

Offshore Keppel Marine

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Offshore
**Converting the world's
first FDP SO**

Outfitting a *Voyageur*

Marine
**Delivering seaworthy
SEAWAYS 12**

**Sailing-away of
FPSO Armada Perkasa**

**Keppel O&M celebrating five fulfilling
years**

2nd Scorpion rig – An eminent *Defender*

FEATURES

Keppel Verolme secures major contracts	5
<i>Defender of distinction</i>	6
Making the ENSCO semisubmersibles	8
Regency Steel enhances production by acquiring critical equipment	11
P-53 heads for new home	12
Dry tree floaters	14
Keppel Shipyard wins best shiprepair yard award	25
Keppel O&M takes ACTIVE-ity seriously	27



P-52 strikes first oil

Page 10



Keppel O&M turns five!

Page 16



A tribute to Sim Kee Boon

Page 21

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Another order for floating accommodation platforms

Keppel FELS has been awarded a contract by returning customer, Floatel International Ltd (Floatel) for a 500-men accommodation semisubmersible (semi) vessel. It is expected to be delivered by end December 2010.

The new accommodation semi, the *KFELS SSAU 3600*, has been designed to operate in regions outside the North Sea. It is the second contract from Floatel. The first was a new generation *DSS20NS DP3*, designed to suit the harsh conditions of the North Sea, awarded to Keppel FELS in April this year.

“The world’s demand for semisubmersible accommodation vessels is presently stronger than the current dedicated fleet of 19 units can satisfy. Floatel is positioning itself to leverage this attractive market opportunity with a new fleet of customised vessels suited to various operating conditions,” said Erland Bassoe, Chairman of Floatel.

“Keppel FELS has proven to be the most reliable and versatile shipyard. I am confident that they are the right partners to support Floatel in our fleet expansion programme,” he said.

“Floatel has given us their vote of confidence with the award of a second accommodation rig contract in a span of less than six months. This is a partnership built on trust, and we will see to it that Keppel delivers quality solutions on time and within budget to meet the needs of our valued customers,” said CH Tong, MD/COO of Keppel O&M.

Designed by Keppel O&M’s Deepwater Technology Group, the six-column unit carries accommodation for 500 persons complete with full recreational facilities. It is cost effective and capable of operating alongside fixed platforms,



Built to the similar design of *Safe Concordia*, the second accommodation semi built for returning customer Floatel will be home for up to 500 men

complemented by a fully redundant Dynamic Positioning System, a high crane capacity and fire fighting capabilities.

In 2005, Keppel FELS delivered *Safe Concordia*, an accommodation semi of similar design to similar specifications for 400 persons.

Floating accommodation platforms are needed to provide additional living quarters for drilling and production personnel. Such support is needed during hook-up and commissioning in the development phase, for maintenance and upgrading during the production phase, as well as for decommissioning.

“As more E&P activities move further offshore and into deeper waters, we expect demand for floating accommodation units to be encouraging,” said CH Tong.

World's first Floating Drilling and Production facility



All hands on deck when it comes to keeping safety records on Azurite

Keppel Shipyard was recently awarded a conversion contract, worth around S\$100 million by Prosafe Production Pte Ltd (Prosafe) for the conversion of a tanker into a Floating, Drilling, Production, Storage and Offloading facility (FDPSO). This will be the world's first converted FDPSO.

Keppel Shipyard has started the conversion of a Very Large Crude Carrier (VLCC) size tanker into an FDPSO constructed with a moonpool used for drilling purposes. It will have the drilling package modules and derrick integrated into the FDPSO. The provision of the drilling packages will be by Prosafe's client.

Work on the vessel is expected to be completed by late 2008.

Nelson Yeo, ED of Keppel Shipyard said, "We are excited at the prospect of building the world's first FDPSO for our long-time customer Prosafe. The FDPSO concept represents a cost-efficient solution for drilling and producing in deepwater fields."

When completed, the FDPSO will have an oil storage capacity of about 1,300,000 bbls. Its gas compression capacity will be 18 MMscfd and its production capacity will be 40,000 bopd.

Meanwhile, the more than 1100 pairs of hands working on the Azurite FDPSO successfully helped the project reach a safety milestone of one million-man hours worked without any lost time incident (LTI).

The safety habits adopted by all those working on Azurite ensured that everyone of the 1100 employees working on this

project not only kept themselves safe but their colleagues as well.

Abu Bakar, GM (Operations) of Keppel Shipyard praised the teams involved saying, "The excellent cooperation between Prosafe and Keppel Shipyard has been essential to this achievement. Key to this open communication and close partnership is trust and confidence. Having worked on eight previous projects together over the last 10 years, I think I can safely say that we complement each other very well.

"On this project, together with our subcontractors, we made sure that we involved all our contractors in the safety aspects of the work from the safety briefings to the area walks. As we all know, this is a very busy period and this makes our safety achievement even more remarkable."

Keppel Verolme secures major contracts

Keppel Verolme BV has secured two significant contracts on the back of an upsurge of offshore activities in the North Sea.

Of the two new contracts, one is a repeat order for the outfitting of a Floating Production Storage and Offloading (FPSO) facility, *Sevan Voyageur*, for Sevan Production AS. Work is expected to be completed in the summer of 2008.

This is the third cylindrical FPSO facility that Keppel Verolme is carrying out works for the same owner. The vessel has an oil storage capacity of 300,000 bbls, with an oil process capacity of 30,000 barrels/day and a water injection capacity of 20,000 barrels/day.

The world's first cylindrical FPSO facility, *Sevan Piranema*, was completed in Keppel Verolme in January 2007. The second unit, *Sevan Hummingbird*, also completed by Keppel Verolme, was delivered recently. In all three projects, Keppel Verolme's scope of work entails the outfitting of marine and process equipment and final completion of all works for the facility at its location, with the hulls built in China.

Harold Linssen, Managing Director of Keppel Verolme said, "We are very flexible in our approach to business and our focus is on the creation of added value for customers.

"One of our business models is to offer project management services for a project. We provide customers with value-added services in managing costs and project-execution issues such as scheduling and assessing risks. This model is favoured by new asset-developing and asset-owning companies in Europe looking for

experienced and flexible yards to work with. This model is welcomed by Sevan Marine which has created the market's first three cylinder-shape FPSOs."

Sevan Production AS is a subsidiary of Sevan Marine ASA which is an offshore technology company specialising in floating production and storage of oil and gas.

The second contract that Keppel Verolme has secured is for the drydocking of Saipem 7000, a semisubmersible crane and pipelaying (J-lay) DP vessel for Saipem S.p.A.

Saipem 7000 is the world's second largest crane vessel with lifting capabilities of up to 14,000 tonnes. On 11 December, the Saipem 7000 was successfully drydocked in Keppel Verolme's mammoth

dock for its first time in her 20-years lifespan.

Keppel Verolme will renew the hull coating system and carry out maintenance works to the underwater equipment, such as the thrusters, overboard valves, quick ballasting system and the impressed current system. Work on Saipem 7000 is expected to be delivered in first quarter 2008.

Saipem Group is a subsidiary of Eni, an Italian oil and gas industry contractor. It is a leader in the provision of engineering, procurement, project management and construction services.



Sevan Hummingbird has been delivered to a happy customer



Lady Sponsor Brenda Harvey (third from left) christened the *Offshore Defender* at the Keppel AmFELS yard in Brownsville, Texas on 10 November 2007. She is accompanied by (from left) CY Ho, Director of Keppel AmFELS, G.S.Tan, President and CEO of Keppel AmFELS, Michael Harvey, Director of Scorpion, Jon Cole, President and CEO of Scorpion, Mrs Cole, CH Tong, Chairman of Keppel AmFELS, Donny Rials, Project Manager of Scorpion, Oscar Lopez, Project Manager of Keppel AmFELS and Gabe Padilla, Vice-President (Engineering) of Scorpion

Defender of distinction

Keppel AmFELS delivered the second jackup drilling rig to Scorpion Offshore (Scorpion) on time and within budget.

The rig was christened *Offshore Defender* by Brenda B. Harvey, wife of Scorpion's Director, Michael L. Harvey, at the Keppel AmFELS yard on 10 November 2007.

Offshore Defender is headed for Brazil where she will fulfill her contractual obligation to Petrobras, the national oil company of Brazil.

A newly established drilling company, Scorpion contracted Keppel AmFELS to build a fleet of five drilling rigs. Construction of the remaining three is progressing well on track, and the rigs are scheduled for delivery through 2008 to 2009.

In addition to the construction of the Scorpion rigs, Keppel AmFELS is

currently building a jackup rig each for Diamond Offshore, Atwood Oceanics and Perforadora Central. The yard had also just secured an order of four jackup rigs from Rowan Companies (*see backpage*).

Jon Cole, President and CEO of Scorpion, said, "Despite this busy period, the teamwork between Keppel AmFELS and Scorpion has resulted in the delivery of *Offshore Defender*, one of the finest products I have ever seen in the 30 years of my career in this industry."

