year contract for Petrobras.

◀ Continued from back page

60-tonne bollard pull Ice-class Anchor Handling Tug/Supply (AHTS) vessels which Keppel Singmarine secured from LUKOIL in May 2005 and January 2006. The deliveries of these two vessels are due between end-2006 and mid-2007.

The two new contracts, secured on the back of the AHTS, are turnkey projects. They are for the construction of an auxiliary icebreaker vessel and a multi-purpose icebreaking supply vessel.

Charles added, "I am glad that LUKOIL is pleased with the services that we are providing, and I am confident we will be able to deliver these two icebreaking vessels according to the owner's requirements."

Contracts for these highly specialised vessels were won amidst competition from European yards. They are the first such vessels to be built by an Asian yard, which is a testament to the growing expertise of Keppel Singmarine in offering high value-added services to its customers.

The vessels will be delivered to their owner between end-2007 and mid-2008. To be deployed to the Barents and Arctic Seas, these vessels are designed and will be built to the rules and standards of the Russian Maritime Register of Shipping, and are customised in accordance with the owner's stringent requirements and superior technical specifications.



The first of four vessels for LUKOIL was recently launched at the Keppel Singmarine yard

The 100m long auxiliary icebreaker vessel will have equipment and system capabilities to work in temperatures down to -40°C and to proceed through 1.7m of level ice with 20cm snow cover.

The 81m long multi-purpose icebreaking supply vessel can proceed through landfast ice having an unbroken thickness of up to 1.5m with 20cm snow cover.



Keppel is increasing its global capacity to meet growing demand for offshore work

Enhancing facilities for offshore demand

In keeping with its credo to offer unrivaled services with fast turnaround, the Keppel O&M group has enhanced its facilities with a new site in Singapore, and is outfitting its Subic Shipyard in the Philippines to undertake offshore work.

Keppel FELS ramps up Singapore facilities

Keppel FELS has expanded its local facilities with a new site at Shipyard Crescent, Jurong. The site is approximately nine hectares and is strategically located between Keppel FELS' Main Yard and Pioneer Yard. Its ideal location will facilitate logistics and the transfer of blocks by floating cranes between yards.

Shipyard Crescent will undertake fabrication work for newbuilding projects secured by Keppel FELS, as well as the mooring and repair of rigs. It will yield an additional throughput of approximately 6,000 – 8,000 tonnes of steel per annum.

Michael Chia, ED of Keppel FELS, said, "We remain committed to deliver our projects on time and on budget. To meet the unprecedented increase in orders, we are ramping up our capacity to ensure our delivery targets are met."

Subic Shipyard shapes up for offshore work

Over in the Philippines, Subic Shipyard is gearing up to undertake the fabrication of steel components for offshore rigs.

As part of the outfitting, critical offshore systems, machinery and equipment will be installed in the yard. These include CNC profile cutting machines, panel lines, low-bed transporters and covered fabrication areas with overhead gantry cranes.

Charles Yap, President of Subic Shipyard, said, "Subic Shipyard's portfolio of services comprises mainly shiprepair, ship conversion and drydocking. We are very excited as the yard gets into the upswing of expanding our services into the offshore sector."

Subic Shipyard is expected to increase throughput of approximately 6,000 – 8,000 tonnes of steel per annum.

In addition to the installation of new facilities, local employees will also be trained for offshore-related construction work.

Charles said, "Re-training is necessary to ensure that our employees are equipped with the required skills for offshore work. We need to inculcate in them an offshore mindset, which is very different from that of the marine sector."

Subic Shipyard will introduce training programmes which include shopdrawing interpretation, 3D computer-aided design tools, CNC profile cutting and advanced welding skills.

In addition, there will be overseas exchange programmes, under which, key engineers and workers from Subic Shipyard are posted to Keppel FELS Singapore for training whilst a team of Keppel FELS supervisors are sent to the Philippines to support Subic Shipyard.

Delivering quality services in a

The offshore rig market is undergoing a boom. Given the cyclical and unpredictable nature of the industry, coupled with the high stakes and stringent requirements involved with the building of rigs, owners need to choose the right yard to execute the jobs.

Drawing from his extensive experience in steering Keppel's

offshore business to become the world's number one rig builder, Chairman & CEO, Choo Chiau Beng (CB Choo) shared his insights at a seminar on 31 May 2006 by the Institute of Southeast Asian Studies (ISEAS) on how to pick winners who can deliver on the promise of quality products and services. OffshoreMarine reproduces extracts of this speech.

Within months of the 1973 oil crisis, a great drilling boom began.

Vast amounts of capital were poured into the oil and gas industry. However, when oil price stabilised at US\$18 for the next 20 years, the industry went into a long downturn.

Of the five yards in Singapore at that time, namely Far East Levingston Shipbuilding, Bethlehem, Marathon LeTourneau, Robin and Promet (PPL), only Far East Levingston (now Keppel FELS) survived. PPL became dormant and was revived only when Sembcorp Marine purchased a majority stake a few years ago.

There was a boom for building deepwater units from 1996 to 2002, spurred by factors including the increase in deepwater drilling rates, the need for new generation rigs and the need to drill deeper. But, many projects were poorly planned and built in relatively inexperienced yards, resulting in long delays and cost overruns. Subsequently, there was a consolidation amongst the drilling contractors and many well-known firms disappeared.

In addition, negative Wall Street perception of speculative newbuildings had left many US-listed drilling companies reluctant to build rigs for fear that they couldn't get long-term charter for their rigs. It was also during this time that Keppel partnered our customers to build and co-own rigs.

The current persistent high oil price since 2003 and ageing drilling rigs gave an opportunity for the visionary Norwegian investors to invest in drilling rigs.

Attracted by the boom, several inexperienced shipyards are entering the rig building business. However, we need to realise that the ability to win projects does not necessarily mean the ability to



To execute a rig project successfully, it is crucial for yards to manage the entire supply chain effectively, CB Choo shared this insight

booming rig market

deliver value to stakeholders. In fact, as previously experienced, many offshore rig projects resulted in high cost overruns and delayed deliveries that led to the bankruptcy of some shipyards. Shipyards can be very busy but are losing money, such as some Korean yards.

Rig building projects are complex, time sensitive and involve many parties. Successful rig yards must have strong contractual and good project execution capabilities. To do that they need good people, experience, relevant facilities and a good understanding of the customer, product and market.

Project Execution

First, we must understand the rigbuilding contract. Each contract has to be carefully and thoughtfully negotiated between the builder and customer. Work scopes must also be clearly defined and the yard must ensure sufficient control over elements they are responsible. Pricing must be right to commensurate for risks. To minimise risks, cash flow from customers must be more than the outgoings of the yard.

It is also important that the yard pay special attention to the termination, liabilities, indemnities and dispute resolutions clauses, as well as the project specifications included in the contract.

Rigbuilding is a very complex project. It is unlike shipbuilding, which is similar to constructing a warehouse, whereas rigbuilding is like putting together a specialised factory. Hence, for Keppel, in addition to working closely with our customers, we build the rigs to our own designs and install our own critical components such as the jacking systems and leg components to ensure effective control of the projects.

Most of the rig equipment are imported from the US, Japan, Korea and Europe. It is important that the supply chain is properly managed. In this respect, Singapore is fortunate because we have an excellent logistics infrastructure.

Over the years, Keppel FELS has invested over S\$250 million to build up our abilities to construct jackups and semisubmersibles effectively and efficiently. We will continue to invest to improve our facilities and leverage the latest technologies to optimise the processes through engineering and R&D.

People

Every organisation is only as good as the people it has. In the rig boom, it is a challenge as the industry is short of good qualified and experienced people.

Keppel O&M is fortunate that we have been building offshore rigs in the last 20 years even during the downturn albeit only one or two rigs in some years. With the integration of our yards, constant recruitment from the Polytechnics and Universities, as well as scholarship awards, we have access to a large pool of experienced and qualified people. In addition, with the Government's enlightened foreign worker policy, we have also employed Malaysian, Filipino, Indian, Bangladeshi and Chinese workers.

With current order book of some S\$10 billion and 17 yards worldwide, we have to forge a strong team through our eight core values – “Can Do” with Passion’ Customer Focus; Committed to Health, Safety and the Environment; Accountability; Integrity; Innovations and Learning; Global Mindset; and People and Teamwork.



One of the key facilities that Keppel has invested to build up its rig construction capabilities is the floating cranes

Partners

A complex offshore rig requires inputs from the entire supply chain. As such, effective management of this chain is crucial to the project's success that is to deliver the rig on time, on budget, at a reasonable profit and more importantly, keep a happy customer who will keep coming back to us.

Ultimately we have to create value to our stakeholders – customers, shareholders, employees and business partners. 

For the full transcript of CB Choo's speech, please visit <http://www.keppelom.com/publications/specialfeature2.asp>

Flying to the rescue

After enduring a 19-foot punchthrough, the legs of ENSCO 107 remained unscathed with minor damages to peripheral structures at the drill floor surrounds.

Nevertheless, the ENSCO project team took no chances. Keppel FELS' flying squad was called in. Repair of the rig was completed ahead of schedule, and in 34 days, ENSCO 107 was back in Vietnam waters.

On 17 June 2006, while pre-loading on a drilling location offshore Vietnam, the

ENSCO 107, a KFELS B Class design jackup drilling rig, had punched through on its Port leg due to the site's soft soil conditions.

ENSCO International Inc, (ENSCO) requested for Keppel FELS' help onsite.

Within a few hours, Keppel's flying squad was activated to fly into Vietnam. Inspection revealed damages were confined to the drill floor, wind walls and electrical systems.

Fred Glander, Engineering Manager of ENSCO, said, "The repairs were confined to a small vertical area above and below the drill floor. Keppel FELS had

everything organised and on track so I had all the confidence in KFELS and our rig team to finish the job."

The rig arrived at Keppel FELS in Singapore 10 days later. The swift diagnosis by the flying squad, and advance preparation by Keppel FELS at the yard, enabled repairs on ENSCO 107 to get underway immediately upon her arrival. Further tests and checks were carried out to confirm no other damages.

The works were initially meant to be completed in 41 days. However, with the close co-operation and determination of the ENSCO and Keppel FELS project teams, the repair works were completed on 30 July 2006, 7 days ahead of schedule. ENSCO 107 has since returned to work offshore Vietnam.

A very impressed rig manager Bill Stibbs congratulated the project teams on the accelerated delivery saying, "I am very pleased with the response and service provided by Keppel. Once the wheels were set in motion, the action took place very fast. Keppel has been very professional in handling the emergency and the co-operation between our teams has been excellent."

The ENSCO 107 was designed and built by Keppel FELS. It was delivered one month ahead of contractual schedule, and within budget in January 2006. It had enjoyed a successful six-month stint off the shores of Thailand and Malaysia before its assignment with Korean National Oil Company offshore Vietnam.

Keppel FELS is currently building its sister rig the ENSCO 108 and two ultra-deepwater semisubmersibles the ENSCO 8500 and ENSCO 8501.



ENSCO 107 undergoes fast track repairs at Keppel FELS



Bob Long and the Transocean team at Keppel FELS

Long tours Keppel FELS

Keppel O&M welcomed Transocean President Bob Long when he visited Keppel FELS on 29 June 2006.

