

LNG Shipping News

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1 March 2018

Japanese/Australian consortium to import gas into NSW

Marubeni Corp, JERA and Squadron Energy, a subsidiary of Australia's Minderoo Group, have signed a Memorandum of Understanding (MOU) to conduct a feasibility study to build an LNG import terminal in New South Wales (NSW), Australia.

The feasibility study is aimed at developing an LNG import terminal at an existing NSW port, which will include the chartering of an FSRU, construction of onshore and offshore facilities, and provision of gas to local customers.

Marubeni said that it had been operating in Australia for over 50 years and has significant energy expertise in the country, as well as considerable experience in global FSRU business. JERA has expertise and long experience in LNG procurement and import terminal operations, while Squadron Energy is an Australian energy company with strong relations with local community and industrial players.

Combine expertise

The three companies will combine their expertise to undertake the study, which will include initiation of gas marketing in NSW, as well as investigating the possibility of procuring LNG through JERA's global network.

Marubeni and JERA said that

they believed that this FSRU-based project can be completed and the supply of LNG to NSW can be started in a timely manner, which will contribute to the stability and diversity of energy sources available to NSW, where gas supplies are expected to remain tight in the coming years.

They also said that this project will contribute to the availability of stable LNG supplies, not only in Australia and Japan, but also in the Asia/Pacific region.

The Minderoo Group encompasses the philanthropic and commercial activities of Australian mining billionaires Andrew and Nicola Forrest. In addition to a 33% shareholding in the Fortescue Metals Group, Minderoo holds a number of pastoral leases, property investments, Harvey Beef and a suite of energy and mineral projects.

Squadron Energy is a 100% owned subsidiary of the Minderoo Group and focuses on exploration and development projects in the



James Baulderstone was thought to be heading up the new consortium

oil, gas, renewable energy and energy infrastructure sectors.

According to local media, a company called Australian Industrial Energy, which is being led by an ex Santos' executive, James Baulderstone, has been formed and GE has been brought on board as a non-equity technology partner.

The consortium has reportedly opened negotiations with port operators of Port Kembla, Newcastle (NSW) and Sydney's Port Botany, which are the preferred sites for the re-gas terminal.

The company said it wants to make a final investment decision (FID) next year and to deliver first gas to the network by 2020-21. ■

FSRU barge gains employment contract

Exmar's FSRU barge, delivered at end of last year, has left the Wison Offshore Marine shipyard for Singapore.

At Singapore, the unit will undergo site specific modifications before departing in mid-2018 to an as yet unnamed destination to commence a long-

term employment under a timecharter.

The FSRU was able to obtain a long-term contract prior to her delivery from the yard.

This is an important step in the successful implementation of Exmar's barge-based regasification strategy, the

company said.

The FSRU is claimed to be the world's first, newbuild regasification barge, built on a speculative basis by Exmar.

More information on the charterer and the location will be released at a later date, Exmar said. ■

SHIPPING NEWS AGENDA

MARKETING

Panama Canal looks to LNGCs	2
Oil majors bullish	3

BUSINESS

EDF to take Mozambique gas	3
GTT reports busy start	3



Knutsen extends Marlink contract	5
----------------------------------	---

FINANCE

GasLog's revenue rise	5
Dynagas sees revenue drop	6
New deliveries boost Teekay	6

TECHNOLOGY



TMS signs up Wärtsilä	9
Sembcorp largest repairer	9
HHI installs test bed	9

LNG ORDERBOOK

LNG carrier orderbook	10
LNG small scale fleet	12

NEWS NUDGE

Egypt buys three Engie cargoes

Egyptian Natural Gas Holding Company (EGAS) is to take delivery of three LNG cargoes from Engie in the second quarter of 2018, according to a Reuters report.

Petroleum Minister, Tarek el Molla, announced last year that Egypt planned to import 80 cargoes of LNG during the fiscal year 2017/2018 that began last July.

Egypt has said it will stop importing gas by June, 2018, as the country's giant Zohr gas field began production at the end of last year, Reuters reported.

LNGC due at Cove Point

The LNGC 'Methane Spirit' is due to arrive at Dominion Energy's Cove Point LNG export facility in Maryland about 31st March, according to Reuters shipping data.

She could be the first vessel to pick up a cargo from the LNG facility, which Dominion said recently was expected to be in commercial operations in March.

In December, Dominion said Royal Dutch Shell would take the initial LNG cargoes from Cove Point.

Dominion sold the project's capacity for 20 years to a subsidiary of GAIL (India) and to ST Cove Point, a joint venture of units of Japanese trading company Sumitomo Corp and Tokyo Gas.