Building a formidable workforce

A key factor of this achievement is the skilled and well-trained workforce of Keppel AmFELS.

CH Tong, MD/COO of Keppel O&M, said, "At Keppel, we recognise that an organisation is only as good as its employees. We have been able deliver

high standard products and services because our people are adequately trained and equipped."

CH Tong, who is also the Chairman of Keppel AmFELS, added, "That is why we continuously develop various industrial training programmes and schemes at the Keppel AmFELS Training Centre to enhance the skills of our employees."

In 2007, Keppel AmFELS invested close to US\$3 million for the training and development of its workforce. Recognising Keppel AmFELS's commitment to the training of new and existing employees, the Skills Development Fund of the Texas Workforce Commission (TWC) recently awarded Keppel AmFELS and four other companies a total of US\$733,538 for the creation and upgrading of skill-related jobs.

The grant will be used to create or

upgrade jobs for welding, pipe fitting, carpentry, and mechanical, among others. Over 600 workers from Cameron County in Brownsville, Texas, will benefit from the job-training grant administered by TWC.

Gilbert Elizondo, Vice President (Human Resource) of Keppel AmFELS shared, "Above and beyond talent development programmes, the senior management of Keppel also play an active role in personally nurturing and getting to know the young blood of the company."

At a recent meet-the-directors session on 9 November, young managers had informal discussions with the board of directors and senior management on the company's on-goings.

Giving back to the community

Apart from providing employment to over 1,500 workers, Keppel AmFELS has been contributing to the overall development of Brownsville through its consistent support to the educational and welfare organisations of the community.

It provides training and education for the locals through its industry-skills training programmes and scholarships. One such effort is the annual Keppel AmFELS Charity Golf Tournament which raises funds for charity.

GS Tan, President and CEO of Keppel AmFELS, highlighted, "In 2006, we raised US\$20,000 for charity. This year, we have quadrupled the amount and it will go towards the funding of the University of Texas at Brownsville scholarships. These scholarships are for promising high school graduates pursuing engineering and science degrees."

The company is also one of the largest contributors to United Way of Southern Cameron County, a reputable Texas-based charity whose primary focus is on funding programmes for youths and equipping adults and families with basic living necessities.

Not only "top-down"

The company's commitment in developing its employees is also shared by its employees. Literally taking training out of the training centre, George Baldree, a welding engineer at Keppel AmFELS with a passion for welding took it upon himself on his own time to reach out to any and every school that would listen to his proposal for a high quality welding programme.

The programme trains students to become certified welders by the time they graduate high school. This would provide Keppel AmFELS with a pool of highly skilled entry-level welders, which are few and far in between in Brownsville.

Talking about the success of one of his presentations, George said, "I was up there in front of 25 kids from an agricultural science class explaining what welding is

and I told them about the jobs available and how much you can make as a welder. At the end, nearly every one said they would want to take a class to become welders!"

According to George, there are already several students, from the Los Fresnos High School, who have begun welding at the Keppel AmFELS training centre and are making their way through the programme with flying colours.

In 2004, Keppel AmFELS was presented the national flag by State Congressman Solomon Ortiz as a tribute to the company's positive impact on society through improving the quality of lives of the people.

Located in Brownsville Texas, Keppel AmFELS is one of the best-equipped offshore yards in the area, serving customers operating in the Gulf of Mexico and internationally.

Brownie points

For his leadership and support of economic development initiatives by the city of Brownsville, Ho Cheok Yuen (CY Ho) earned the Brownsville Economic Development Council (BEDC) Economic Development Leadership Award. The award recognised his excellence and leadership during his tenure as President of Keppel AmFELS from May 2003 to November 2007.

Keppel AmFELS is a people oriented organisation and believes strongly in the development of their employees and community, CY Ho has supported training initiatives and on behalf of the company contributed scholarship money and led efforts in supporting charitable organizations.



The award was presented to CY Ho (fifth from left) at a farewell reception hosted by the BEDC on 25 October

Making the ENSCO semisubmersibles

All eyes were fixed on the mega structure in the sky. Suspended from the Asian Hercules II and hanging over the Keppel FELS yard, the final piece of derrick was slowly moved into position and installed on board the ENSCO 8500 semisubmersible (semi) drilling rig.

The ENSCO 8500 has come a long way since the project was first awarded to Keppel FELS in September 2005. From two dimensional engineering drawings, the mammoth rig has slowly taken form and currently towers over the yard.

The completion of the derrick on 28 November sets a new milestone for this project, the first of four such semis Keppel FELS is building for long-time customer ENSCO.

Progress of the other two ENSCO semi projects is well on track. Both projects under construction at

the Keppel Batangas Shipyard (Keppel Batangas) in the Philippines celebrated their milestones of launching and keel laying.

The lower pontoons of the ENSCO 8501 were launched at a ceremony attended by the project teams, representatives from ENSCO, ENSCO's clients Nexen Petroleum and Noble Energy, American Bureau of Shipping, vendors and subcontractors on 15 November.

Keppel Batangas delivered the pontoons in 2.4 million manhours without loss time incident. They were towed to the Keppel FELS yard in Singapore for further works such as the completion of the lower hull and mating with the upper deck.

Philip Jeff Saile, Executive Vice President of ENSCO, said, "The fine product I see is a result of all your effort. There has been a lot of work going on around here but you have managed to improve the product and your facility. I am very proud to be associated with you guys, Great job everybody. This is really outstanding."

Although 1 November was a national holiday in the Philippines, the project teams at Keppel Batangas put in extra time to mark the keel laying milestone for ENSCO 8502.

The project is the fifth offshore rig fabrication project undertaken by Keppel Batangas and the third project for ENSCO since it ventured into the offshore marine fabrication industry in 2006.

Yeo Yue Ngiap, Keppel FELS' Senior Project Manager for all the ENSCO semi projects congratulated the project teams that made this milestone possible. He said, "The achievements we have made for the ENSCO projects are testament of our Can Do! attitude in keeping our promise to deliver all projects on time, within budget and with high quality and safety standards. Keep up the good work!"

Asian Hercules II finishes the derrick installation on board ENSCO 8500



Armada sets sail



Olatunde Emmanuel Odusina (3rd from left), Minister of State for Energy (Gas), Nigeria, and representatives from AFREN Nigeria, Bumi Armada Berhad, AMNI and Keppel, launching the sail-away of FPSO Armada Perkasa

Keppel Shipyard has completed the upgrade and modification of FPSO Armada Perkasa for repeat customer Bumi Armada. A ceremony was held for the sail-away of the vessel for its deployment in the Okoro Setu Fields, Nigeria.

Gracing the occasion was Olatunde Emmanuel Odusina, Minister of State for Energy (Gas), Nigeria.

Hassan Basma, Chief Executive of Bumi Armada commented, "We are delighted to have completed a quick refurbishment programme on the Armada Perkasa. Keppel Shipyard which has previously worked on the

vessel, was instrumental in achieving the fast-track timeline."

Keppel Shipyard first converted the vessel in 1997, which subsequently returned for refurbishment, life extension and repair prior to its current upgrade. This includes installation of additional field equipment and modification of FPSO and shipboard systems.

Tong Chong Heong, MD/COO, Keppel Offshore & Marine said, "We are confident that the FPSO has been refurbished to the highest specifications and are pleased to have achieved another successful delivery of the Armada Perkasa."

Saluting SEAWAYS 12

On the evening of 30 November 2007, Keppel Singmarine celebrated a significant milestone with customer Seaways International Pte Ltd (Seaways). SEAWAYS 12, the first of two 100T Bollard Pull Anchor Handling Tug was delivered to its proud owners.

Keppel Singmarine delivered the first vessel to Seaways ahead of schedule and with no compromises on safety and quality. The second vessel has also maintained a good safety record and construction is progressing well on track.

Hoe Eng Hock, ED of Keppel Singmarine said "We signed the first contract to build a new anchor handling tug in December 2005. One year later, Keppel Singmarine was awarded with the second contract to build a repeat vessel."

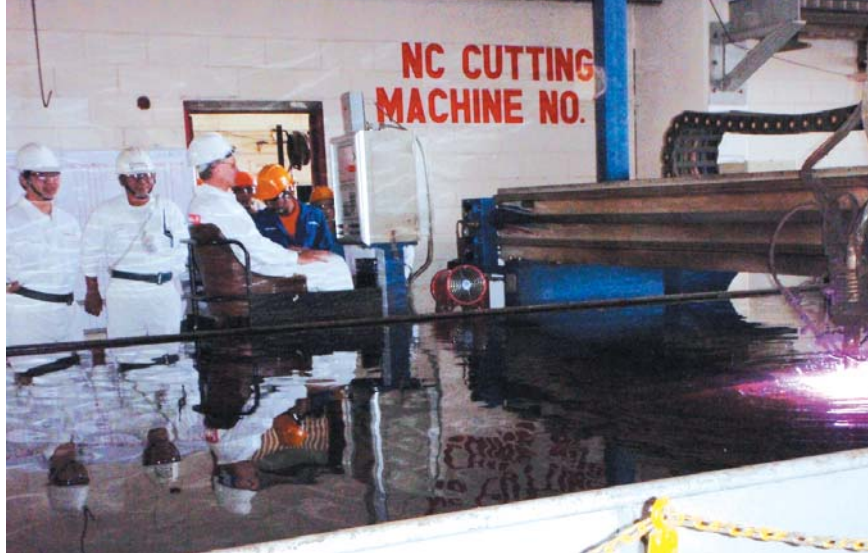
SEAWAYS 12 surpassed expectations during the sea trials. It achieved a bollard pull of 112 tonnes during sea trials, against its contractual design of 100 tonnes bollard pull. It also surpassed the contractual speed of 13 knots to achieve 14.75 knots per hour.