CB Choo and CH Tong received him and exchanged views of current market trends and opportunities during a dialogue session.

Following the discussion, they took him on a tour of Keppel FELS yard where he had a first hand view of the repair of Transocean's semisubmersible, the *Sedco 702*.

The President of the world's largest drilling company also had the opportunity to witness various newbuilding and upgrading projects in progress, as well as repairs jobs such as *Bohai 4* and *ENSCO 107*.

Perfecting the jack

Moving a jackup rig and installing it onsite is a delicate operation requiring robust planning and careful procedures.

Offshore Technology Development (OTD), Keppel O&M's R&D arm and jackup rig designer, has developed critical equipment, such as the jacking, fixation and monitoring systems, to perfect the operation.

The equipment allow for the operation to be carried out swiftly and safely. They are well received by the industry as one of Keppel FELS' valued customers, Premium Drilling, can attest to.

Engineering Manager, Steve Nowak, had returned after *Deep Driller 2*'s rig move from Miri, Sarawak to Brunei. *Deep Driller 2* is of the KFELS Super B Class jackup rig design and was delivered ahead of schedule to Premium Drilling on 27 April 2006. The rig's move is the third since her delivery.

Impressed with the critical offshore systems that are installed onboard *Deep Driller 2*, Steve wrote, "I am very satisfied with the excellent performance of Keppel FELS' jacking, fixation and Enhanced Monitoring System (EMS) onboard *Deep Driller 2*. Keppel FELS has made very good progress in perfecting the reliability

and efficiency of jackup equipment, which have contributed to our rig's smooth moving operations."

The unique feature of Keppel's EMS is its intuitive and graphical human interface that extracts real-time data collected from the rig's rack phase differential (RPD) and chord load monitoring devices.

With the data, rig operators can make informed decisions and take the necessary correction or preventive actions. The EMS system also serves as a type of "black box", which guides post-mortem works after a rig installation.

Looking ahead, Dr Foo Kok Seng, GM of OTD, said, "The EMS will be enhanced with tools that can help operators better visualise the behavior of their rig. It can also be linked to other modules such as the leg penetration monitoring and various scenario planning tools. This will allow operators to develop better procedures to mitigate risks during a rig's installation."

"I am heartened by Steve's positive comments and we will continue our efforts to be at the forefront of technology and as a preferred partner in solutions", Dr Foo added (See page 28 on the successful spudding of *DD2*).

Through extensive R&D, OTD has developed critical offshore systems that enhance a rig's operations





Brilliant start to the first two AHTS for Hadi

Tacking the course in Nantong

The buoyant offshore industry has led to a surge in Keppel O&M's order books. Keppel Nantong Shipyard, too, is riding the waves with new shipbuilding projects.

Current jobs include the construction of four Anchor Handling Tug/Supply (AHTS) vessels for repeat customer, Hadi Offshore Pte Ltd (Hadi) and two AHTS vessels for Gulfmark Offshore Inc. The yard is also building two 45-tonne bollard pull harbour tugs.

The keel laying ceremony of Hadi's first two vessels, *H001* and *H002*, was held on 21 July 2006. Senior management and the project team from Hadi were greeted by fireworks to mark the start of the newbuilding projects.

T.K. Rajgopal, GM of Hadi H. Al-Hammam Est., the holding company of Hadi, commended, "The fact that the [keel laying] ceremony was organised in a short span of time shows the dedication of your workforce in Nantong. The "Can

Do!" spirit of Keppel is also demonstrated in China... We are very confident that the vessels being built here will be of the same high standards as those constructed in Singapore.

"This keel-laying is only the beginning of many more vessels to be built in Keppel Nantong and we pray and wish the very best of success for the new facility. We are confident that the relationship between Hadi and Keppel will continue for years to come."



Newbuilding projects at Keppel Nantong



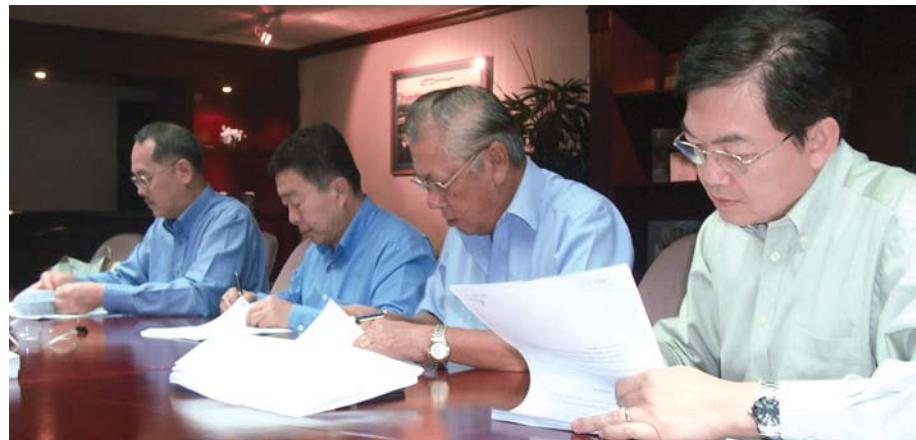
Keppel Cebu inks new deal

Keppel Cebu Shipyard (Keppel Cebu) has inked a new contract to build two harbour tugs for Maju Maritime Pte Ltd (Maju Maritime) on 21 July 2006, on the back of the keel laying of the yard's first offshore newbuild for the foreign market in May this year.

"These two orders bring the number of tugboats being built for Maju Maritime by the Keppel yards in the Philippines to four, with the other two built in Keppel Batangas Shipyard," said Ben Chew, General Manager of Maju Maritime.

Toh Ko Lin, Chairman of Keppel Cebu and President of Keppel Philippines Marine (KPMI), commented, "We appreciate the trust and confidence that Maju Maritime has in Keppel Philippines' shipyards with these new orders."

The construction of the two new 50-tonne bollard pull Azimuth Stern Drive (ASD) twin-screw tugs will be based on the design by Keppel Singmarine's research and development arm, Marine Technology Development (MTD). These steel-hulled tugs will be equipped with firefighting and oil pollution control capabilities.



Signing the newbuilding contract are (from left) Tang Tong Hee, Senior Vessel Manager, Smit Singapore Pte Ltd; Ben Chew, Fok Swee Yin and Toh Ko Lin

Equipped with two powerful Niigata 6L26HLX marine engines generating a combined force of 4,078 PS that drives the two Niigata ZP-31 propulsion systems, the tugboats are well-adapted to manoeuvre big ships in crowded ports and tow vessels in coastal water. Three 83ekW Cummins diesel driven generator sets provide the auxiliary power.

The 30-metre long and 10.5-metre wide tugboats will be able to accommodate 10 personnel each. It will be provided with the latest navigational aids and communication equipment. SOLAS-

compliant life-saving apparatus and FiFi Class 1 offship fire-fighting and dispersant system will also be provided.

Fok Swee Yin, President of Keppel Cebu, shared during the signing ceremony, "Keppel Cebu is proud to build its first 50-tonne tugs in the Philippines. With our dedicated team of engineers and personnel, we are confident of carrying out an excellent job and meeting our clients' requirements."

The ISO certified Keppel Cebu yard's facilities in Lapu-Lapu City have been recently upgraded to take on multiple shipbuilding projects as it ventures into this buoyant segment of the marine industry.

Delivery of these two tugs is expected to be in October 2007 and January 2008 respectively.

Maju Maritime is managed by Smit Singapore. Its services include harbour towage, standby duties, tow out of offshore structures, outside port limit ship-to-ship transfer, marine support and coastal towage.



Keppel Cebu seals contract to build two 50-tonne ASD tugs for Maju Maritime

August days for Keppel Batangas

August 2006 was a striking month for Keppel Batangas Shipyard. The yard struck the first plate of steel for two semisubmersibles, which marked the beginning of production for two very important customers, GlobalSantaFe and ENSCO International.

Red-letter day for GSF

Another significant milestone for Keppel Batangas Shipyard was marked on 1 August 2006 as it cut the steel for its second offshore rig, an ultra-deepwater semisubmersible drilling platform of GlobalSantaFe Corporation (GSF).

It was only seven months ago when Keppel Batangas struck the steel for its first rig, a semisubmersible for ENSCO. This project is on subcontract from Keppel FELS in Singapore.

The wholly-owned marine shipyard of Keppel O&M in Bauan, Batangas in Philippines won praises from Jason Montegut, Senior Project Manager of GSF, who presided over the cutting of the first steel plate for its new oil rig, *Development Driller III*.

Present at the ceremony were representatives from Keppel Batangas, Keppel FELS, GSF, American Bureau of Shipping and the Maritime Industry Authority (MARINA).

"It is a very exciting time for GSF. This is the

largest project that we've undertaken and we have the longest contract in our history," Jason shared his enthusiasm over the project.

He added, "I spent the few days looking around (Keppel Batangas Shipyard) and I have seen the quality with respect to how everybody feels about their work. What we have seen is that they take pride in what they do. The work that we have seen on the ENSCO rig and others in the yard, we are very much looking forward to that in our project."

"We feel that we are already a family with your positive comments," replied Toh Ko Lin, President of Keppel Philippines Marine, as he acknowledged the presence of the guests and colleagues.

"We want to assure our customers about our commitment. The development of our yards facilities to support the project is well underway including the construction of our second panel line shop. We have acquired another NC cutting machine, our biggest to-date, and we are increasing our workforce."

Jason Montegut and John Conlon of GSF officiating the strike steel ceremony



Keppel Batangas is building the port pontoon mid-section of GSF's semisubmersible with Subic Shipyard. They are targeting to complete it by April 2007. The hull blocks will be transported to Keppel FELS for assembly with the other parts of the drilling rig in Singapore.

Second milestone for ENSCO

On 16 August 2006, Keppel Batangas Shipyard cut the steel for another semisubmersible rig for ENSCO International.

Their first rig, the *ENSCO 8500*, like the second which is subcontracted from sister company Keppel FELS, began construction seven months ago in January 2006.

Jeff Saile, ENSCO's Senior Vice President, Larry McRae, Vice President (Operations) of Nexen Petroleum, Chip Rimer, Director of Operations Services from Noble Energy, Yeo Yue Ngiap, Senior Project Manager of Keppel FELS and Kok Boon Heng, Vice President of Keppel Batangas were present at the ceremony. Nexen Petroleum and Noble Energy are customers of ENSCO.

The elated Jeff Saile, proudly assured their customers that they would do their personal best in the construction, operation and execution of the semisubmersible drilling unit, the *ENSCO 8501*.

His confidence is founded in part on the many successful projects undertaken with Keppel FELS in the last decade. ENSCO's projects with Keppel FELS have always been on time or ahead of schedule and within budget.

In fact, *ENSCO 8500* has just celebrated its one million manhours worked without loss time incidents.

However, YN Yeo, Keppel FELS' SPJM for the ENSCO projects, is not resting on his laurels. A careful man of little words, he chose to highlight that the task of building the *ENSCO 8500* and *ENSCO 8501* rigs is "still ahead of us." He told the Keppel FELS and Keppel Batangas teams, "Let us not be complacent. I urge everyone to be vigilant and to keep up our commitment to complete the jobs on time and on budget, and as well as to high safety record and quality standards."