Panama Canal holds talks on future LNGC transits

As projections for growing gas shipments firm, the Panama Canal is working towards increasing the number of LNGCs that can transit the Neopanamax locks per day.

Commensurate with current levels of traffic, the Panama Canal offers only one daily LNGC reservation slot, the Panama Canal Authority said.

The Canal has handled up to two fully loaded LNGCs per day, when necessary, as part of its efforts to accommodate customers' needs. Two-LNG-transit days have become more and more frequent, as the result of the optimisation achieved by traffic scheduling and close co-ordination with customers.

The Authority is also offering more flexibility for LNG bookings, enabling exporters to opt for this route even if a canal transit was not in the original plan.

As part of this initiative, Panama Canal representatives, including Administrator Jorge

Quijano, hosted executives from US LNG exporter Cheniere Energy last week to discuss the waterway's growing LNGC transit segment and opportunities for future growth.

"Our visit allowed a greater understanding of the complexities around the Panama Canal operations. We are very appreciative of the collaboration with the Panama Canal to facilitate our 62 transits in 2017, positioning Cheniere as the largest LNG user of the Canal," said Eric Bensaude, Cheniere's Managing Director, Commercial Operations and Asset Optimisation. "The Panama Canal and the LNG industry are, together, going through a learning curve. Cheniere is confident in the Panama Canal's capabilities to adapt in addressing the needs of

the growing LNG sector. The success of the Panama Canal is essential to the satisfaction of Cheniere's customers and to the LNG industry as a whole."

LNGC transits to rise

Since the expanded Canal was inaugurated in June, 2016, the Neopanamax locks have handled more than 280 LNGCs, and this traffic is expected to continue to rise steadily.

Quijano said; "As exports from the US increase, LNG transits could increase by 50% by as early as September. The meetings with Cheniere allowed us to hear about customers' experience transiting the Neopanamax locks first-hand, and to collaborate on ways we can continue meeting this growing demand from the LNG industry.

"At the Panama Canal, we strive to provide the highest standards of safe, efficient and reliable service to the global maritime community. To do so, it's crucial to continually work with, and listen to, our customers so that we can best anticipate their needs and exceed their expectations.

"In the same way that we have reliably attended to our traditional market segments, we look forward to continuing to work with Cheniere and all of our industry partners so that together we can realise LNG's bright future at the Canal and deliver value for all of our customers around the world," he said.



Panama Canal could see an increase in LNGC transits

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Oil majors forecast a bright future

In what will be good for shipping, BP Energy and Shell LNG outlook forecast that natural gas production will grow strongly on the back of LNG expansion through 2040.

This is due to the projected increasing industrialisation levels and power demand, particularly in the emerging economies of Asia and Africa; continued switching away from coal to gas, especially in China; plus the increasing availability of low cost supplies, particularly in North America and the Middle East.

Qatar and Iran will contribute over half of the incremental production during the period, but by 2040, the US will account for nearly 25% of global gas production, BP said, with the Middle East and CIS accounting for around 20% each.

Global LNG supplies will more than double by 2040 with around 40% of the supply increase occurring in the next five years.

Shell has said that the global LNG market has continued to defy many market observers expecta-

tions, with demand growing by 29 mill tonnes to 293 mill tonnes in 2017, according to the oil major's recently introduced annual LNG Outlook.

Supply shortage

Based on current demand projections, Shell said it saw a potential for a supply shortage developing in mid-2020s, unless new LNG production project commitments are made soon.

"We are still seeing significant demand from traditional importers in Asia and Europe, but we are also seeing LNG provide flexible, reliable and cleaner energy supply for other countries around the world," said Maarten Wetselaar, Shell's Integrated Gas and New Energies Director. "In Asia alone, demand rose by 17 mill tonnes. That's nearly as much as Indonesia, the world's fifth-

largest LNG exporter, produced in 2017."

LNG buyers continued to sign shorter and smaller contracts. In 2017, the number of LNG spot cargoes sold reached 1,100 for the first time, equivalent to three cargoes delivered every day. This growth mostly came from new supply from Australia and the US, Shell said.

The divergence in requirements between buyers and suppliers is growing. Most suppliers still sought long-term LNG sales to secure financing. But LNG buyers increasingly wanted shorter, smaller and more flexible contracts to better compete in their own downstream power and gas markets.

This situation needs to be resolved to enable LNG project developers to make final investment decisions (FID) that are needed to

ensure there is enough future supply of this cleaner-burning fuel for the world's economy, Shell said. ■

GTT off to a good start

Since the beginning of this year, GTT has received several orders, including containment systems for three LNGCs and one bunkering vessel.