SEAWAYS 12 shipshape and seaworthy – Toh Ko Lin (Senior GM Commercial, Keppel Singmarine), Charles Foo, Mr Arun Varma, Director of Seaways International, Arun Varma, Lady Sponsor Mrs Nijhawan, Capt Ashish Nijhawan, Hoe Eng Hock, ED of Keppel Singmarine and Capt. Shardul Sadhale, GM of Seaways International



Jubilation at the strike steel of *Greatdrill Chitra* in Singapore



Floatel's first accommodation semi strikes steel in Keppel Batangas Shipyard in the Philippines

Striking similarity

It was a month of double celebration at Keppel FELS when two projects marked their first construction milestones on the same day, 1 December 2007.

Greatdrill Chitra, a KFELS B Class jackup drilling rig for customer Greatship Global Energy Services (Greatship), and the first floating hotel (floatel) Keppel FELS is building for Floatel International struck steel.

The entire construction of *Greatdrill Chitra* is being carried out at the Keppel FELS yard in Singapore. Initial works for the floatel, such as the fabrication of the pontoons is being done at Keppel Batangas Shipyard in the Philippines. When completed, the pontoons will be brought to Singapore, together with the columns that will be fabricated in China, for integration with the upper hull.

The new generation floatel is being built to the DSS20 NS DP3 design. The design was co-developed by Keppel's R&D arm, Deepwater Technology Group and the Netherlands based Marine Structure Consultants. The floatel will be delivered in the second quarter of 2010 and will meet the most stringent rules and regulations for worldwide operation including those of the Norwegian North Sea sector.

Striking Black Gold



'Gold fingers' – Petrobras' Director of Exploration and Production, Guilherme Estrella getting a handful as *P-52* strikes first oil

The Keppel-built production platform, *P-52*, has struck its first oil for Petrobras in November 2007, at the Roncador field. The 180,000 bopd production capacity is slated to reach an output of up to 50,000 bopd by year-end, and likely will reach its peak output by mid-2008.

In September, Petrobras produced 1.769 million barrels of oil in Brazil. Its overall Brazilian and overseas oil and gas output was 2.28 million barrels of oil equivalent.

Keppel is currently constructing the *P-51* and *P-56* production platforms for Petrobras.

Equipped for greater challenges

In a bid to meet the growing demands of the offshore and marine industry, Keppel O&M's wholly-owned subsidiary, Regency Steel Japan (RSJ) has enhanced its production facilities with the addition of critical steel fabrication equipment.

The commissioning of the new equipment took place on 6 November 2007. The equipment, which include a 10,000-tonne press, a heating furnace and a quenching bath, add to RSJ's capabilities.

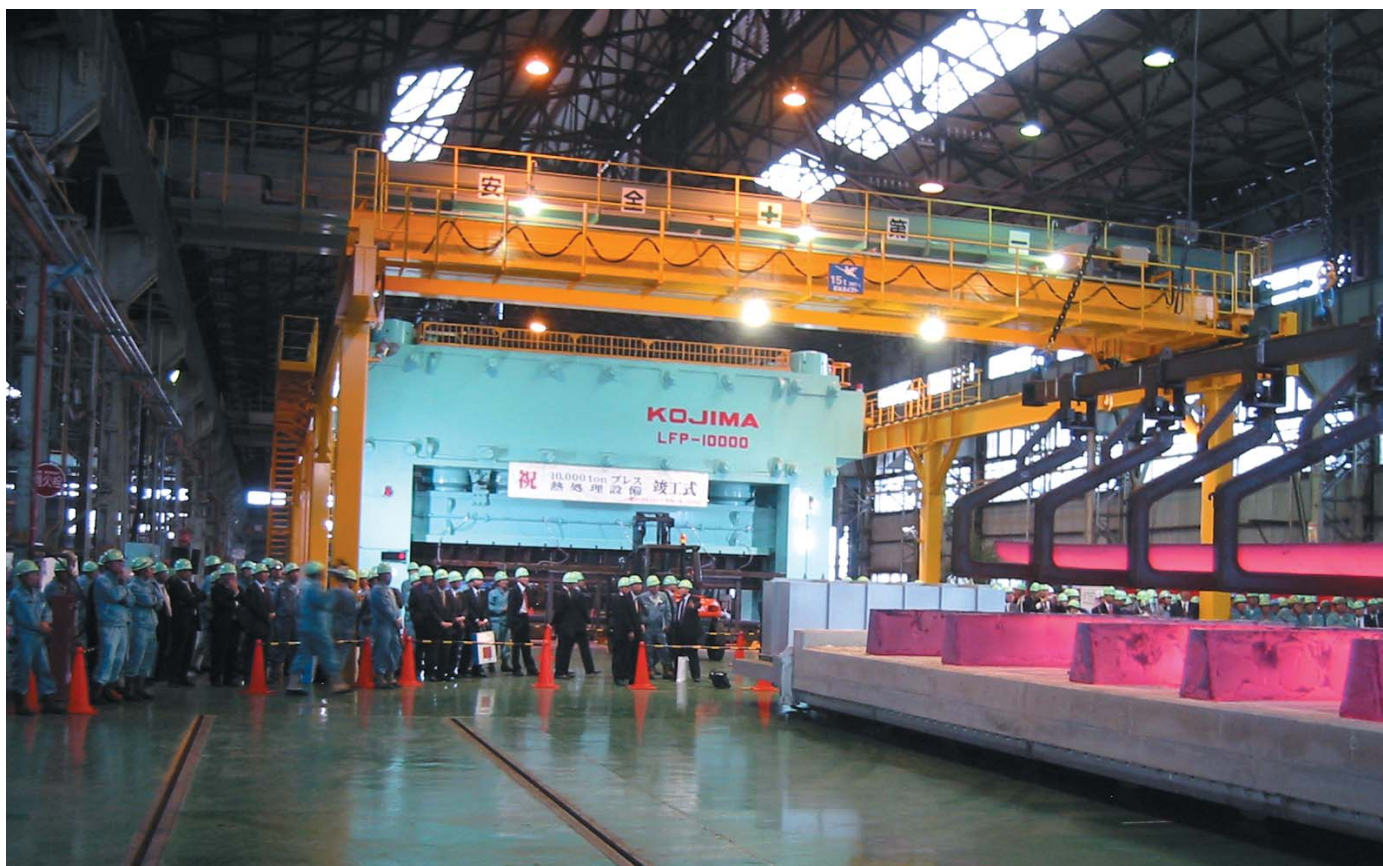
With the additional resources, RSJ is able to perform the entire manufacturing process for critical components of a jackup rig.

CB Choo, Chairman & CEO of Keppel O&M said, "This is an important milestone for RSJ. The company has been a great success from the

very beginning with its cost effective facilities and experienced workforce. With the addition of the new equipment, it is a great morale booster for our people in RSJ."

Looking ahead, RSJ's next milestone is to increase production efficiency, cost effectiveness and project revenue.

The company is a manufacturer of large, high-quality steel structures for international and domestic markets. These structures are used in the construction of high-strength structures, new steelmaking facilities and nuclear power plants. Some of the structures that RSJ manufactures for the offshore and marine sector include cylindrical columns and drums, turret shafts and the shells for liquefied gas tanks on ships.



Impressing the crowd with its pressing capability at the commissioning ceremony was the new 10,000 tonne press in the background as it shaped and formed steel structures from heated steel plates



The *P-53* project team celebrates the sail off of the *P-53*

P-53 heads for new home

After two years, two months and two days, the Floating Production Unit (FPU), *PETROBRAS-53 (P-53)*, left Keppel Shipyard for its final project phase in Brazil.

Keppel Shipyard secured the contract from Petrobras SA via the Charter Development Limited Liability Company (CDC) in June 2005 to carry out the hull conversion of the *P-53* and the fabrication of what is to be the world's largest turret.

In July 2007, the FPU facility was towed to a topside contractor yard in Rio Grande, Brazil, for the installation and integration of the topside modules. These were built both in Niteroi and Singapore. Upon completion, Petrobras SA will charter the *P-53* from CDC for the Marlim Leste field in the Campos Basin.

Keppel Shipyard commissioned the shipboard systems prior to its sail-off.