Scott Dauphinee and Charles Yap

Subic Shipyard

Vying for a slice of the action is Subic Shipyard, which struck steel for the mid section pontoon of GSF's *DD III* on the wet day of 15 August 2006.

The rain, however, did not deter the ceremony from pushing ahead. Instead, for Charles Yap, President of Subic Shipyard, the downpour signified a volley of blessings to the start of the building of the "foundation of the rig."

Subic Shipyard's small beginning in the construction of offshore rigs only serves to excite Charles and his team of more and greater offshore work in the days to come.

Unabashed with his high hope for the shipyard, and sharing it with the employees, he said, "We hope to play a bigger role in the construction of future rigs with the vision that we can one day build a complete rig."

He urged the workers during the ceremony, witnessed by Scott Dauphinee, Welding Inspector from GSF, C. Ponnambalam, Quality Assurance representative from Keppel FELS and union representatives to "release and maximise your potential and to believe that you are capable of more than you already done."



From left: George Lee (Keppel FELS PJM), Don Weisinger (Noble Energy), Roselle (ABS Philipines rep), Butch Bagley (Nexen Petroleum), Paul Wildberger (ENSCO, GM of Capital Project), Ron Couet (ENSCO, PJM of Capital Project), YN Yeo and Chip Rimer

Teamwork gives wings to Angel

Keppel FELS and Keppel Shipyard teamed up to successfully upgrade and repair *JT Angel*, a Friede & Goldman L-780 MOD II jackup for Transocean Offshore Drilling Services LLC (Transocean).

Leveraging the expertise of Keppel FELS for specialist drilling equipment and systems, as well as the experience of Keppel Shipyard in repair projects, both companies were able to maximise resources and add value to the repairs.

JT Angel prepares to unfurl her wings and return to sea after receiving the Keppel service



While *JT Angel* conducted its special periodic survey in the yard, she received extensive blasting and painting on the hull, tank and legs. Steel renewal and piping repairs were also completed in the process. In addition, Keppel FELS undertook specialised repairs on the leg racks.

The renewal of 300 tonnes of steel within a tight schedule provided a challenge to Keppel that they overcame, completing the repairs on time and on budget.

In a letter to the Keppel project team, Serge Mallet, *JT Angel*'s Project Manager from Transocean complimented them, "The project, which posed various challenges at different stages, was completed without any recordable incidents and is a good example of team work between Transocean and Keppel."

"We would also like to mention that Keppel's project team has set good standards in engineering as well. We appreciate the effort and help extended by Keppel towards the end of the project in preparing the rig for departure and the support provided when the rig was in anchorage."

The repairs and upgrades were completed in June 2006 after four months in the yard. The rig left the anchorage on 3 July to resume operations in Indonesia.

Keppel has proven itself as a one-stop solution for all offshore and marine needs with its efficient use of resources whether it is newbuildings, upgrades, repairs or conversions.

In addition to the repair of *JT Angel*, the Keppel O&M group continues to repair and upgrade various rigs from valued client Transocean. Keppel AmFELS recently completed the repair project, *Transocean Marianas* in March 2006 to the satisfaction of the customer. Keppel FELS and Keppel Verolme are each in the process of upgrading of a Sedco 700-series semisubmersible drilling rig.

Hive of activities at Keppel FELS



Celebrating another milestone in the partnership between Keppel and SeaDrill



ENSCO 108 and Deep Driller 5 undocked

A record number of projects have seen a high level of activities in Keppel FELS. Led by an excellent team of project managers, milestones in various production phases are being achieved on schedule.

The following milestones of striking steel, keel laying and undocking took place consecutively within one month.

Strike Steel

GlobalSantaFe's (GSF) *Development Driller III*, a state-of-the-art ultra-deepwater drilling rig, struck steel in Keppel FELS' Pioneer yard on 29 July 2006. This rig is being built to the DSSTM51 design jointly developed by Keppel's Deepwater Technology Group and Marine Structure Consultants (MSC).

With a touch of the button, GSF Project Manager, Bob McKechnie, ignited the plasma-cutting machine in Pioneer yard, signifying the start of the project's production phase. *Development Driller III* is scheduled for delivery in the first quarter of 2009.

Other projects that struck steel were

SeaDrill Limited's (SeaDrill) jackup, *West Ariel*, and Maersk's second jackup unit.

To be built to the world-renowned KFELS B Class jackup design, *West Ariel* is one of the four B Class units Keppel is building for SeaDrill.

"We are constantly developing innovative building methods by maximising available resources and drawing on fabrication and assembly capacities of the various yards to meet the growing demand for rigs," said Jay Singam, Keppel FELS Project Manager for *West Ariel*.

Maersk's second jackup unit is also one of four units that Keppel FELS is fabricating for Maersk. Being built to the CJ-50 design, they can operate in water depths of up to 350 feet, and drill high-pressure wells down to 30,000 feet.

Keel Laying

Maersk's first jackup laid its keel on 3 August 2006, in Pioneer yard's Admiral Dock two days after its sister rig struck steel. Sitting on the keel blocks, progress is well underway for this jackup unit as it

is scheduled for undocking in the fourth quarter of 2006.

GULF-5, Gulf Drilling Inc's (GDI) second rig to be built in Keppel FELS also laid its keel on the slipway of Keppel FELS' Pioneer Yard 3.

Undocking and Fleeting

Two KFELS B Class jackup units in the Admiral Dock were undocked and berthed at the quayside. These projects were ENSCO's *ENSCO 108* and Deep Drilling Invest's *Deep Driller 5*.

Two other rigs, SeaDrill's *West Atlas* and *SeaDrill 4*, which were also in the drydock, were moved further out towards the exit of the dock in a process called fleeting. Fleeting is a procedure of moving rigs under construction towards the gates of the drydock.

As the rigs advance in their progress and become more completed, they are fleted to make way for new keels to be laid. This requires extreme precision as the gap between the hull and the walls of the drydock are less than a metre.

Walking the talk for safety

When it comes to safety,
everyone counts



Safety has always been top priority for Keppel O&M in every project. To encourage workers to put in their best for safety, each project team works closely with owners to reward "No Loss Time" records during project milestones.

At a safety bonus award ceremony for the construction of a semisubmersible at Keppel FELS, Erik Madsen, Site Manager of Maersk Contractors (Maersk) noted the safety culture inherent in Keppel.

He said, "As I have been around in this industry for a long time, I have seen many yards and workplaces with safety messages displayed on walls and posters but little action and commitment.

"In Keppel FELS, people practise what they preach. In the last three months, I have seen all workers in Keppel FELS commit to the highest standards of safety all the time. The safety culture is evident in the management, the workers and the sub-contractors."

Here is what various project teams have achieved in the last two months.

Project	Owner	Yard	Manhours without LTI
Deep Driller 3	Sinvest	Keppel FELS	2,000,000
Deep Driller 5	Sinvest	Keppel FELS	1,000,000
Semisubmersible	Maersk	Keppel FELS	500,000
SeaDrill 4	SeaDrill	Keppel FELS	1,000,000
ENSCO 8500	ENSCO	Keppel FELS	500,000
Maersk Jackup	Maersk	Keppel FELS	500,000
Sedco 702	Transocean	Keppel FELS	500,000
FPSO Polvo	Prosafe	Keppel Shipyard	1,000,000

Strides and stripes

Six Keppel FELS project teams earned their stripes for the strides taken in achieving a clean safety record for their projects.

Together, they clocked in over five (5) million man-hours without lost time incident, attesting to Keppel FELS' commitment in maintaining high standards in Health, Safety and the Environment (HSE) as a lifestyle in the yard.

The project teams of the Maersk semisubmersible DSS™21 and the Maersk B273 semi (no.1) both achieved 500,000 man-hours each with no loss time incident. In recognition, Maersk Contractors presented the two Keppel project teams with cheques of \$16,000 each.

This culture of safety was also evident when Deep Drilling Invest Pte Ltd (DDI) gave out two awards to the Keppel project teams of *Deep Driller 3* and *Deep Driller 5* for achieving two million and one million safe man-hours respectively. The teams were each awarded a \$10,000 bonus for their vigilance on safety.

Maintaining the grit for safety is the *Sedco 702* project team working on Transocean's semisubmersible. They achieved 500,000 worked hours without lost time incident on 28 July 2006.

Expressing their appreciation of the workers and subcontractors whose collective efforts contributed to the accomplishment, Transocean presented 155 safety awards to the individual workers on the project teams.

Transocean praised Keppel FELS' HSE philosophy of carrying out an "Incident Free – Zero accidents, Zero Loss, no harm to people and no damage to the environment."

In addition, *Seadrill 4* also reached a safety milestone going one million man-hours without lost time incident. As a token of appreciation to the project team's safety efforts, Seadrill gave the Keppel team a bonus of \$10,000.

At the award ceremony for *Seadrill 4*, CH Tong reiterated Keppel's commitment to the safety culture saying, "I think we have reached a point where behavioural change is the difference between taking the message casually and making every word count. We practise what we preach.

"It is through training, orientation, careful guidance and more importantly, the emphasis placed on making our workplace safe that will inculcate in our staff a sense of responsibility. Having said so, we are only as good as our last project. Therefore, we strive to achieve high safety standards not only on our first or second million hours but every million, for every project."

Polvo in safe hands

Imagine 1,000 workers criss-crossing each other in a building as big as the Empire State Building, it is a wonder that they don't collide into each other at least once. Not for the FPSO *Polvo*.

The former *MT Apollo*, a tanker measuring 340.6 metres by 54.56 metres and 28 metres

Continued on page 18 ►



The *Polvo* project team showing off their award

◀ Continued from page 17

deep, the vessel is being converted by Keppel Shipyard into a floating production storage offloading (FPSO) facility.

The vessel achieved its one million manhours without any lost time incident.

Keppel Shipyard and Prosafe's site teams worked very closely together to achieve this safety milestone. Prosafe and Keppel Shipyard's senior management congratulated the project teams involved and presented them with a safety award on 5 August 2006 to commemorate this event.

Stuart Brown, Prosafe's construction manager, praised the teamwork involved in achieving this milestone, saying, "The cooperation between Prosafe and Keppel starts from the VSCC meetings in the mornings and safety becomes the priority for every worker involved in the project."

To be completed by year-end, major works include refurbishment, blasting and painting as well as fabrication and installation of an internal turret, flare tower, helideck, and accommodation upgrading.

S. Sugumaran, Keppel Shipyard's Senior Project Manager, credited the safety record as "the total commitment of the foremen, supervisors and subcontractors on board the project."

STEPS to zero accidents

Think, Observe, Identify, Control and Act. These are five easy Self Task Evaluation Process (STEP) steps to zero accidents.

During this year's (HSE) campaign, employees of Keppel FELS were reminded that hazards present in a particular activity should flagged out for mitigation if not elimination, before work even begins.

Launched in 2003, STEP is a simple and systematic method for employees to evaluate their performance before and after work. It accounts for many of the safety awards that Keppel FELS has achieved in the last few years.