The three LNGCs, with capacities ranging from 174,000 to 180,000 cu m, will be built at Samsung Heavy Industries (SHI) and Hyundai Samho Heavy Industries (HSHI) and are scheduled for delivery in 2020.

They will be fitted with Mark III Flex containment systems.

In addition, the latest version of the Mark III system, the Mark III Flex Plus, will be fitted on board an LNGC already included in the GTT orderbook.

The bunkering vessel, with a capacity of 18,600 cu m, will receive Mark III Flex tanks and will be built by Hudong-Zhonghua.

Based in Northern Europe, she will be specifically aimed at supplying LNG to CMA CGM's future large containerships. The vessel will be operated by Mitsui OSK Lines and chartered by Total's subsidiary specialising in bunkering - Total Marine Fuels Global Solutions (TMFGS). It is scheduled for delivery in 2020.

Philippe Berterottière, GTT Chairman and CEO, said: "A particularly satisfying and promising start to the year. We are pursuing our trust-based relationships with the major players of the LNG industry and are starting to see the ramp-up of our LNG as a fuel activity. We are helping to shape tomorrow's maritime world." ■

EDF to take Mozambique LNG

Anadarko Petroleum Corp has confirmed that Mozambique LNG1 Co, the jointly owned sales entity of the Mozambique Area 1 co-venturers, has entered into a long-term LNG sale and purchase agreement (SPA) with EDF.

Under the SPA, the off-take calls for the supply of 1.2 mill tonnes per annum over 15 years.

"EDF is one of the world's largest electric utilities, and reaching this SPA continues to validate Mozambique LNG's position as a competitive long-term LNG supplier and as one of the world's leading greenfield projects," said Mitch Ingram, Anadarko Executive Vice President, International & Deepwater Operations and Project Management. "Mozambique LNG is unique in its ability to supply LNG to a variety of geographic locations to serve its customers, and this SPA gives us flexible access to Europe, which is one of our key strategic markets.

"The EDF sale is included in the portfolio of sales of more than 5 mill tonnes per annum for

which we have agreed key terms, and we continue to advance additional off-take arrangements. We anticipate the future development of Mozambique LNG will open new opportunities for the country and serve as a growth platform for its ongoing development," he added.

The Anadarko-operated Mozambique LNG project will be the country's first onshore LNG development, initially consisting of two LNG trains with total nameplate capacity of 12.88 mill tonnes per

annum to support the development of the Golfinho/Atum fields located within Offshore Area 1.

Anadarko Moçambique Área 1, a wholly owned subsidiary of Anadarko Petroleum Corp, operates Offshore Area 1 with a 26.5% working interest. Co-venturers include ENH Rovuma Área Um (15%), Mitsui E&P Mozambique Area1 (20%), ONGC Videsh (10%), Beas Rovuma Energy Mozambique (10%), BPRL Ventures Mozambique (10%), and PTTEP Mozambique Area 1 (8.5%). ■

“ Mozambique LNG is unique in its ability to supply LNG to a variety of geographic locations to serve its customers... ”

Mitch Ingram, Anadarko Executive Vice President, International & Deepwater Operations and Project Management.

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Knutsen Group and Marlink extend contract

Norwegian LNGC and tanker owner Knutsen has extended its contract with satcoms service provider Marlink.

This agreement is intended to ensure that Knutsen's fleet of 38 vessels, including LNGCs and two newbuildings continues to have access to high bandwidth, reliable global IP connectivity and voice calling through the Sealink Premium VSAT service.

Marlink's Sealink VSAT features a Committed Information Rate (CIR), which ensures a minimum level of bandwidth is always accessible while also providing a

faster Maximum Information Rate (MIR) when available.

Based on its guaranteed level of service, the Knutsen Group said it was exploring new ways to further digitalise its fleet.

A Marlink customer for 18 years and an early adopter of maritime VSAT in 2000, Knutsen has continuously developed its digital processes across its technically advanced fleet.

Starting initially with on

board/shoreside database replication and electronic forms/reporting, Knutsen uses the speed, reliability and global coverage of Sealink VSAT to deliver high quality service to its clients through efficient vessel and logistics operations, the company said.

Knutsen is also promoting the business case for providing high-end communication facilities for its seafarers. The shipping company has seen demand for crew bandwidth rise significantly since 2002 and has continuously asked Marlink to ensure that its crew are satisfied with the communications facilities on board.