The shipyard achieved more than seven million manhours worked without any lost time incidents on the *P-53* project. This achievement won the Keppel Shipyard team the Safety and Health Award Recognition for Projects (SHARP) awarded by the Ministry of Manpower. The award is given out to projects or worksites that have good safety and health performance and workplace safety and health management systems.

Team Spirit

The *P-53* project is an amalgamation of excellent project management and remarkable teamwork between Keppel Shipyard and Petrobras.

Here are what the key site project team members have to say:

Reginaldo Sarcinelli Filho

*Hull Conversion Site Manager
Petrobras/CDC*

“I had previously worked with Keppel FELS on the P-52. My experience with Keppel is this: Keppelites work very hard, they have great capacity to mobilise resources and people to get the job done.

“We overcame the challenges of procurement and engineering resulting in greater teamwork and synergy between the project teams.

“There was great commitment from managers to supervisors and workers. Everyone was focused on achieving the target. I am certain the P-53 will be a stunning FPU.

“Congratulations to all of you at Keppel for an excellent job. Keppel has been a good partner of Petrobras and will be for a long time. It was an excellent partnership and we are very satisfied (with the P-53 project).”

Gersen Salles Verlangieri

*Turret Construction Manager
Petrobras/CDC*

“We had to work on so many fine details and the most challenging was the logistics. Space was a concern, where to build each section or module. Much coordination between the different trades was required.

“The P-53 project has been a very successful project. We enjoyed our pleasant experience working with Keppel and have formed many good relationships over the two years.”

Jayaraman AV

*Project Manager
Keppel Shipyard*

“This is the best team put together. There was a strong bond in the team and we had the strong support of our management, especially from our Project Director, Louis Chow (General Manager, FPSO Conversions of Keppel Shipyard). We never gave up.”

Terry Wong

*Project Manager
Keppel Shipyard*

“We have highly committed team members behind this project and we are united with our Petrobras counterparts in completing our mission on-time and safely.

“We engaged our contractors constantly to ensure project execution is smooth and the workplace is safe for all our workers onboard.

The world's largest turret resides on the P-53



Fast facts about P-53

Capacity

Capacity of up to 180,000 bopd (barrels of oil per day);
Gas compression capability of 6 million m³/day;
Water injection capability of 39,000 m³/day

Turret

75 risers, 2,000 valves, 36 metres in diameter, 73 metres in height

Deployment

Marlim Leste field, Campos Basin, offshore Brazil, 125 km

Electricity generated

92 MW

Water depth

1,080 metres

Accommodation

240 persons

Accolades

SHARP Award (seven million manhours without LTI)

Dry tree semisubmersible design for deepwater floaters

The dry tree semisubmersible (semi) is an innovative concept that applies proven deepwater technologies. It offers small in-place motions, large open deck areas, dockside commissioning, and minimum offshore hookup.

From tradition to innovation

Until now, the two deepwater hull forms capable of supporting top-tensioned risers (TTRs) have been the spar and the tension leg platform (TLP). For production depths exceeding 5,000 ft, present TLP designs encounter challenges with tendon design and installation. The spar is the sole candidate for production beyond this depth.

FloaTEC's newly developed dry tree semis are alternatives to the spar for deepwater production. These innovative deepwater floater designs have the motions of a spar and the functionality of a semi. Figure 1 shows two of the company's new designs, the ESEMI II (E-Semi) and the truss semi (T-Semi). These dry tree semis have similar design philosophies. The main difference between the designs is the installation method.

The truss for the truss semi can be installed at the deployment site or near shore in a water depth sufficient to position the truss under the hull. This installation approach requires an installation vessel.

The second method for installing the truss section is to set the truss on the sea bottom, ballast the semis over the truss, then pull the truss up into the hull for connection. This operation could be carried out without the aid of a

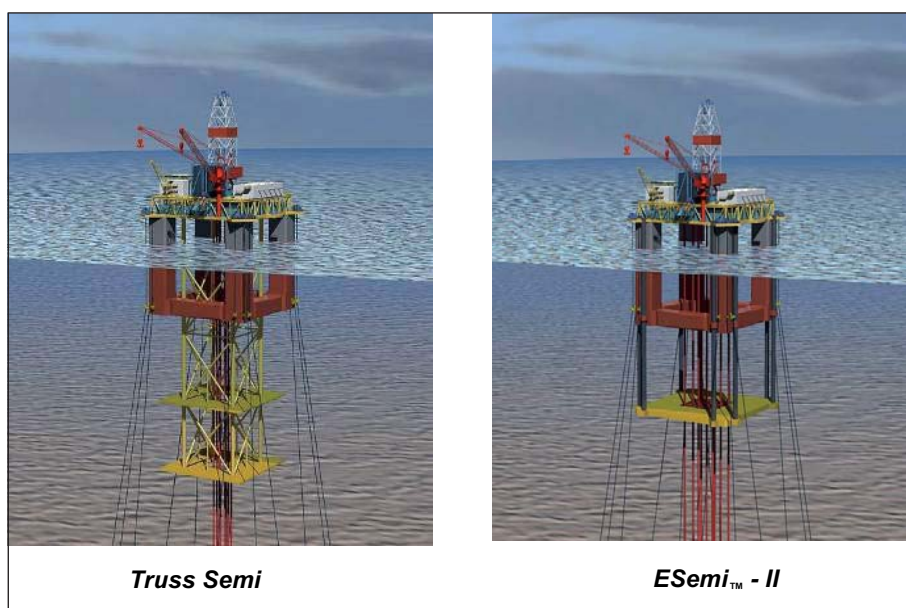


Figure 1. FloaTEC's dry tree semi designs

vessel. Both methods provide low-risk mating.

The ESEMI II is a self-installing version of the dry tree semi. This design features the single heave plate installed dockside under its keel allowing the semi to be transported to the installation site with the plate retracted. Once moored on site, the plate would be lowered into position and secured. This design is easily reversible.

How the dry tree semi works

The primary design objective is to minimize heave motions. Figure 2 compares the heave response of a conventional semi, a spar, and a dry tree semi. These curves are called the "response amplitude operators" (RAOs). They show the unit's heave response per unit wave amplitude as a function of wave period.

The traditional semi's response curves are characterised by a small rise at the lower periods. At approximately 12 seconds, the RAO falls to a near zero value called the "cancellation period." Above this period, the RAO increases steeply to a resonant response at a higher period. This cancellation period occurs where the hydrodynamic forces on the pontoons are practically equal to the forces on the columns, and the heave response therefore tends to zero. The conventional semi cannot be used to support dry trees.

Without the heave plate, the semi has a cancellation period of about 12 seconds. The RAO above this period is very high, and the resonance period falls within the wave energy period, which causes a large heave response. When the heave plate is attached, the cancellation period is increased to approximately 23 seconds, which is well above the range of wave energy periods.

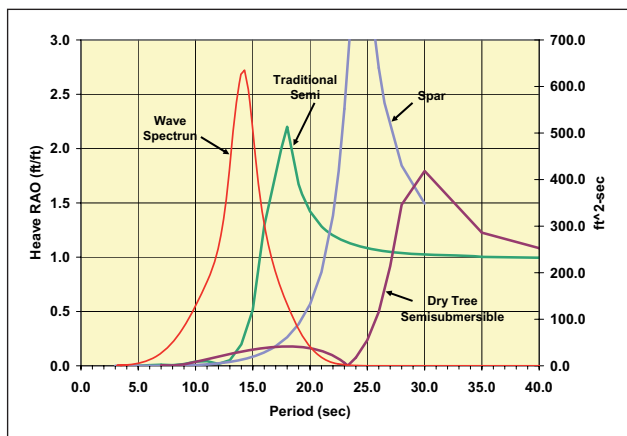


Figure 2. Comparison of Heave Response

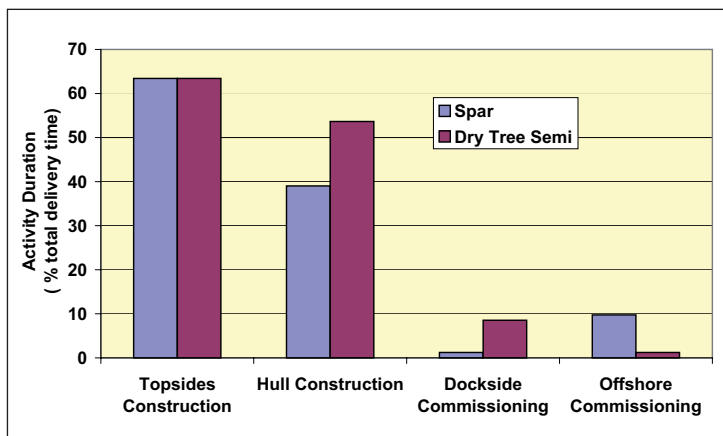


Figure 3

Design advantages

The semi has a large open deck area, which offers a number of operational advantages compared to the spar.