During the month-long campaign which began on 7 July, employees participated in activities such as the safety photo hunt quiz, safety slogan competition, safety drawing competition and section exhibit competition. These activities engaged employees and helped them become more familiar with the STEP.

Recognising the people behind the campaign, Michael Chia, ED of Keppel FELS said at the closing ceremony, "Fu Wei Wen, Chairman of the HSE committee and his team has put together many activities to achieve the objective of inculcating the importance of risk assessment and safety in all of us. Let us continue to be proactive in working towards our goal of achieving zero accidents, and towards our mission of providing a safe workplace for everyone."

The safety message was translated into 6 different languages to ensure that the workers of various nationalities understand



Safety is golden

Keppel O&M is preparing for its first Group Safety Symposium to develop a set of Best Practices for HSE.

These golden rules for Safety will set a new benchmark and guidelines that govern workplace safety in Keppel O&M's yards around the world.

In preparation for the symposium, a two-day Safety Workshop was organised on 17-18 August 2006 and attended by 19 key representatives from the Group's local and overseas yards.

More than just an invaluable platform for the exchange of experience and know-how by individual yards, it will provide a fertile breeding ground for more synergistic development of safety initiatives and programs.

CH Tong expressed his support, "I am very happy that our people are taking the lead to enhance our benchmarks in HSE (Health, Safety and Environment) efforts. We need everyone to take individual ownership towards safety. Together, we can make our yards safer so that every direct and subcontract worker can return home safely."

At the safety workshop, decisions regarding the structure and alignment of the symposium and key challenges to safety were established. Discussions delved mainly into best practices, key success factors and recommendations. Arising out of which, six safety focus areas were identified as being critical. They include Leadership and Management Commitment, Risk Assessment, Safety Induction, Confined Space safety, Permit-to-Work, and Major Lifting Operations. Six workgroups are now hard at work collating relevant information and streamlining processes for sharing at the upcoming symposium.



Championing higher HSE benchmarks at Keppel O&M's global yards

One of the HSE Champions, Abu Bakar from Keppel Shipyard, was pleased with the workshop, "Let this be a starting point for all of us. Especially with the network and bonding established, I have great confidence that it will facilitate and enhance more sharing and alignment of safety initiatives and programs within Keppel O&M."

Indeed, the workshop was a good opportunity for representatives of the globally dispersed yards to convene as a unified Keppel O&M family.

Gilbert Elizondo, VP of Human Resources, Keppel AmFELS, expressed this aptly, "The mutual support and cooperation shown at this workshop demonstrates the shared commitment within the family of yards to improve safety standards, and has also laid substantial groundwork in ensuring a successful symposium to be looked forward to in early-2007."

The symposium was initiated ground-up by the HSE department, but the success of the symposium will rest on keen participation and ownership of the project from everyone.

LH Chan, GM of Arab Heavy Industries, said it best, "Safety is a responsibility for every member of the Keppel O&M family – from every yard to every department and right down to every individual. The ultimate aim, which is to establish a set of Keppel O&M Best Practices, must draw from the vast experience of our worldwide operational units.

"Valuable inputs from our worldwide HSE departments and operational staff will make these Best Practices part of our Keppel O&M core values for superior HSE management. With the support of management and each member of the Keppel O&M business units, we are confident that this will make us the industry leader in HSE Management."

Seeding the future

Keppel Cebu Shipyard has launched an apprenticeship programme for various trade skills recently.

Accredited by the Technical Education and Skills Development Authority (TESDA), this apprenticeship programme is made available to youths living in the community.

This programme is not new to Keppel's shipyards in the Philippines. Keppel Cebu's sister yard, Subic Shipyard has had such apprenticeship programme for welders and shipfitters since 1999.

Out-of-school youths acquire new trade skills at the Keppel Batangas Training Centre

Another sister yard, Keppel Batangas started offering apprenticeship opportunities for school leavers of Bauan, Batangas, and other nearby municipalities in 2004. The program is run by Keppel Batangas Training Centre.

The aim of such programmes is to cultivate competencies and teach new technical skills to trainees in areas such as welding, ship fitting, scaffolding, shop drawing interpretation, safety and other yard-related work.



The Apprenticeship Programme provides practical on-the-job training and hands-on opportunities to apply newfound knowledge and trade skills in shipyard activities

Toh Ko Lin, President of Keppel Philippines Marine, Inc (KPMI), the listed company for the three shipyards in the Philippines shared, "Keppel will continue this tradition of being a partner for progress in the community by creating and fostering a sustainable community of young people who will be productive members of society."

Youths who have passed the trade tests are provided practical on-the-job training in the respective shipyards and opportunities to apply their newfound knowledge and trade skills in shiprepair activities.

Outstanding trainees get a chance to work overseas in Singapore at various Keppel yards. They will receive further specialised training on rig and shipbuilding.

Established in the Philippines in 1975, KPMI has a long tradition of being a seedbed for many of the industry's marine engineers and skilled workers. The company has over the years offered scholarships, internships and short training programs for undergraduates and school leavers. The Apprenticeship Programme is one of its latest programmes to meet growing demand for shipcare and offshore services as well as encourage the youth to be industrious members of society.



Keppel strides ahead with 3D technology

As the market for offshore drilling rigs and floating production units continues to soar, Keppel O&M is meeting the demand with the help of a next generation software solution.

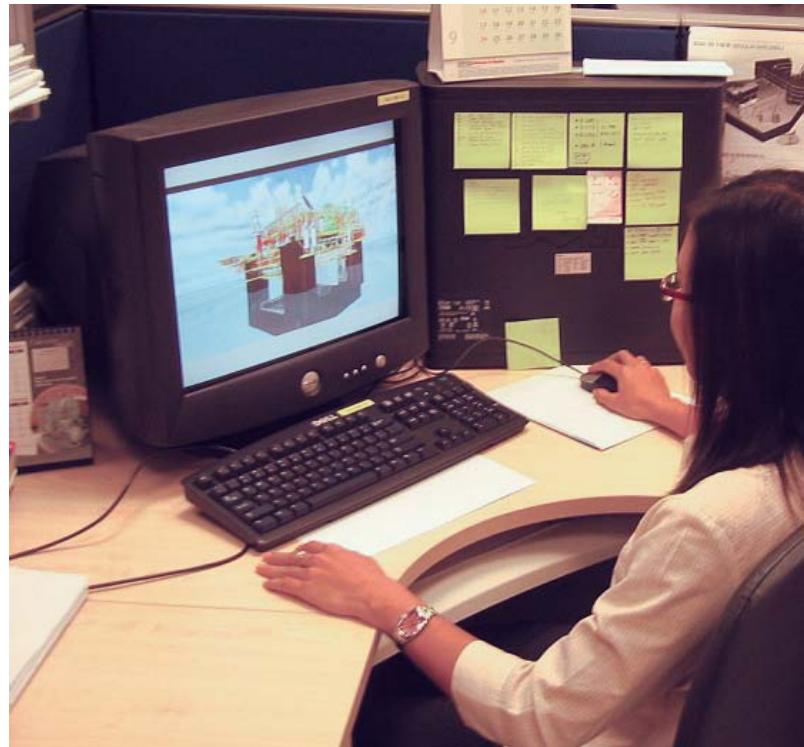
The group has invested in Intergraph's next generation *IntelliShip* software which is a data-centric solution for streamlining shipbuilding design processes and work to preserve existing data, making it more usable.

Its offshore subsidiary, Keppel FELS, has been using Intergraph's Plant Design System (PDS), SmartPlant Review (SPR), Support Modeller and INtools (instrumentation design tool) for the engineering design of the P-51 and P-52 projects.

The P-52 and P-51 are floating oil-processing semisubmersibles destined for offshore Brazil. With a displacement of 81,000 tonnes, each unit is capable of producing 180,000 barrels of oil daily.

Aziz Merchant, Keppel O&M's General Manager for Engineering said, "We started talking to Intergraph towards the end of 2003 about using PDS to deliver the P-51 and P-52 projects. At the time, this software was new to us. They provided us training which helped our team understand the tools and their usage."

"The PDS improves our skills and productivity by reducing the manhours required for design projects. The user interface and the graphics capabilities are also good," Aziz said. "The software, SmartPlant Review, enables us to review the data while we are doing the modeling. This is a great advantage for us."



Engineering the next generation offshore rigs with the latest technology

The engineering department has completed the trial of *IntelliShip*, and is planning to use *IntelliShip* as well as other Intergraph solutions including PDS, SmartPlant P&ID, SmartPlant Instrumentation, SmartPlant Electrical, SmartPlant Review and Support Modeller.

These software solutions are designed to provide shipbuilders with better decision support capabilities to facilitate global design, production and life cycle optimisation which ultimately makes the shipyard more competitive.

"Now that we have committed to *IntelliShip* we hope to be using the software as our 3D solution in Keppel O&M by 2007/2008," Aziz added.

One extraordinary 'son'

The gargantuan P-52 floating production unit (FPU) received 'presidential praise' for a job well done even as it is almost being completed.

His Excellency, Luiz Inácio Lula da Silva, President of Brazil, visited BrasFELS Shipyard, a subsidiary of Keppel FELS Brasil, on 3 August 2006 to bring himself up to speed with the progress of his "son".

He said, "It's like watching a son grow. When I meet my wife later today, I am going to tell Marisa that I have spent my whole day watching BrasFELS getting the work done for the P-51 and P-52 platforms."

The President was accompanied by Petrobras President, José Sergio Gabrielli, CH Tong and President of Brazilian Economic and Social Development Bank (BNDES), Demian Fiocca.

Beaming with 'parental pride', the President added, "Everything here is a result of a national controversy. They used



The team from the Keppel-led consortium and Petrobras that made the birth of the "extraordi-



A hug from His Excellency Lula Da Silva to Keppel O&M MD/COO Tong Chong Heong (right) as Keppel FELS Brasil President/CEO Tay Kim Hock (second from left) and BrasFELS President Gilberto Israel (left) looks on

to say that shipyards in Brazil did not have the right conditions to build platforms. And I am here looking at one extraordinary unit." He was referring to the P-52, which will be the world's third largest FPU when completed.

From conception to construction, many doubted the viability of the P-52 and P-51. Most of the issues were related to matching the needs of the economy of Rio and the economics of the two mega projects.

Back in 2003, Lula da Silva, who was then campaigning for Presidency, made building the two projects worth nearly US\$1.5 billion, largely in-country as the main platform for generating employment and to stimulate the economy for Rio.



“extraordinary son” possible

On the other hand, the need was pressing to get both projects quickly underway to address Brazil’s depleting energy production and reserves. Brazil’s offshore and marine building industry was just rejuvenated, and foreign expertise was needed.

While Petrobras, the Brazilian national oil company, was working through the tough issues with the government, including tax on imported equipment and domestic content requirements, Keppel O&M and Technip Offshore structured an innovative arrangement that allowed the partners to bid successfully for both jobs. Their ingenious bids stunned the market, but led Petrobras to review its original tender rules which prevented both contracts going to the same consortium.