The current on board configuration using 1 m Ku-band antennas with back-up on L-band, helps to ensure that the crew are able to access social media, browse the Internet and talk to friends and family at home, while also enabling

high bandwidth and reliability for vessel and business applications, in addition to fleet management.

"VSAT has been a standard on our fleet for a long time, but we continue to see new applications and demands with the ongoing digitisation happening within the maritime markets, which means we need a future proof solution to enable our own digitisation strategies," said Nils Trones, Communication & Navigation Manager, Knutsen OAS Shipping. "We are reviewing new opportunities to improve our service to clients even further using Marlink's digitalisation solutions that can help us to maximise our investment in communications."

Knutsen currently owns 11 LNGCs with another two 180,000 cu m newbuildings to come from HHI in 2019, as well as shuttle, chemical and products tankers. ■



Marlink has extended its contract to supply satcoms services to Knutsen

GasLog Ltd sees revenue increase

GasLog Ltd reported revenues of \$135.8 mill for the fourth quarter of last year, compared with \$126.5 mill for 4Q16.

Profit for 4Q17 was \$29.7 mill, compared to \$46.4 mill, while EBITDA was \$89.7 mill (4Q16: \$84.8 mill), adjusted EBITDA \$89.7 mill (4Q16: \$85.4 mill) and adjusted profit was \$21.4 mill (4Q16: \$18.9 mill).

Full year revenues were \$525.2 mill, compared to \$466.1 mill for 4Q16.

Profit for the 12-month period was \$84.2 mill (2016: \$28.1 mill), EBITDA was \$355.9 mill (2016: \$301 mill), adjusted EBITDA \$356 mill (2016: \$302.4 mill) and adjusted profit was \$78.7 mill (2016: \$57.5 mill).

GasLog Ltd completed the drop-down of the 'Solaris' to GasLog Partners for \$185.9 mill on 20th October, 2017.

On 12th January, 2018, GasLog signed a contract with Samsung to build a 180,000 cu m GTT Mark III Flex LNGC with LP-2S propulsion (Hull No 2213). This vessel is

scheduled to be delivered in the second quarter of 2020.

She will be chartered to Pioneer Shipping, a wholly-owned subsidiary of Centrica, for an initial period of around seven years, as previously announced on October 20, 2016.

A sistership (Hull No 2212) to be delivered earlier in the third quarter of 2019 is currently without a charter.

On 8th January, the company took delivery of the 'GasLog Houston' and the vessel commenced a short term timecharter.

Charter amended

GasLog has also amended the charter of the 'GasLog Hong Kong' to Total Gas & Power, resulting in the charter commencing on her delivery scheduled for this month. The charter is due to expire in 2025.

CEO, Paul Wogan said: "GasLog posted another strong quarter,

achieving record quarterly and annual results for revenues and EBITDA, due to improved earnings from our spot fleet and a strong uptime performance from our ships on charter, including our 2016 newbuild deliveries.

"The 2017-2018 winter saw a significant increase in demand for LNG. In particular, China's demand exceeded expectations as a result of cold weather and changes in energy and environmental policy. This strong demand from Asia pulled in LNG supply from multiple sources including the US, resulting in a significant tightening in the LNG shipping market, which led to spot rates reaching multi-year highs.

"While we may see a seasonal moderation in spot rates as we exit the Northern Hemisphere winter, GasLog remains well positioned to benefit from the



GasLog recently received 'GasLog Houston', which is to be chartered by Shell

anticipated longer term market recovery through our five vessels currently trading in the spot market through the Cool Pool and the 'GasLog Houston' prior to the start of her long-term charter to Shell at the end of 2018.

"We are also encouraged by signs of continued LNG demand growth, which will likely support development of new liquefaction capacity in the US and elsewhere. We continue to grow our fleet through the order of a newbuild LNG carrier from Samsung. The vessel is currently unchartered but is expected to deliver into a stronger LNG shipping market in the third quarter of 2019." he said. ■

Dynagas LNG Partners suffers revenue drop

Dynagas LNG Partners reported a 63.7% fall in net income for the three month period ended 31st December, 2017.

Net income was \$5.6 mill, compared to \$15.5 mill in the corresponding period of 2016. This was mainly attributable to (i) a drop in operating revenues and (ii) the increased interest costs for servicing a term loan.

Adjusted net income for 4Q17 was \$7.6 mill, compared to \$17.4 mill in 4Q16, which represented a 56.5% decrease. Adjusted EBITDA for 4Q17 was \$26.9 mill, compared to \$33.9 mill for 4Q16 - a fall of 20.6%.