One advantage is greater flexibility in the wellbay layout. The dry tree semi can easily accommodate rectangular layouts. These layouts reduce the span of the skid beams for a rig, which reduces the spanning structural weight and lowers the centre of gravity.

Another advantage the semi offers is lower accelerations at the drilling deck. Horizontal accelerations induced by pitch at this elevation are larger on the spar than they are on the dry tree semi. As a result, drilling operations can continue on the dry tree semis in conditions that would normally suspend operations on a spar.

Faster delivery and commissioning

The dry tree semi offers a number of construction, delivery and cost advantages. A comparison of the distribution of durations for each major activity carried out in a delivery demonstrates the relative advantages. These are illustrated graphically in Figure 3. The graph compares the duration of each activity, indicated as a percentage of the total time required to deliver each system.



The team at FloaTEC

The graph also shows that topsides construction takes about 63% of the time required and are also on the critical path. Spar hull construction takes less time than the dry tree semis, which introduces flexibility to the construction schedule. The critical difference is the amount of dockside commissioning compared to offshore commissioning.

Only 1% of the spar commissioning takes place at dockside, while 10% is carried out offshore. The opposite is true for the dry tree semi, which allows 7% of the delivery time to be spent at the dock and only about 1% offshore. Costs for offshore work can be 1.8 times more expensive than similar dockside work because of the additional equipment, manpower and logistics required.

Timing is everything

The dry tree semi is a practical solution for deepwater development and production, offering advantages in terms of fabrication, delivery, and operations. The tight rig market has limited operators' choices for deepwater production systems. Assuming analyst Douglas-Westwood is accurate in its prediction that by 2011 more than US\$18 billion will be spent on deepwater operations, the industry definitely needs more designs like the dry tree semi.

Story contributed by John Murray Director - Technology Development FloaTEC, LLC



Clockwise from top:

1. Igniting the future – Mr George Yeo, Minister for Foreign Affairs launches KOMtech with Keppel’s senior executives
2. The Keppel O&M story unveiled in newly published book, “More than Mettle”
3. Penning well wishes for Keppel O&M
4. Eminent guests flanked by Michael Chia (left) and Nelson Yeo
5. (From left) CB Choo and Eileen Choo with guests
6. The celebration is also an occasion for networking



Keppel O&M unveils new S\$150m te

Keppel Offshore & Marine celebrated its fifth anniversary with a strong net orderbook of over S\$13 billion, including above S\$7 billion of new contracts secured in 2007.

The company was established in 2002 following the restructuring and integration of the offshore and marine businesses of Keppel Corporation.

Focused on technology innovation to

provide viable and cost effective solutions for its customers, Keppel O&M’s proprietary technologies have generated contracts worth some S\$15 billion over the years, including current projects under construction.

The Company’s revenue has grown some 300% from S\$1.9 billion in 2002 to \$5.7 billion in 2006, and is expected to be higher in 2007. Its return on equity has improved from around 20% in 2002 to 50% in 2006.

Spearheading technology development

The Company has also launched Keppel Offshore & Marine Technology Centre (KOMtech) to boost its R&D edge and position itself for long term growth. Keppel O&M will inject seed money of S\$150 million to fuel the Centre’s activities over a 5-year period with additional support from the Economic Development Board.



2



3



5



4

Technology centre on 5th anniversary

CB Choo, Chairman & CEO of Keppel O&M said, "KOMtech's deliverables will sustain our market leadership, and provide the quantum leap in technology and returns for the Company. It will work closely with our industry partners to conceive effective solutions for the market in the long run."

KOMtech's scope will include managing, stimulating and carrying out R&D, product development, technology foresight, shipyard process improvement and knowledge building activities within the Keppel O&M Group.

Headed by industry veteran Charles Foo, Keppel O&M's MD (Special Projects), KOMtech is staffed by a talent pool of 30 highly competent professionals. The Centre is expected to increase headcount to about 100 in the near future.

The Keppel O&M Story

A commemorative book entitled, *More than Mettle, the Keppel Offshore & Marine Story*, was also launched in conjunction

with the Company's 5th anniversary celebrations.

More than Mettle is a story of survival and resilience. It tells of Keppel O&M's rapid growth in just five years to become a world leader in the key segments of the offshore and marine industry – rigbuilding; ship repair and conversion and the construction of specialised offshore support vessels.

More stories in the Special Edition of Keppelite (December 2007).



We would like to thank the following partners for their contributions in making

- | | | |
|------------------------------------|-------------------------------------|---|
| 1. ABAN | 20. CORUS | 39. HEMPEL |
| 2. ABB INDUSTRY | 21. CRESTCHIC | 40. HG METAL MANUFACTURING |
| 3. AIRTRADE SYSTEMS | 22. CRETE SHIPPING SERVICES | 41. HIAP CHUAN HARDWARE |
| 4. ALFA LAVAL | 23. DRAKA | 42. HUI KOON ENTERPRISE |
| 5. ALLBEST MARINE ENGINEERING | 24. ESAB | 43. INDUSTMARINE ENGINEERING |
| 6. ALLINTON ENGINEERING & TRADING | 25. FAVELLE FAVCO CRANES | 44. INTERNATIONAL PAINT SINGAPORE |
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| 16. BH GLOBAL MARINE | 35. GLOBALTECH OFFSHORE & MARINE | 54. KONGSBERG MARITIME |
| 17. CABLES INTERNATIONAL | 36. GOH KWANG HENG | 55. KWONG SOON ENGINEERING |
| 18. CATHODIC PROTECTION TECHNOLOGY | 37. HAMWORTHY | 56. LAL OFFSHORE AND MARINE |
| 19. CHUAN LEONG METALIMPEX | 38. HEATEC JIETONG | 57. LEEDEN |



our anniversary supplement possible in the Straits Times on 5 December 2007.

- | | | |
|---|---------------------------------------|--------------------------------------|
| 58. LYCKAD MARINE | 75. NSH GLOBAL MARINE
ENGINEERING | 94. STAR-RAY |
| 59. MAERSK CONTRACTORS | 76. OAKWELL ENGINEERING | 95. SUPREME OILFIELD SERVICES |
| 60. MARITIME AND PORT
AUTHORITY OF SINGAPORE | 77. OCEAN TANKERS | 96. TAT ENG INDUSTRIES |
| 61. MARSHAL TECHNOLOGY
MARKETING & ENGINEERING | 78. PANGROWTH ENGINEERING | 97. TEAMTEC MARINE PRODUCTS |
| 62. MATOPO ENGINEERING | 79. PROSAFE | 98. TECHNICS OFFSHORE
ENGINEERING |
| 63. MECTRON ENGINEERING | 80. RADIO HOLLAND SINGAPORE | 99. TETRA FIRE ENGINEERING |
| 64. MHE-DEMAG | 81. REGENCY STEEL ASIA | 100. THONG SENG METAL |
| 65. MIZU | 82. SCHOTTEL FAR EAST | 101. TRUMARINE |
| 66. NANYANG TECHNOLOGICAL
UNIVERSITY | 83. SCHULZ WORLDWIDE | 102. TSL POWER SYSTEMS |
| 67. NAM LEONG | 84. SEADRILL | 103. UNITOR MARINE SYSTEMS |
| 68. NATIONAL OILWELL VARCO | 85. SEAQUEST ENTERPRISE | 104. UNIVENTURE TECHNOLOGIES |
| 69. NATIONAL OXYGEN | 86. SEE HUP SENG | 105. VAN LEEUWEN PIPE AND TUBE |
| 70. NATIONAL UNIVERSITY OF
SINGAPORE | 87. SIN GHEE HUAT CORPORATION | 106. VETCO GRAY |
| 71. NAUSCH, HOGAN & MURRAY | 88. SINGAPORE CABLES
MANUFACTURERS | 107. WAH SOON MARINE |
| 72. NEW & NOVEL ENGINEERING | 89. SINGAPORE DUPONT | 108. WARTSILA |
| 73. Ngee ANN POLYTECHNIC | 90. SINGAPORE POLYTECHNIC | 109. WORLDWIDE FLOORING
SYSTEMS |
| 74. NIIGATA POWER SYSTEM | 91. SINO MARINE ENGINEERING | |
| | 92. SOUTH SEA INSPECTION | |
| | 93. SPRINGER – EMS | |

At the helm

Keppel FELS' ability to ensure on-time, on-budget deliveries without incidents has been the result of the focus, effort and determination of its people. To further augment efficiency and to meet the increase in workload with the same effectiveness, there has been some re-organisation within the company.

Since 1 November 2007, Michael Chia, ED of Keppel FELS has taken charge of Customers and Marketing, Engineering, Commercial and Projects. Commercial includes Estimating & Analysis and Purchasing.

Wong Kok Seng, Senior GM (Group Procurement) has been promoted to ED (Operations) of Keppel FELS to oversee Planning and Control, which includes Production Planning, Cutting Plan, Production Control and Operations. His responsibilities under Operations would be Production & Commissioning, Subcontracting and Warehousing & Logistics.