The President amidst excited shipyard workers of BrasFELS

Happily, a compromise was reached between the government and Petrobras. In December 2003, Petrobras awarded the Keppel/Technip consortium the 81,000-tonne *P-52* project. Then in May 2004, the *P-51* FPU was also awarded to the same consortium. President Lula presided over the contract signing for both projects.

However, the award of the *P-51* project prompted industry veterans to wonder if the Keppel/Technip partners were biting off more than they could chew.

But with the Brazilian government fully supportive, all the stakeholders were deeply committed to the success of the projects. The Petrobras and Keppel/Technip teams quickly got down to putting in place new and innovative management, logistics, administrative and operational systems. These were created to ensure that there were transparent and timely communication as well as rapid

flow-through of concerns and issues to senior management on both sides.

The government’s objective was also fulfilled. José Sergio proudly reported to President Lula that the *P-52* project created more than 4,300 direct jobs and approximately 13,000 indirect jobs. For *P-51*, there are 4,800 direct and approximately 14,400 indirect employments.

Onboard the near-complete platform, the jubilant President hugged the shipyard workers and promised that he will return to BrasFELS yard yet again – for the christening ceremony of his “extraordinary son”, to celebrate the completion of the *P-52* floating production platform.



P-52 FPU

Semisubmersible newbuilding

Client	: Petrobras
Length	: 125 m
Breadth	: 110 m
Height	: 101 m
Displacement	: 80,000 tonnes
Mooring Lines	: 16
Oil Production Capacity	: 180,000 bopd
Gas Compression Capacity	: 9,300,000 Sm ³ /d
Water Injection Capacity	: 48,000 m ³ /d
Classification	: DNV
Field	: Roncador Field, Brazil
Water Depth	: 1,800 m

P-51 FPU

Semisubmersible newbuilding

Client	: Petrobras
Length	: 116 m
Breadth	: 110 m
Height	: 101 m
Displacement	: 80,000 tonnes
Mooring Lines	: 16
Oil Production Capacity	: 180,000 bopd
Gas Compression Capacity	: 6,000,000 Sm ³ /d
Water Injection Capacity	: 45,000 m ³ /d
Classification	: DNV
Field	: Marlim Sul Field, Brazil
Water Depth	: 1,225 m

Keppel FELS Brasil has successfully achieved the critical milestone in the 81,000-tonne P-52 floating production semisubmersible unit (FPU) when it completed the delicate and complex marine mating operations in early July. This is a testament of the good teamwork and impressive engineering proficiency.

The project is now 91% completed overall, and the project management team will push on for the hook-up and integration phase, with the same commitment and zeal for the mechanical completion by end of 2006. First oil is expected in early 2007.

The 81,000-tonne P-51 FPU, which is being built by Keppel FELS Brasil, is now at 63% completion. Her construction is in like manner as the P-52 FPU.

The P-51 pontoon blocks and nodes forming two huge "C"-shape will be launched around the third quarter of 2006. The joining of the two "C"-shape halves of the pontoon will follow immediately.

The four column blocks currently under construction, each weighing about 1,500 tonnes will then be lifted and positioned

Serving up a buffet of solutions for exploration and production in Brazil

Providing a wide spread of effective solutions to customers is the driving desire behind every Keppel O&M project team. With the group's "near market, near customer" presence in different parts of the world, Keppel O&M optimises its group resources to give value-added services to its customers. This article chronicles work-in-progress for various customers who are building offshore structures for deployment in Brazil. The end user is Petrobras, the national oil company of Brazil.

Continued on page 26 ►

to the joined pontoon to form the gigantic lower hull structure weighing 17,000 tonnes and measuring 85 metre by 85 metres and 44 metres in height.

Concurrently, the construction of the deckbox is in progress and will be ready to be skidded over onto a floating barge in the drydock. Once the deckbox is floated out on the barge, the installations of all the process modules will commence.

The mating of the deckbox and spiderdeck with the lower hull is scheduled for early 2007.

P-52



P-53 (Ex-Settebello) FPU

Conversion from tanker to an FPU

Length	: 346.24 m
Breadth	: 57.36 m
Depth	: 28.5 m
GRT	: 152,374
DWT	: 322,446
Mooring System	: Internal Turret System
Oil Production Capacity	: 180,000 bopd
Gas Compression Capacity	: 6,000,000 Sm ³ /d
Water Injection Capacity	: 39,000 m ³ /d
Classification	: BV
Field	: Marlim Leste, Brazil

The P-53 floating production storage offloading (FPSO) facility is nearly 70% completed, and is expected to be on time for delivery towards the end of the year.

Work completed includes the lifting and installation of the moonpool structure, the assembly of helideck panel and installation of the helideck support structure, installation of the accommodation cabins, machining of upper bogie support and the upper turret and the installation of lower bogie support.

The vessel is expected to be drydocked in September for Turret Installation work. With 75 risers and a circumference of 25 metres, the P-53 turret is the largest in the world.

◀ Continued from page 25

FPSO Polvo (M.T. Apollo)

Conversion from tanker to an FPU

Client	: Prosafe Production
Length	: 340.6 m
Breadth	: 54.56 m
Depth	: 28.0 m
GRT	: 138,787
DWT	: 257,882
Classification	: ABS
Mooring System	: Internal Turret System
Oil Production Capacity:	90,000 bopd
Field	: Polvo Field, Brazil



The work scope for this tanker includes the fabrication and installation of the internal turret, flare tower and helideck; integration of production skids, boilers and turbo alternators and renewal of bottom plates, as well as internal tank blasting and painting.

Upon delivery in end 2006, the facility will be deployed in Polvo Field off Brazil for Devon Energy.

DSS™38 drilling rig

Semisubmersible

Client	: Queiroz Galvão Perfurações
Length	: 99.5 metres
Breadth	: 69.5 metres
Draft	: 20.5 metres
Main Deck	: 69.5 metres
Drilling depth	: 30,000 feet
Water depth	: 9,000 feet
Operational displacement:	40,000 tonnes
Variable deck load:	5,500 tonnes
Accommodation	: 130 men
Class	: American Bureau of Shipping
DYNAMIC POSITIONED SYSTEM	(DPS-2) requirements

The latest project that Keppel O&M is undertaking for Brazilian waters is the design and construction of a drilling rig for Brazilian drilling contractor Queiroz Galvão Perfurações (QGP) (see page 3).

A fifth generation deepwater solution, the DSS™38 semisubmersible drilling platform will be delivered in third quarter 2009 to support Petrobras' exploration and production programme.

SSP Piranema

Meanwhile, Keppel Verolme is pushing rapidly with construction of the riser deck and the integration of the 25,000-tonne SSP Piranema's topside for Sevan Production, to the great satisfaction of the Sevan and the Petrobras project team.

To be delivered in January 2007, SSP Piranema is on charter to Petrobras off the coast of Sergipe, offshore Brazil. It has a production capacity of 20,000 barrels of oil and a storage capacity of 30,000 barrels.

CALM Buoys

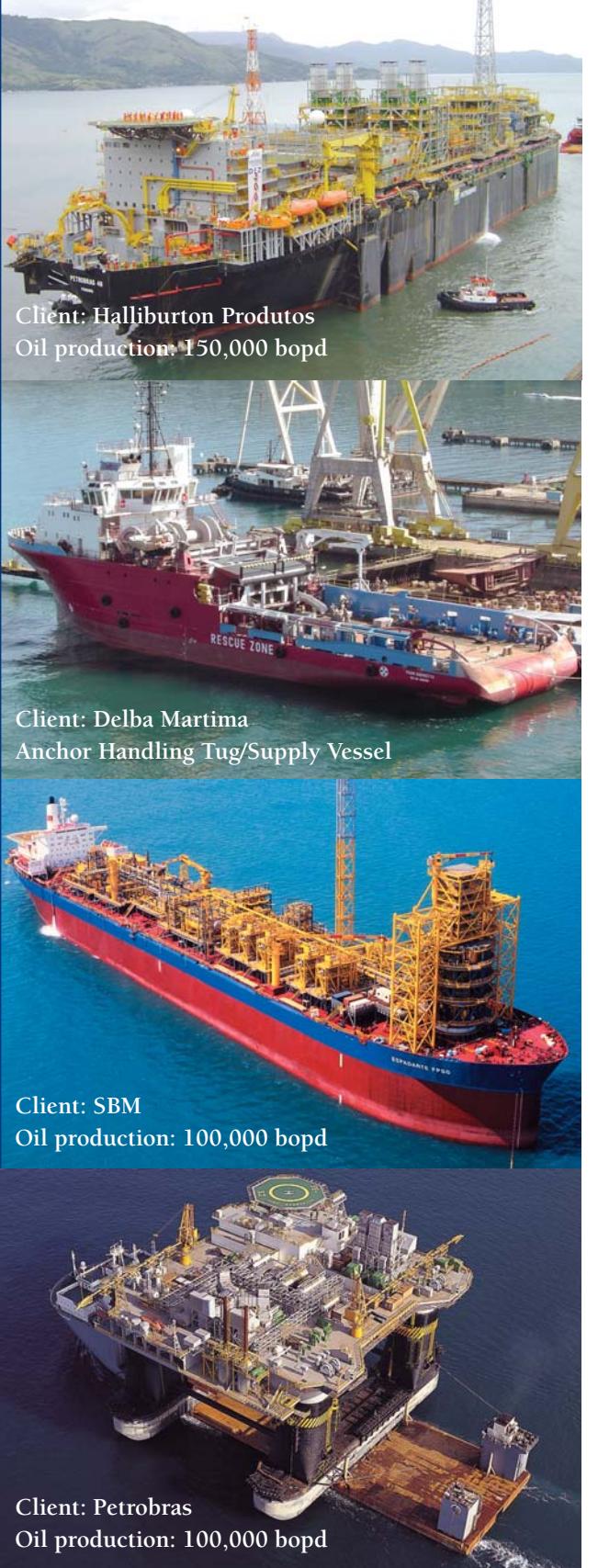
Keppel FELS Brasil S.A. was awarded by SBM Inc. the construction of two Catenary Anchor Leg Mooring (CALM) Buoys.

The two CALM Buoys will be installed offshore in the Campos Basin, Brazil by third quarter 2007. They will form part of the PRA-1, an Autonomous Re-pumping Platform Complex, which comprises of a Pumping Station Platform and a Floating Storage and Offloading (FSO) unit.

The PRA-1 Platform and FSO will receive crude oil from the Floating Production Units (FPU), P-51, P-52, P-53 and later the FPU P-55.

The PRA-1 Complex will re-pump the crude oil through these two CALM Buoys to export shuttle tankers. The CALM Buoys will provide mooring and loading to shuttle tankers of up to a size of 322,000 deadweight tonnage. The average export rate the CALM Terminals can handle will be up to 650,000 barrels per day.