Taking over the role of Senior GM (Group Procurement) is Ho Cheuk Yuen who recently completed his secondment in USA as President and CEO of Keppel AmFELS. He oversees Purchasing and Materials Management since 1 December 2007. He also assists the various

Executive Directors in materials management and supply chain management.

Having completed his secondment in Brazil in October, Tay Kim Hock has returned to Singapore. He is now the Senior GM (Group Business Development) and also assists Nelson Yeo, ED of Keppel Shipyard in the Qatar Yard development.

Deputy President/CEO of Keppel FELS Brasil Daniel Chang has assumed the company's position of President and CEO.

Rio connection

Tay Kim Hock has returned to Singapore after a seven-year secondment to Rio de Janeiro as Keppel FELS Brasil's President and CEO. He leaves behind a wealth of well-wishers and good friends.

"Thanks to your support and dedication all these years the company has been built up to what it is now. Have a nice trip back home and good luck in Singapore."

– Karina Stoff (*Legal Coordinator*)

"I would like to thank you for the support that was given to me. I would also like to comment that you are a blessed man because you have secured three of the biggest platform construction contracts (P-51, P-52 and P-56) with Petrobras for Keppel FELS Brasil."

– Alceu Mariano (*Institutional Relations Director*)

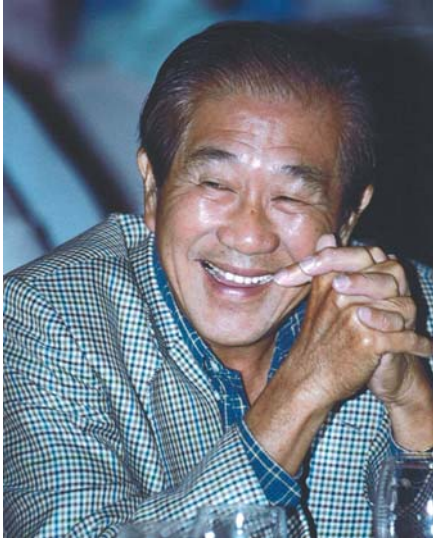
"It was indeed a great privilege to work with Mr Tay throughout these years on the P-51 project. His contribution was essential to keep the team confident and motivated to carry out the project successfully".

– Jose Pedro (*P-51 & P-56 Projector Director*)

Tay Kim Hock and his wife receiving farewell presents as friends and Keppelites say their goodbyes



Tough man, bold vision



Sim Kee Boon

An old school gentleman. A leader who led by example. A dear friend. A kind boss.

That's how many described Sim Kee Boon, who passed away on 9 November 2007 at age 78. He is survived by his 76-year-old wife, Mrs Jeanette Sim, five sons and five granddaughters.

Sim joined the Civil Service in 1953 soon after graduation and rose through the echelons to become Acting Permanent Secretary (Ministry of National Development) in 1962 and Acting Permanent Secretary (Ministry of Finance) in 1963.

From 1983, he concurrently held the position of Permanent Secretary to the Public Service Division of the Ministry of Finance.

In 1963, he was awarded the Meritorious Service Medal and the Malaysia Medal. In 1991, he was awarded the Distinguished Service Order. In January 1997, he was sworn in as a member of the Council of Presidential Advisers.

Sim was appointed Director of Keppel Corporation in February 1984 and

became Executive Chairman in May 1984 after leaving his previous position as head of Singapore's civil service. He stepped down from his post in 2000 and was appointed Senior Advisor until his retirement in 2003.

For almost 20 years, Sim dedicated his corporate life to the stewardship of Keppel, growing the company from a shipyard into the Singapore icon it is today.

Keppelites pay tribute to the man.

"Keppelites have benefited immensely from Mr Sim's leadership during his 16-year tenure as Group Executive Chairman. He developed a strong and stable platform for Keppel upon which we have been able to develop and grow at a sustained pace during these last eight years. Keppel's success today is a result of his vision and effort.

"As his colleague, I have learned much from him through his inimitable style, particularly his great sense of optimism and cheerfulness even during very trying times."

Lim Chee Onn
Executive Chairman
Keppel Corporation

"I will always remember Mr Sim Kee Boon as a successful man who was able to balance well the demands of business and public service with family life and a passion for golf. He was an excellent boss – he demanded results but was humane and caring. He always kept his cool like holing the final putt in an important 18th hole!"

Choo Chiau Beng
Chairman & CEO
Keppel Offshore & Marine

"Mr Sim was a great mentor and never failed to remember those who had worked with him. He kept in touch with those he knew, and never failed to send notes, smses, or emails to congratulate or encourage. I find him to be most decisive yet humble and understanding, and a great boss to work with.

Tong Chong Heong
MD/COO
Keppel Offshore & Marine

"Mr Sim remained a Keppelite to the very end, a term coined during his tenure as our Chairman. He would make it a point to attend all the important functions. Even when he had a relapse a few months ago, he displayed a strong and positive attitude and continued his contacts with the Keppel team. We in Keppel shall miss him dearly. His indomitable spirit shall live in us forever."

Teo Soon Hoe
Senior Executive Director &
Group Finance Director
Keppel Corporation

"Mr Sim was respected and loved. In all his years at Keppel, he has taught me always to be first a Singaporean and then a Keppelite in my thinking process because what is good for Singapore will be good for the future of Keppel. I learned a lot from one of the finest masters in the art of communication.

"I will always remember him as one who has a meticulous attention for details as well as an infectious *joire de vivre*, always affable and charming to everyone he meets."

Wang Look Fung
General Manager,
Keppel Group Corporate Communications

Making safety a noble virtue



Senior management of Keppel, ExxonMobil, SBM and Shell celebrate with the Gold award recipients

The Contractor HSE Recognition Award 2007 ceremony was kicked off with an address by Nelson Yeo, ED of Keppel Shipyard. He shared the history of the Safety Leadership Programme as part of the yard's Safety Plus initiatives. Nelson thanked the contractors and customers like ExxonMobil, Shell and Single Buoy Moorings for their support.

He credited the Safety Leadership Programme for Keppel Shipyard's achievement of an accident frequency of 0.25 in 2007 compared to 1.34 in 2006. He stressed that "Bringing the safety accident rate down is doable. We must continue to put in effort to keep on improving."

Abu Bakar, GM (Operations) of Keppel Shipyard, said, "Safety is a journey. We need to head in the right direction and continue, step by step, until safety is no longer a process by itself but part of our daily operations. We have to realise that safety is more than just a core value. It is

a noble virtue which we all have to incorporate in our daily lives."

Held at Keppel Shipyard on 12 December 2007, the award ceremony was attended by 219 people. Among the VIPs were CH Tong, MD/COO of Keppel O&M, Ken Larson, Senior Project Manager of ExxonMobil, Chris Davison, Senior Project Manager of SBM and Chris Howell, FPSO Lead of Shell.

To recognise contractors' effort in maintaining an injury-free work environment, 19 Gold, 23 Silver and 65 Bronze were handed to the contractors. Gold award recipients are those who achieved 300,000 injury-free manhours worked, Silver recipients 50,000 injury-free manhours worked and Bronze recipients 50,000 injury-free manhours worked.

Employees of the Gold award recipients received safety shoes while employees of the Silver award recipients received safety

belts. Safety goggles were handed out to employees of the Bronze award recipients.

Choong Yik Lin, Managing Director of Ta-Ching Marine Technology Pte Ltd (Ta-Ching), who received the Gold award, enthused, "We are very honoured to receive this award. This award will motivate all our employees to continue to keep safety their top priority."

Silvaraj, an Operations Manager, in particular, was extremely happy. All three of his companies won awards. Ram Sri Ram General Contractors won the Gold, Ram Raja Ram General Contractors won the Silver and Ram Ram Marine Services won the Bronze award. He said, "The Keppel management is very approachable. They are always willing to help. Keppel has helped us to set up our HSE programme which includes daily, weekly and monthly safety meetings. We will continue to enhance our safety culture."

Achieving records

Even with the current busy times, safety is still a top focus at Keppel FELS. Testament to this is the cumulated 13 million manhours without lost time incidents for the five rigs that Keppel FELS is building for Maersk.

"This is indeed a magnificent trail of records," said Claus Hemmingsen, CEO of Maersk Contractors, in a letter to the project team.

The Keppel FELS project teams were presented with cheques of S\$16,000 for each project at a ceremony held on 19 December to commemorate the safety achievement. The projects include three



jackup and two semisubmersible (semi) drilling rigs.

Keppel FELS is building a total of four jackups and three semis for Maersk. The first jackup is scheduled for delivery in the first quarter of 2008.

Friends at the field

In commemoration of Kazakhstan's Independence Day on 16 December, Team Astana, comprising Kazakhs living in Singapore, played a friendly match of football with a team from Keppel O&M.

"Keppel and Kazakhstan have shared a close relationship since 2003 when

Keppel first set up its yard in the country. The yard subsequently secured newbuilding projects from a customer and this created employment and provided training opportunities for Kazakhs," said CB Choo, Chairman/CEO of Keppel O&M.

Five employees from Keppel's Kazakhstan yard who are in Singapore on an exchange programme played alongside their Singaporean colleagues.

Organised by the Embassy of the Republic of Kazakhstan, the two teams kicked off to an exciting match filled with high spirits, camaraderie and sportsmanship.

Adil Tursunov (right), Head of Mission for the Kazakhstan Embassy in Singapore, surprises CH Tong and CB Choo with Team Astana jerseys for each of them



Driving his passion

Seow Tiang Keng, imparted the gems of his experience and expertise to undergraduates of the National University of Singapore's Electrical Engineering faculty on 15 November 2007.

Better known as TK Seow, the Senior Electrical & Instrumentation Manager of Keppel FELS, lectured on AC drives in oil rigs, particularly Variable Frequency Drives, in the two-hour seminar.

TK has worked in Keppel for 38 years. He is a registered Professional Engineer and Chartered Engineer. He has also served as an Advisory Consultant to several teaching institutions, and is currently a consultant to the Energy Market Authority for the testing and examination of engineers applying for the High Voltage switching licence.

Some 50 undergraduates were inspired by his presentation. More importantly, TK talked about the technological advancements in the equipment and facilities within Keppel O&M.

The veteran encouraged the budding engineers to broaden their horizons in the offshore and marine industry and to consider Electrical Power Engineering as a career choice.



Millions saved by dino-mite ideas



Barney the Dinosaur comes to life at the iQC award presentation

In its fourth consecutive year, the iQC movement in Keppel FELS has saved millions of dollars for the company. The projects undertaken by the various iQC teams in the past year have helped the company to achieve an overall projected cost savings of \$4.5 million per year.

The “Million Dollar Project Award”, introduced this year, was awarded to the two iQC teams which managed to achieve a minimum of one million dollar cost savings for the company.

Team SAF (*Production: Hull*) identified the problem of unsafe and long block erection time. They had brainstormed on improving block erection guides used in floating conditions and came up with the

solution of standardising the types of guides used. A considerable amount of time spent in block erection was saved.

Team *Secure 1* realised that unknown to the workers, pilfering was occurring within the Keppel O&M yards. The team realised that by creating awareness about the thefts, they would improve the workers’ vigilance of their own equipment. A crime awareness programme, which included the compilation of crime statistics on a periodic basis was introduced. A Crime Information Dissemination Area was set up, and crime prevention ambassadors were also appointed. All these techniques helped to cut down loss of property.

A total of 32 teams from all levels of

employees and subcontractors were involved at the iQC Convention held in September 2007. Two iQC teams received the Star Award while six received the Gold Awards, 11 the Silver Awards and nine the Bronze Awards. Four Certificates of Participation were also given out.

The “Most Innovative Presentation Award” was given to *Team Elite (HR)* who had conceived a creative project. They used a cartoon character Barney the Dinosaur, to interact with the assessors and audience during their presentation.

Having achieved a commendable score in their innovative and value-added project during the iQC Convention, *Team GBB (Production: Hull)* managed to retain the Outstanding iQC Team Challenge Trophy for the second consecutive year.

Executive Director of Keppel FELS, Michael Chia, said during the Award Presentation and Innovation Month 2007 Closing Ceremony, “iQC continues to serve as a good platform for employees to come together and contribute innovative ideas to help the company make improvements to the work environment, processes and products.”

In addition to the iQC Movement, Keppel FELS also has a Staff Suggestion Scheme which received a total of 271 suggestions from employees between September 2006 and August 2007. This represents a 95% increase in participation rate over the previous year.

The increase in participation reflects the employees’ commitment to building an innovative and progressive company.

A touch of Brazil in Singapore

Brazilian art took centre stage at the 2007 Singapore Design Festival as City Hall played host to a unique exhibition featuring Brazilian design and architecture.

Keppel O&M partnered the Ministry of External Relations of Brazil in a sponsorship of the inaugural exhibition.

Opened on 28 November, the exhibition featured renowned Brazilian architect Oscar Niemeyer, recognised worldwide for his contribution to modernist architecture. His most acclaimed creation is the city of Brasília, the capital of Brazil.

CB Choo, CEO/Chairman of Keppel O&M, acting in his capacity as non-resident Ambassador to Brazil, launched the exhibition as Guest-of-Honour.

He enthused, "Exhibitions like this one will bring about a confluence of ideas in Singapore. I hope that the impact of the exhibition will be mutually beneficial. Let Singapore and Brazil, two young and vibrant urban cities, give and receive the best of each others' art, architecture and culture. This exchange of ideas will not only lead to new artistic developments in both our beautiful cities, it will also deepen our already strong ties."

For the first time, Singaporeans were able to gain insights to works of Brazil's most acclaimed and influential designers.

Prominent architects such as João Filgueiras Lima and Sérgio Parada also showcased their creations along with renowned furniture designer Maurício Azeredo, jewellery designer Carlos Amorim and graphic designer Hans Donner.

Best shiprepair yard in Asia

For the third consecutive year, Keppel Shipyard was voted the best shiprepair yard in Asia by readers of Lloyd's List Maritime Asia and Lloyd's List Daily. A panel of industry specialists eventually selected the winner from the top three short listed companies.

The award recognised the shiprepair yard in Asia for meeting the needs of its regular customers, particularly in times of tight capacity, and at the same time, offering cost effective and quality services with a keen eye on yard safety.

400 of the region's luminaries in the offshore and marine community gathered at the Shangri-La Hotel in Kowloon, Hong Kong on 15 November 2007 to celebrate the community's achievements.

Jimmy Loh, Yard Manager of Keppel Shipyard (Tuas), said, "We are honoured to receive this award. It celebrates the strong relationships we have with our customers and this is testament to all the efforts of our team at Keppel Shipyard."



Jimmy Loh (centre) receives the award from Ian Rogers (left), MD of Aggreko Asia, sponsor of the award and Chris Mayer, Executive Editor of Lloyd's List

Keppel Shipyard recognises evergreen staff

Keppel Shipyard presented Long Service Awards to 113 employees in recognition of their 10 or more years of committed service. Collectively, they accumulated more than 2,355 years of service.

CH Tong, MD/COO of Keppel O&M who presented the awards said, "You have in your own ways, contributed your experience and expertise to help make the Keppel Offshore and Marine Group what it is today.



One big happy family as Management and staff celebrate their many years in Keppel

"The younger staff bring with them their own energy, enthusiasm and ideas. But they will need guidance and assistance from more experienced staff like yourselves to pass on to them the ethos, experience and wisdom gained over the years."

Project Manager, Goh Tong Woo, reminisced, "In my 30 years, I've made many friends and I'm happy with my accomplishments. It's been an eye-opener witnessing the changes in the industry, especially the technological advances that have made our work so different from before. It is always a continuous learning process."

Human Resources Manager, Teo Khai Yang, said, "I have many fond memories of my time in Keppel. What I cherish most are the teamwork, camaraderie and friendships I have made. I have been very fortunate to be able to work in Keppel which is a very nurturing organisation."

TH Tan, Yard Manager (Operations), can hardly believe how time has flown by. He recalls, "It feels like just yesterday when I joined and now its 20 years. I always wondered how people stayed in the job for so long. Now I know – through passion for the work, good colleagues and friends and a sense of accomplishment."

Ahoy Rotterdam!

Europort Maritime 2007 lived up to its reputation as a multi-faceted platform for the maritime sector. Keppel Verolme was an active participant with a booth at the exhibition which stood out among the 835 exhibitors spread across nine halls.

All market sectors were represented at the exhibition: shipbuilding, maintenance and repair, propulsion, dredging, navigation, electronics and services.

Sjaak Sely, Senior Business Manager of Keppel Verolme, explained why it was

important for Keppel to be represented at the exhibition, "Europort Maritime is one of Europe's largest international trade fairs for maritime technology in ocean shipping, inland shipping, shipbuilding, dredging, fishing and related sectors in Europe.

"Many of The Netherlands-based clients visited the Keppel booth. The fair is an excellent opportunity to promote our "Near Market, Near Customer" strategy, and meet our customers in a relaxed atmosphere to discuss projects."

Ahoy Rotterdam, the indoor sporting arena where the exhibition took place, received 31,521 visitors from 6 to 9 November. 17% of the total numbers of visitors were from abroad reinforcing its international reach.

Europort Maritime is a contemporary centre for knowledge and trade. Conferences with lively exchanges of ideas and knowledge were also held. These included the CEDA Dredging Day and the annual IBT conference.

ACTIVE participation

With pounding feet and punching fists, 4,000 Keppel FELS employees moved to the beats of popular tunes while most Singaporeans were still asleep.

It was not a dusk-to-dawn rave party but ACTIVE (All Companies or Communities Together In Various Exercises) Day at Keppel FELS. In line with the company's commitment to workplace health, ACTIVE Day encourages its employees to make exercise a habit.