Milestones of completed projects for Brazil

P-27 (1998)	 <p>Client: Petrobras Oil production: 50,000 bopd</p>	 <p>Client: Petrobras Oil production: 100,000 bopd</p>
FPSO BRASIL (2002)	 <p>Client: SBM Oil production: 90,000 bopd</p>	 <p>Client: SBM Oil production: 100,000 bopd</p>
FPSO MARLIM SUL (2004)	 <p>Client: SBM Oil production: 100,000 bopd</p>	 <p>Client: Delba Martima Anchor Handling Tug/Supply Vessel</p>
FPSO CAPIXABA (2006)	 <p>Client: Single Buoy Mooring (SBM) Oil production: 100,000 bopd</p>	 <p>Client: Halliburton Produtos Oil production: 150,000 bopd</p>

Deep Driller 2 makes first impressions

Deep Driller 2, the first KFELS Super B Class jackup rig, spudded successfully on its maiden assignment for Brunei Shell Petroleum Company in offshore Brunei Darussalam. Spudding marks the start of the drilling of an oil well where the first hole is bored into the seabed.

Premium Drilling, a drilling contractor and rig operator, called for Keppel FELS' involvement and assistance upon arriving. Keppel FELS responded promptly facilitating Deep Driller 2's timely start-up.

Appreciative of Keppel FELS' dedication and quick action in responding to Premium Drilling's queries, Sachin Mehra, Director (Projects) of Premium Drilling thanked the Keppel FELS team.

Hailed as a technological milestone, Deep

Driller 2 affirms the KFELS Super B design as one of the most capable drilling rigs in the world. Developed to withstand high pressure and high temperature conditions during operations, this drilling rig is capable of operating in water depths of 350 ft and drilling down to 35,000 ft. One of its key features is the ability to allow cantilever skid-off to the wellhead platform.

John Campbell, Site Manager of Deep Drilling Invest (DDI), said, "This rig broke new grounds for Keppel by being the first Super B rig to be built. Deep Driller 2 is an extremely amazing accomplishment as the rig was not only delivered ahead of schedule, it also achieved over two million manhours without any loss-time incident.

"Deep Driller 2 is a shining example of what good communication, hard work,



Deep Driller 2 is capable of operating in water depths of 350 ft and drilling down to 35,000 ft

dedicated people, excellent organisation and cooperation between partners can achieve. Everyone involved in this project should be very proud of what they have accomplished in a very tight schedule. It is a job well done by all of you!"

Deep Driller 2 was completed and delivered to Sinvest ASA ahead of schedule in April this year.



Sunrise at Keppel

Keppel Shipyard has successfully completed the docking and repair of membrane Liquefied Natural Gas (LNG) vessel, S K Sunrise.

The Mark III membrane LNG carrier, with a capacity of 138,000m³, arrived at Keppel Shipyard (Benoi) for its first intermediate survey docking in August 2006.

Major works for this 2003-built vessel include overhauling of its cargo pumps, main propulsion system as well as its cargo and cryogenic equipment.

S K Sunrise departed Keppel Shipyard on 18 August 2006 to resume operations

Keppel Shipyard became an authorised membrane LNG carrier repairer for Gaz Transport & Technigaz (GTT). GTT is a membrane containment system designer.

Through a Technical Service Agreement (TSA), Keppel Shipyard can tap on GTT's expertise in the design and maintenance of the membrane containment system. Keppel Shipyard's

specialised LNG Project Team is highly trained on membrane repair procedures, safety of the containment system as well as welding of the membrane.

This type of LNG carriers makes use of special technologies such as gas-tight membranes of thickness between 0.7 mm to 1.2 mm, and insulation layers.

Solutions for deepwater

In the May/June edition of OffshoreMarine, we introduced one of the designs in the SemiTEC™ suite of products, the DeepDraft™ Semi technology. In this issue, OffshoreMarine features the Extended Tension Leg Platform (ETlp®) technology, one of the designs in FloaTEC LLC's TlpTEC™ suite of products.

As an evolution of the conventional TLP design, FloaTEC LLC, developed the ETlp® (Extended Tension Leg Platform). The ETLP is designed to enhance features of the conventional TLP with particular focus on the following:

- Wider tendon base for greater pitch stiffness (stability)
- Smaller spacing of deck supports for more efficient structure
- Lower rotational inertia for hull and deck to lower pitch and roll natural period
- Large moonpool to accommodate conventional top tension risers

Advantages of the ETlp®

The ETlp® column spacing is independent of the tendon spacing, thus reducing deck structure and steel weight. In addition, de-coupling of the tendon porch separation distance from the topsides offers maximum design flexibility.

Other features and advantages of the ETlp® design include:

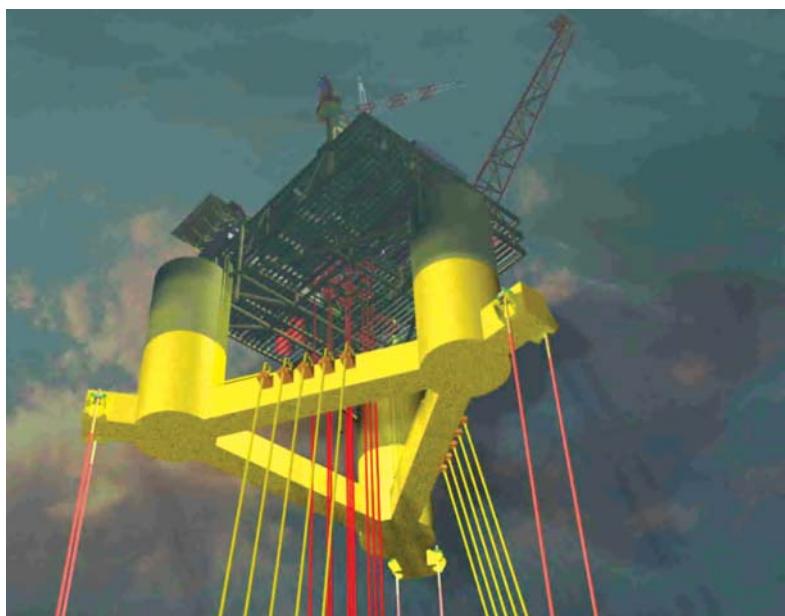
- Optimum column spacing for deck support, thus improving hull weight efficiency
- Reduced wave and current loading, resulting in improved tendon responses
- Lower tendon forces which reduces the effect on the hull steel
- Conventional tensioners can be used for production and drilling risers
- No high-risk elements needed, such as

riser guides, buoyancy cans and keel joints

- Availability of 3- or 4-column layout, therefore maximising design flexibility
- Reduced risk from an unconditionally stable hull

One of the main benefits unique to ETlp® technology is the significant steel weight savings in deck and hull steel. The design also allows for flexibility in construction, quayside integration and commissioning, and optimisation of the drilling configuration. Due to the need for fewer tendons compared to the conventional TLPs, the mooring system is also simplified.

ETLPs have been successfully designed, fabricated, and installed at the *Kizomba A* and *B* locations offshore Angola and the *Magnolia* location in the Gulf of Mexico.



The Extended Tension-Leg platform design is a proven concept, with units that have been successfully designed, fabricated, and installed at the *Kizomba A* (left) and *B* locations offshore Angola and the *Magnolia* (right) location in the Gulf of Mexico

Cultivating engineers



Keppel Baltech celebrates its 12th birthday at the beautiful seacoast restaurant in Varna



Room for growth – Keppel FELS Engineering Shenzhen is increasing its staff strength to 200

12 years by the Black Sea

At the stroke of midnight on 7 July 2006, Keppel FELS Baltech, a wholly-owned subsidiary of Keppel O&M, celebrated its 12th birthday.

Lyudmil Stoev, General Manager of Keppel FELS Baltech, expressed satisfaction with results achieved by all staff and proposed a toast towards a prosperous future for the company.

The auspicious occasion was held at a popular restaurant called Nikova Kyshta or Nikova's House, which boasted a beautiful view of the Varna Seacoast. Amidst the conducive setting and great company, the team bonded over food, fun and friendly games, especially for the 29 new employees who have just joined the company last year.

Established in 1994 as the first engineering outsource centre, Keppel FELS Baltech started out as the first European subsidiary of Keppel O&M, serving primarily the needs of Keppel FELS. It aims to be a first-class design office and preferred supplier of

engineering services in the offshore and marine industry.

Today, Keppel FELS Baltech is the preferred partner of reputable shipyards all over the world, specialising in the basic design and detailed engineering of offshore drilling units, production storage units, merchant ships, heavy lift floating cranes, tugs and specialised vessels, technical consultancy, and finite element analysis.

Engineering outfit in China

Keppel FELS Engineering Shenzhen Company was inaugurated on 3 July 2006 by Keppel FELS' ED, Michael Chia. The engineering company in Shenzhen is now a wholly-owned registered company of Keppel FELS.

Over the years, the Company has grown from strength to strength, from a mere 20 headcount to its current 133-strong staff. The engineering office is actively involved in the engineering design and drafting of rigs through computer-aided 3D modeling tools.

In his speech at the inauguration ceremony, Michael highlighted the importance of the China office where more than 30% of Keppel FELS' engineering work is undertaken. He also emphasised development of human resources to provide effective design and engineering support to the Singapore office.

Friendly match

Keppel FELS Engineering Shenzhen won its guest team, Schlumberger, 5-3 in a friendly soccer match on 4 June 2006.

Led by team captain Zhong Liang Sheng, the Keppel FELS team executed a brilliant strategy by strengthening their mid-field defence to oust their opponents.

Star player, Li Chao Chun, an engineer from piping section, struck deep into the heart of the opponent by scoring two out of the five goals.

This win aptly led up to celebrations for Keppel FELS Engineering Shenzhen at its opening ceremony.

Forging ties

Keppel Kazakhstan played host to Singapore's Minister for Foreign Affairs, George Yeo, on 4 June 2006 at its offshore facility in Aktau, Kazakhstan.

Accompanied by CB Choo and Keppel Kazakhstan's President Yick Ping Wong, Minister Yeo was given an overview of the yard's operations as well as the business opportunities in the Caspian Sea region.

Minister Yeo also had the opportunity to tour the yard where fabrication works on the pipe racks and four barges for Agip Kazakhstan North Caspian Operating Company N.V. (Agip KCO) are underway.

In Singapore, Rahul Gandhi, Member of Parliament of India, and his entourage called at Keppel FELS on 7 June 2006. Met by CB Choo and the management team of Keppel O&M, Mr Gandhi was introduced to Keppel's offshore and marine business. Both parties also exchanged views on doing business in India.

Mr Gandhi also toured Keppel FELS yard and a KFELS B Class jackup rig under construction. Keppel FELS is presently constructing four similar rigs for Indian owners.

On a separate occasion, Mr Gan Kim Yong, Minister of State for Manpower and Education called on Keppel Shipyard (Tuas) during a meeting organised by the Association of Singapore Marine Industries (ASMI).

During the visit on 31 July 2006, Mr Gan went onboard a Floating Production, Storage and Offloading (FPSO) vessel, FPSO Falcon, to gain an insight of FPSO conversion, an area in which Singapore is a world leader. Keppel Shipyard is a specialist in the conversion of FPSOs.



Minister George Yeo (wearing cap) at Keppel Kazakhstan



Mr Rahul Gandhi onboard a KFELS B Class jackup rig



Minister Gan Kim Yong (right) at the deck FPSO Falcon

Aiding the twilight years

Getting acquainted with the usage of mobility aids and safe transfer techniques are skills that come in handy in their work with senior citizens.

At least, this was what volunteers from the Keppelite Recreation Club (KRC) found out recently.