ACTIVE Day proved to be popular among its participants. James Chia, from Marketing department, shared, "ACTIVE Day highlights the importance of having regular exercises and proper diets – elements of a healthy lifestyle. Contrary to beliefs that it was a typical routine, the morning mass workout actually turned out to be both fun and enjoyable!"

CB Choo, Chairman/CEO of Keppel O&M, said, "It has been a very busy time for all of us. In order for us to stay alert, productive and efficient, at home and at work, we must exercise regularly.

"Do not let ACTIVE Day be a one-off event. For those who have not started exercising regularly, let it be the beginning."

Five fitness instructors were engaged to lead in the high-energy morning workout held on 15 December 2007. CB Choo, together with Keppel FELS' senior management and union leaders joined the employees who participated in the event.

Farahdila Nordin, Project Secretary of Keppel FELS, enthused, "I had a lot of fun! The physical instructor was very good and he kept the spirit of the people high by interacting with us. At one point, he jumped down from the stage and 'high-fived' us! We should have more ACTIVE Days!"



Senior management, union leaders and employees join hands in promoting a healthy lifestyle

Around our yards

OffshoreMarine tracks works at various Keppel yards.

MAERSK DENTON



GAS NEMESIS



Singapore

Keppel Shipyard

Name : **MAERSK DENTON**
 Owner : KG ms 'Santa Rutina' Offen Reederei GmbH & Co
 Country : Germany
 Type : Container
 DWT : 53,115
 GRT : 45,803
 Date : 1 – 8 November
 Scope : Major works include drydocking, overhauling of seawater pumps, renewal of mooring winches, clearance of tailshaft and rudder, polishing of propeller, repair of the LT cooler end plate and changing of chrome liner

Country : Greece
 Type : Chemical tanker
 DWT : 28,000
 GRT : 28,400
 Date : 2 November – 4 December
 Scope : Special Class Survey and general repairs

Name : **LUDOVICA**
 Owner : Tomasos Brothers Inc
 Country : Greece
 Type : Chemical tanker
 DWT : 28,000
 GRT : 28,400
 Date : 8 November – 9 December
 Scope : Special Class Survey and general repairs

GRT : 14,278
 Date : 28 November – 11 December
 Scope : Renewal of seawater pipes, cleaning, blasting and painting of hull

Name : **GAS NEMESIS**
 Owner : Brave Maritime
 Country : Greece
 Type : LPG Carrier
 DWT : 4,994
 GRT : 4,966
 Date : 6 – 16 December
 Scope : Replating of bilge storage tank; renewal of engine room pipes, rudder carrier, pintle, neck bushes and sleeves; overhauling of sea valves and auxiliary boiler valves

The Netherlands

Keppel Verolme

Name : **THEANO**
 Owner : Tomasos Brothers Inc

The Philippines

Keppel Batangas Shipyard

Name : **OOCL ADVANCE**
 Owner : Rickmers Reederei GmbH & Cie. KG
 Country : Germany
 Type : Bulk Carrier
 DWT : –

Keppel Cebu Shipyard

Name : **ANDALUCIA CARRIER**
 Owner : Norbulk Shipping UK, Ltd.
 Country : UK
 Type : Reefer Cargo
 DWT : 6,064



ANDALUCIA CARRIER

GRT : 4,830
 Date : 27 November – 7 December
 Scope : Blasting and painting steelworks, servicing of sea valves and sea grating; overhauling of tailshaft, propeller, rudder works, deck machineries; work on anchor, chain locker, cable, various motors and pipes renewal

Name : **TRITON REEFER**
 Owner : Wallem Shipmanagement Ltd.
 Country : Hong Kong
 Type : Reefer Cargo
 DWT : 9,679
 GRT : 8,818
 Date : 20 October – 4 November
 Scope : Tailshaft, propeller and rudder works. Life-boat survey, steel renewals at side shell and chain locker.



TRITON REEFER

Deck crane servicing, overhaul of hatch cover, driving cylinder and various engine room machinery. Deck pipe renewals, external hull blasting and painting

Subic Shipyard & Engineering

Name : **MV "SUN ROUND"**
 Owner : Sunford Shipping Ltd.
 Country : Japan
 Type : Container Ship
 DWT : 57,904
 GRT : 53,359
 Date : 21 November – 2 December
 Scope : Drydocking, hull preservation, cargo holds and hatch cover upgrading, steel renewals for containers socket, water ballast tank no. 5 and cargo hold. Port and starboard internal repair, boiler and exhaust gas economiser cleaning, mounting valves and safety valves overhauling and



MV "SUN ROUND"

survey. Propeller blades polishing and root blade dye checking, bow thrust blades trimming and grinding

Name : **MT "CHAMPION LION"**
 Owner : HDS AS
 Country : Norway
 Type : Oil Tanker
 DWT : 44,979
 GRT : 26,113
 Date : 25 November – 5 December
 Scope : Afloat repairs, blasting and painting of main deck area in way of side ballast tank, center section including structures and tank hatch covers

Name : **MV "SHIN SAKAIDE"**
 Owner : Hachiuma Steamship Co., Ltd.
 Country : Japan
 Type : Bulk Carrier
 DWT : 91,625
 GRT : 50,238
 Date : 19 November – 5 December
 Scope : Drydocking, hull preservation, upgrading of cargo holds, polishing and painting of propeller, overhauling main engine turbocharger and generator engine governor, auxiliary boiler mounting and valves, engine room motor fan; cleaning of main and emergency switchboard.

Keppel Group Newsbytes

WTE plant for Vietnam

Keppel Seghers has received in-principle approval for the development of a waste-to-energy (WTE) plant from the People's Committee of Ho Chi Minh City (HCMC). The proposed plant in HCMC will be the first WTE plant in Vietnam and also the biggest WTE facility in Southeast Asia, outside Singapore. With the capacity to treat 2,000 tons of waste per day, the plant will generate more than 20 MW of green energy for HCMC.

Singapore's largest lease deal

Marina Bay Financial Centre (MBFC) and DBS Bank have entered into an agreement to lease 700,000 sq ft in Tower 3 of the Marina Bay Financial Centre. The lease agreement will see DBS commence occupancy from 2012 under a 12-year lease with options to renew.

At 1.3 million sq ft, and with striking views of the Bay, the 48-storey MBFC Tower 3 will be the largest office tower in Singapore. Its impressive floorplates of between 30,000 and 50,000 sq ft include

two of the largest trading floors in Singapore in the podium block.

Large-scale residential project in Shanghai

Keppel Land has acquired a 100% stake in Shanghai Hongda Property Development Co. Ltd. ("Shanghai Hongda"), which owns a 26.4 ha (396 mu) residential site in Xinchang Town, Nanhui District, south-eastern Shanghai.

The site will be developed in phases over 5 years into a mixed residential enclave comprising 3,000 homes.

Eco-friendly campus

Keppel FMO has been awarded a three-year maintenance contract by Republic Polytechnic (RP). The contract carries an option to renew for another two years.

Keppel FMO will provide integrated facility management and maintenance services for all building equipment and systems in its new 20-hectare Woodlands campus. In addition, Keppel FMO will provide laboratory operation and technical support services for the academic schools.

SPC'S 38th Kiosk

Singapore Petroleum Company opened its 38th service station in Punggol, Singapore in November 2007 as part of its commitment to strengthen its retail footprint and serve the local motoring public.



The largest lease deal ever transacted in Singapore, DBS will take up 700,000 square feet of Tower 3 in MBFC

Global Reach

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Four jackup rigs for new customer Rowan

Keppel AmFELS has secured contracts from Rowan Companies, Inc. (Rowan) to build four jackup rigs which include owner furnished equipment.

“The construction contracts with Keppel AmFELS afforded us the opportunity to accelerate the expansion of our offshore drilling business by partnering with a first class organisation and shipyard,” said Danny McNease, Chairman and Chief Executive Officer of Rowan.

Rowan is a major provider of international and domestic offshore contract drilling services. The company also owns and operates a manufacturing division that produces equipment for the drilling, mining and timber industries. The company's stock is traded on the New York Stock Exchange.

CH Tong, MD/COO of Keppel O&M and Chairman of Keppel AmFELS, said, “Rowan is a world-class drilling contractor and a new customer to Keppel. We are glad that they

recognise Keppel's capability and commitment to meet customer requirements on time, within budget and without incident.

“We endeavour to build a long-term partnership with them based on integrity, reliability and delivery of quality products.”

Deliveries of the four rigs are slated progressively between the second quarter of 2010 through to 2011.

The rigs will be built to the LeTourneau Super 116E design with initial leg lengths of 410ft for operating in water depths of up to 350ft and drilling depths of down to 30,000ft. When completed, the rigs will be capable of drilling high-pressure, high-temperature and extended-reach wells.

Keppel AmFELS has delivered a second rig to Scorpion Offshore and is constructing six more jackups: three for Scorpion Offshore, and one each for Atwood Oceanics, Diamond Offshore and Perforadora Central. It is also building a sludge vessel for the City of New York.

Located in Brownsville Texas, Keppel AmFELS is one of the best-equipped offshore yards in the region