**Azgor Hossain Bin
Mohammed from Keppel
Benoi lends SSTI trainer,
Grace Sim, a helping hand
with the walking aid**



Conducted by the Social Service Training Institute (SSTI) on 24 May 2006, the course was entitled "Understanding and working with senior citizens". Held at Keppel FELS, participants were taught the proper way of moving the elderly around on wheelchairs and learned the myths and truths about ageing. They also gained knowledge on how to communicate with the elderly as well as how to deal with several common geriatric illnesses.

Communications Supervisor of Keppel FELS Christine Desker was a volunteer who took home many valuable lessons from the session.

She said, "The course was helpful as it taught us a lot about the elderly in our community. The insight into their well-being, health and illnesses taught us how to care for them. We also learned the correct way to handle the various apparatus that they use, like the wheelchair, the walker, etc. It was a good session and it made me feel that the elderly people should be given lots of love and attention in their twilight years."

United way to serving the community

Thanks to the efforts of local volunteer organization, United Way of Southern Cameron County, the communities of Brownsville, Olmito, Los Fresnos, Laguna Vista, Port Isabel and South Padre Island area have a platform with which to launch their community outreach programmes.

Employees of Keppel AmFELS showed their care for the community in contributing to the 2005 United Way of Southern Cameron County Campaign. This has made Keppel AmFELS one of the largest donors in South Texas and the

largest private donor in Cameron County with a contribution of close to US\$200,000.

In recognition of this, Traci Wickett, President of the United Way of Southern Cameron County presented CY Ho, CEO of Keppel AmFELS with a Community Impact Award.

United Way of Southern Cameron County funds over twenty programs meeting needs in two broad areas of impact—Successful Children and Tools for Living.



CY Ho, CEO of Keppel AmFELS, and HR Administrator Norma Saldana receiving a Community Impact Award from Traci Wickett, President of the United Way of Southern Cameron County

A boost for aspiring engineers

Provide employment and contribute to the overall development of Brownsville, Texas. That's the community commitment aim of Keppel AmFELS even as it grows as a corporation.

The most equipped offshore yard in the Gulf of Mexico, Keppel AmFELS places strong emphasis on social responsibility and this is evident through the shipyard's consistent support to community, educational and welfare organisations.

In line with its vision, the company recently established engineering scholarship programmes at the University of Texas-Pan America, University of Texas Brownsville and Texas Southmost College

by giving \$5,000 to each university's engineering programmes as scholarships.

In the 10 August 2006 edition of *Brownsville Herald*, a local newspaper, it was reported, "universities rely greatly on community support for their success and growth."

Gilbert Elizondo, Keppel AmFELS' HR Vice President, shared, "There are many aspiring engineers in Brownsville who do not have the opportunity to pursue their dreams because of the lack of resources. It is our hope that the scholarship will propel them towards realising their goals, and at the same time help raise the level of education amongst our youth."



(L to R) Dr Juliet V. Garcia, UTB/TSC President, CY Ho, and Elaine Rivera, Financial Aid Director

Riding the Dragon

Keppel O&M participated in the Singapore Dragon Boat Festival that took place on 1 and 2 July 2006 at the Bedok Reservoir. With team members hailing from various business units, it was great to see their teamwork put into play on the row.

Participating in the corporate category, our boys came up against stalwarts like Singapore Airlines. They rowed valiantly with cheers aplenty from the Keppel supporters, just almost making it past the heats.

Nevertheless, the team and their supporters thoroughly enjoyed immersing themselves in atmosphere of more than 3,500 participants and 20,000 spectators.

Dragon-boater Mohammed Sunny, from Keppel FELS Production, said, "Dragon boating can bring people of different nationalities to row



The "Can Do!" spirit comes alive!

together as a team. It is all about the team spirit. No matter what happens, we do not leave anyone behind."

Colours of Nationhood

Beating the morning blues

While many Singaporeans celebrated the nation's independence late into the night on 9 August 2006, Keppelites gathered at the yard as early as 7am on 10 August for its annual National Day Observance Ceremony.

Gracing the occasion was Mr Gan Kim Yong, Minister-of-State for Education and Manpower. He opened the ceremony on an upbeat note, acknowledging the growth and development of Keppel O&M on the global scene.

CH Tong credits the group's success to the commitment and dedication of its workers, as well as the support of the Union.

However, he urged everyone to remain vigilant on safety even in the busiest period of our history. He said, "We must execute all our projects very well. We must deliver every single one of our projects on time and on budget. Most of all, we must deliver them without incident. I want all our workers and contractors to return home at the end of every workday safe and sound."

Keppel O&M also honoured 145

Keppelites who have dedicated many years and hard work to the organisation for 10, 30, 35 and 40 years.

Painting Copacabana red

On 11 August in Brazil, Keppelites and their families came out in red and white to celebrate the nation's independence at the Copacabana's Zhon Guo Restaurant in Rio de Janeiro. It was difficult to miss them.

In the typical Singaporean embrace of other cultures, Keppelites marked the occasion by having a great feasting with their Brazilian colleagues and customers from Petrobras.

Kicking off the night was Keppel FELS Brasil's CEO Tay Kim Hock who shared on the growth of Singapore in the last 41 years, "We are a nation without any natural resources. Yet, with good governance and a hardworking people, we have progressed to become a world-class nation."

The highlight of the evening was the screening of the National Day Parade (NDP) downloaded via the company's FTP site. The patriotic Singaporeans and friends stood to attention as they sang the national anthem.



Keppelites in Brazil celebrates Singapore's 41st birthday

Pauline Tan, from Procurement at FSTP, a consortium of Keppel and Technip, shared, "This is the moment when we remember that everyone plays a part in building a united nation for a better tomorrow. I am proud to be a Singaporean. Watching the NDP makes me miss home!"

"I wish I had witnessed the parade in person. I wish Singapore a Happy Birthday and a brighter future!" enthused Zeon Chong, also from Procurement department.

The night closed with two delectable birthday cakes specially baked by BT Leow, Executive VP, Commercial, of Keppel FELS Brasil.



A pledge to the nation

Wellness in the yards



No smoke about it – the two-day Anti-Smoking Campaign at Keppel Shipyard met with encouraging response from employees

Keppel places emphasis on its employees' well-being and this is demonstrated through many activities organised by the yards. The various staff programmes and initiatives are part of the group's effort to promote a healthy lifestyle and support of employees.

Anti-Smoking Campaign

Keppel Shipyard launched its own Anti-Smoking Campaign on 29 June 2006 following positive feedback on the company's participation in the "World No Tobacco Day" and "The National Smoking Control Campaign 2006".

All its three yards (Benoi, Gul and Tuas) rallied together in the two-day campaign launch, packed with a series of health awareness talks, alongside various exciting activities and games. Prizes such as bags of sugar-free sweets, apples, tidbits, and canned drinks also helped deter the smoking habit.

Abu Bakar, General Manager (Operations), represented Keppel Shipyard to receive the award



Employees having fun participating in the games to learn more about AIDS

AIDS Awareness Campaign

The Health Promotion Board (HPB) and Action For Aids held an AIDS Awareness Mobile Showtime on 10 August 2006 during lunchtime at Keppel Shipyard's workers' canteen.

A celebrity emcee serenaded the workers with several tunes and entertained them with educational games to share the message on the risks and prevention

measures of Human Immunodeficiency Virus (HIV) and Acquired Immunodeficiency Syndrome (AIDS).

At the same time, a exhibition with information on safe and unsafe sex roved parts of the yard from 8-14 August 2006. This is part of HPB's RESPECT (Rallying Employers to Support the Prevention, Education and Control of STI/HIV/AIDS) Programme.

Distinguished Defence Partner Award

For its outstanding support for national defence, Keppel Shipyard was presented the Distinguished Defence Partner Award, a grade higher than the Meritorious Defence Partner Award it received last year.

The Awards were presented to companies in recognition of their support for National Service and the important roles of the civil resource owners in helping the SAF maintain a high level of operational readiness.



Whoa! Madness



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It was a night of merry making, excellent music and culinary delights for Keppelites, their guests and their families.

Keppel O&M hosted a reception for guests and employees in conjunction with the 'World of Music, Arts and Dance (WOMAD) Singapore 2006' on 25 and 26 August at Fort Canning Park. It was the perfect showcase for world music with artistes from Nigeria to Peru, Brazil to Puerto Rico, playing on different stages around the park.

Keppel O&M was also proud to present Brazilian artist Chico Cesar's performances where he thrilled the crowds with his wonderful songs and dances. The Keppel guests were thoroughly entertained with his pieces and mingled with him at the Keppel pavilion.

Eduardo Autran, MD of Petrobras Singapore, who was enthralled by the evening's programme, said, "The music is fantastic, the

food and drinks are great. It is a good place to listen to music and have a chat with friends outside the workplace."

Turret Construction Manager of the FPSO P-53, Gerson Verlangieri, added, "We were very happy to see Chico Cesar. I had never heard his music before but now, as I have told him, he has a new fan! It is really a special event for people who love music and different cultures."

Gulfmark Offshore's Newbuilding Superintendent, Ray Minto was intoxicated by Chico Cesar's music too: "It was a great performance, a real highlight of the evening. Keppel is really good at organising entertainment for our benefit and we're really appreciative of that."

Getting jiggy with it

During the WOMAD festival, Keppel employees were treated



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with a special workshop conducted by Risenga Makondo, a talented percussionist and dancer from South Africa, who has performed in theatres throughout the United Kingdom.

Bernard Tey, Senior Subcontract Officer from Keppel FELS, said in awe, "I had a fantastic time at WOMAD, especially with the closed-door workshop. The enjoyment continued way past the workshop and into the other events for the day. Seeing the showcases of different international cultures drives home one of Keppel O&M's core values, which is to have a global mindset."

Rodney Chin, Legal Counsel from Keppel OM, described it this way, "Chico Cesar's Brazilian folk pop music brought everyone to their feet! The highlight was certainly Risenga Makondo's workshop, which was dynamic, funny and fun-filled – to see 50 fellow Keppel colleagues moving to the South African rhythms is indeed a sight to behold!"

Clockwise from left:

- 1 Martin Watts, Area Director of Gulfmark Offshore Inc. trying out a new dance
- 2 Dancing to a global beat: Keppelites learning the moves from Risenga Makondo
- 3 Chico Cesar wowing a packed audience at Fort Canning Park
- 4 The Brazilian contingent from Petrobras hanging out with Chico Cesar
- 5 Making full use of the Keppel mat while catching Chico's performance up close
- 6 CH Tong enjoys a jovial conversation with Erik Madsen, Site Manager of Maersk and his wife, together with Wong Fook Seng, GM (Projects) and his daughter
- 7 Taste the world: Chico Cesar (left) cooking up a storm at the culinary stage while CB Choo enjoys the food and conversation with Mrs Eileen Choo (far right) and the people from the Brazilian embassy

Sundowner goes to the races

The tension in the air was palpable. Everyone held their breath in anticipation as the horses approached the finishing line. It was close but SHENZOU just edged out MAXRICH across the line by an arm's length. Behind a glass booth overlooking the track, the crowd cheered in delight.

And so began a night of drama, laughter and camaraderie as the Keppel FELS' monthly Sundowner got underway in a two-part special that saw Keppelites and their customers get together at the Turf Club on 30 June and 28 July 2006.

Held at the end of every month, Sundowner is an occasion where Keppel FELS and its customers let their hair down.

Holding the event at the Turf Club drew enthusiastic response from customers such as Diamond, ENSCO, GlobalSantaFe, Maersk, SeaDrill, Sinvest and Transocean, and as well our own Keppelites.

Organised by the marketing department of Keppel FELS, guests were treated to a spectacular view of the horses from an exclusive VIP gallery. It brought out the closet gamblers in all but the most resolute. Opinions were sought and



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- 1 Ron Couet and his wife enjoying the races with Yeo Yue Ngiap
- 2 Watching the horses go toe to toe
- 3 It was food, horses and great company as Keppelites and their guests enjoy the latest Sundowner activity
- 4 ED Michael Chia (right) laughs heartily as he wishes Glen (centre) and Wilson happy birthday



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ONS 2006 hailed as a big success

advice freely given as people anxiously scanned the television screens showing the odds and nervously placed their bets.

In the midst of it was a scrumptious feast that not only tantalised the taste buds but also provided energy to the excited spectators. Some lounged in the leather chairs enjoying the races while some pored over sheets of paper for information on the horses and still others filled up their bellies at the buffet table.

Ron Couet, Project Manager from ENSCO came with his wife and thoroughly enjoyed himself, saying, "Keppel FELS has been very professional and we feel like part of the family here. These events help to foster relationships between Keppel and their customers."



Glen Gibson thought it was his lucky day when his pockets filled up with more money than when he came. It would only serve to be the icing on the cake (literally) as he was surprised with a cake and a birthday song. The occasion was shared by Keppel FELS' Senior Project Manager Wilson Goh who was just as surprised to celebrate his birthday on 28 July.

Reflecting on a successful sundowner, Glen said, "It was a welcome change and I was really surprised as I didn't tell anyone it was my birthday. I went home a lucky man indeed."



CH Tong (fifth from left) and his team at the Offshore & Marine ASA booth

The Offshore Northern Seas 2006 (ONS 2006) exhibition, conference and festival in Stavanger between 22 and 25 August have exceeded all the organiser's expectations.

The 1,251 exhibitors attracted some 34,000 visitors, with well over 1,100 paying delegates. With 50 per cent of the exhibitors coming from outside Norway, the exhibition occupied just over 17,500 square metres of stand space.

Keppel's "near market, near customers" yards in the North Sea –

Keppel Verolme (The Netherlands) and Offshore & Marine (Norway) – were present at the exhibition.

For Offshore & Marine ASA, this year's exhibition was especially remarkable. Its two sets of Wireline Units for Deepwell was a feather in its cap when the units were nominated for the ONS 2006 Innovation Award.

The two companies made a splash at the conference with a cocktail reception for customers and friends. The Keppel FELS team, led by CH Tong, joined them in the party.

Customers
enjoying
the Keppel
Cocktail



Around our yards

OffshoreMarine tracks works carried out at various Keppel yards.

Singapore

Keppel Shipyard Tuas

Name : **NICHIHIKO**
Owner : Nissho Odyssey Ship Management Pte Ltd
Country: Japan
Type : Oil Tanker
DWT : 257,987 tonnes
Date : 13 – 28 August 2006
Scope : Hull coating • overhauling of sea valves • withdrawal of tailshaft • overhauling of cargo oil and ballast pumps • coating of underdeck bridge wing

Name : **SUNRISE V**
Owner : Nippon Oil Tanker
Country: Japan
Type : Oil Tanker
DWT : 264,164 tonnes
Date : 8 – 28 August 2006
Scope : General survey and repair

Name : **Maysora**
Owner : Hijazi & Ghosheh Food Stuff
Country: Jordan
Type : Dry Cargo – Livestock Carrier
DWT : 28,338 tonnes
Date : 4 – 22 August 2006
Scope : Maintenance and repair

Keppel Shipyard Benoi

Name : **FRONT BIRCH**
Owner : Frontline Management A S (Managed by Vships)
Country: Norway
Type : Oil Tanker
DWT : 135,000 tonnes
Date : 18 July - 21 August 2006
Scope : General survey and repair

Name : **S K SUNRISE**
Owner : Iino Kaiun Kaishi Ltd / Iino Marine Service Co
Country: Japan
Type : LNG Membrane
GRT : 92,927 tonnes
Date : 1 August – 18 August 2006
Scope : General survey and repair

Philippines

Keppel Batangas Shipyard

Name : **LADY MARION**
Owner : Dongwon Industries Co. Ltd.
Country: Korea
Type : Purse Seiner
GRT : 981.67 tonnes
Date : 7 June – 4 July 2006
Scope : Hull cleaning • blasting and painting • overhauling of the air coolers, boom, main engine and sea valves • tailshaft and propeller withdrawal

Name : **ASIA CEMENT NO. 2**
Owner : U-Ming Marine Transport Corporation
Country: Taiwan
Type : Cement Carrier
GRT : 8,165.94
Date : 11 – 28 August 2006
Scope : Hull cleaning • blasting and painting • engine room and ballast pipes renewal • sea valves overhauling • boiler repair • steelworks





Name : SAINT PETER THE APOSTLE
Owner : Negros Navigation Company Inc.
Country: Philippines
Type : Passenger Ro-ro
GRT : 6,090.33
Date : 17 July – 2 September 2006
Scope : Steelworks on bottom tank top and internals • cleaning, gritblasting and painting of hull • stern tube overhauling and propeller repair • fuel and lube oil tanks cleaning • steelworks on wagon, poop and forecastle deck

Keppel Cebu Shipyard

Name : M/TKR "CARBON DRAGON"
Owner : Kristian Gerhard Jebsen Skipsrederi AS

Country: Norway
Type : Asphalt/Bitumen tanker
DWT : 3,884.00
GRT : 2,967.00
Date : 31 May – 22 August 2006
Scope : Upgrading of generators • renewal of main switchboard and transformer, propulsion works • bearing renewal • drydocking

Name : MV "ALCANTARA CARRIER"
Owner : Norbulk Shipping UK Ltd.
Country: United Kingdom
Type : Refrigerated Cargo
DWT : 6,553.00
GRT : 4,963.00
Date : 5 August – work in progress
Scope : Special survey • steel renewal at various locations • major repair and maintenance works on rudder and propeller • deck machinery

overhauls • renewal of hull anodes • electrical motor overhauls including main switch cleaning, various tank cleaning • quadrennial survey of cargo derrick boom

Name : MV "MAGDALENA OLDENDORFF"
Owner : Egon Oldendorff
Country: Germany
Type : Log/Bulk Carrier
DWT : 23,515.00
GRT : 14,762.00
Date : 19 June – 3 July 2006
Scope : Fabrication and installation of propeller blades tips • overhauling of forward and aft seals • steel repair of cargo hold hatch cover • overhauling various main engine machinery • drydocking

Keppel Group Newsbytes



Keppel will continue to deliver value to our shareholders. From left: Teo Soon Hoe, Group Finance Director, Lim Chee Onn, Executive Chairman and CB Choo, Senior Executive Director, of Keppel Corporation

Keppel Corporation delivered robust growth with a record first half attributable profit of \$366 million and earnings per share of 46.5 cents, on the back of S\$3,190 million revenue.

Annualised return on equity (ROE) scaled to a new benchmark of 18.5%. Economic Value Added (EVA) at S\$193 million for the first half of 2006 was also at an all time high, equivalent to that which was achieved for the whole of 2005.

Group revenue at S\$1,646 million for the second quarter of 2006 was 42% above the corresponding quarter in 2005. This is due to higher revenue reported by the Offshore & Marine and Property Divisions.

Group profit before tax at S\$332 million and attributable profit before exceptional items at S\$196 million for the second quarter were 65% and 47% higher than same period in 2005 respectively.

Keppel Land reported PATMI of \$80.6 million for the six months ended

30 June 2006, up 20.3% from the first half of 2005. Overseas earnings made up 65% of PATMI in the first half of 2006 compared with 57% a year ago and 59% for FY2005. The 36.7% growth in overseas PATMI to \$52.5 million in the first half of the year was due mainly to higher profit contributions from the Group's development projects in China, India, Vietnam and Indonesia.

Keppel Land has increased its stake from 35.37% to 64.63% in the joint venture D L Properties (DLP), which owns the 28-storey *Equity Plaza*, located in Raffles Place.

Keppel Land acquired the 29.26% interest in DLP for S\$17.9 million from the existing joint-venture partner; Sumitomo Corporation and Sumitomo Corporation (Singapore) Pte Ltd. CapitaLand (Office) Investments Pte Ltd holds the remaining 35.37%.

Utilisation Co. Ltd to provide technologies and services for its waste-to-energy (WTE) plant.

The contract reaffirms KIE's position as the market leader for imported WTE solutions in China where the company has 60% of the market.

KIE has also secured a S\$30 million contract to provide technologies and services for the first waste-to-energy (WTE) plant in Finland.

Securing the contract for Finland's first WTE plant for municipal solid waste is a very significant breakthrough for Keppel as well as the acceptance of WTE in the country.

Keppel Integrated Engineering (KIE) has secured a \$13.5 million contract from Tianjin Taihuan Recycling Resources

Global Reach

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An artist impression of the icebreaker and the ice-breaking supply vessel which Keppel Singmarine is building for LUKOIL

A new touch of class

Keppel Singmarine clinched contracts for two highly specialised vessels from LUKOIL – Kaliningradmorneft (LUKOIL), a subsidiary of leading Russian oil company, LUKOIL Oil Company.

Keppel O&M also signed an agreement with LUKOIL for further co-operation in potential newbuilding of offshore rigs, special purpose offshore facilities and vessels, and to service LUKOIL's offshore oil terminal vessels at Keppel O&M shipyards around the world.

Charles Foo, MD (Special Projects) of Keppel O&M and Chairman of Keppel Singmarine, said, "This partnership with LUKOIL represents a strategic milestone in the Keppel Offshore & Marine group's effort to enhance its services for the Russian energy and offshore-related market.

"We are pleased with LUKOIL's confidence in Keppel. As we work in partnership with LUKOIL, we also endeavour to renew and strengthen our ties with other Russian owners to offer them our comprehensive range of products and services in our global yard network to meet their needs."

With its huge reserves of oil and gas, Russia has always been an important market for Keppel O&M.

According to the latest reports by the Energy Information Administration, the country has the world's largest proven gas reserves of 1,680 trillion cubic feet, and its proven oil reserves at 60 billion barrels is the eighth in the world. Probable and possible oil reserves are even more at 67 billion barrels. Russia is also the world's largest producer and exporter of gas, and ranks second in terms of world crude oil production.

Keppel's relationship with Russia dates back to the '80s when Keppel Shipyard and Keppel FELS serviced various owners in shiprepair, ship conversion and offshore rig construction and repair respectively. Work from Russia tapered down following the dissolution of the USSR in 1991, as much of the country focused on the development of a market economy. The country is now enjoying a renaissance of consistent economic growth.

Keppel's first projects in recent years for the Russian market are the construction of two

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