Average daily hire, gross of commissions, was about \$65,900 per day per vessel in the three month period, compared to around \$78,250 per day per vessel for 4Q16.

On 20th December, 2017, the Partnership entered into a new three-year timecharter with Statoil for the 'Arctic Aurora', which is expected to commence in the third quarter of 2018 in direct continuation, following the vessel's manda-



Dynagas will benefit from a three year charter of the 'Arctic Aurora' to Statoil

tory statutory class five-year special survey and drydocking.

Statoil will also have options to extend this charter by two consecutive 12-month periods at escalating rates.

Deadline extended

On 6th February, 2018, the Partnership agreed with Dynagas to extend the deadline for exercising the purchase options for both the 'Clean Horizon' and the 'Clean Vision' to 31st December, this

year, previously granted to the Partnership under the omnibus agreement retroactively from their initial expiration in July, 2017 and January, 2018, respectively.

CEO, Tony Lauritzen, commented: "Our reported earnings for the

fourth quarter of 2017 were, as expected below those of the fourth quarter of 2016 and were impacted by the following: (i) the temporary employment of the 'Clean Energy' on the spot market until July, 2018, when the vessel will commence a timecharter with Gazprom for a term of approximately eight years, and (ii) the longer term nature of our contracts following our decision to reduce the charter hire rate on two vessels, the 'Yenisei River' and the 'Lena River', with effect

from November, 2016, in exchange for securing the long-term charter with Gazprom, mentioned above, for the employment of the 'Clean Energy'. These transactions contributed substantially to our contracted backlog, thereby enhancing significantly our revenue visibility.

"Part of our strategy has been to enter into longer term charters for the employment of the vessels in our fleet. In general, based on the conditions of the charter market, long-term charters may be priced at day rates above or below shorter term charters. With our fleet 85% contracted through 2018, 92% contracted through 2019 and 100% contracted through 2020, and with an estimated fleet-wide average remaining contract duration of 10.4 years, we believe we have significant cash flow visibility. We expect to increase contract coverage going forward on the back of an improving LNG shipping market," he said. ■

Teekay LNG buoyed by newbuilding deliveries

Teekay LNG Partners reported a GAAP net income of \$39.9 mill and adjusted net income of \$34 mill in the fourth quarter of last year.

The Teekay Corp daughter company generated distributable cash flow of \$52.1 mill, or \$0.65 per common unit, in the period.

Since September, 2017, the Partnership has taken delivery of three MEGI LNGC newbuildings and two 30%-owned LNGC newbuildings, all of which commenced their respective charter contracts with Royal Dutch Shell, ranging between six and 20 years in duration, plus extension options.

During the period, Teekay LNG also completed an \$816 mill long-term debt facility to finance all six of the Partnership's 50%-owned Arc7 LNGC newbuildings delivering through early-2020, the first of which was delivered and immediately commenced a 28-year charter contract in January, 2018 with Yamal LNG.

Subsequently, in January 2018,

the Partnership sold its 50% ownership interest in the 2005-built FSRU 'Excelsior' for about \$44 mill net after repaying outstanding debt obligations.

In February, 2018, the Partnership refinanced a 2018 loan maturity with a new \$197 mill long-term debt facility secured by two LNGCs operating on long-term contracts.

Mark Kremin, President and CEO of Teekay Gas Group Ltd, said; "During the fourth quarter of 2017, the Partnership continued to generate stable cash flows and execute on its growth projects and financing plans.

"In December, 2017, our 50/50 joint venture with China LNG Shipping secured a long-term debt facility to finance all six Arc7 LNGC newbuildings and in mid-January 2018, we took delivery of our first Arc7 vessel, the 'Eduard Toll', two

weeks ahead of schedule. In total, since October, 2017, the Partnership has taken delivery of six LNGC newbuildings over a four-month period, all of which immediately commenced their respective long-term charter contracts.

"Looking ahead to the remainder of 2018, we expect to take delivery of another five LNGC newbuildings and a further three mid-sized LPG carrier newbuildings in our 50/50 joint venture with Exmar, all of which we expect will provide further cash flow growth to the Partnership.

"We also continue to make good progress on refinancing our debt maturities. I am pleased to report that in November, 2017 we



Teekay LNG has taken delivery of the company's first of six Arc7s to go on charter to Yamal LNG

refinanced and upsized our unsecured corporate revolving credit facility and in February, 2018, we refinanced one of our 2018 loan maturities with a new five-year, \$197 mill long-term debt facility.

"Finally, in January, 2018, we completed an opportunistic sale of the 50%-owned 2005-built 'Excelsior' at an attractive price," he concluded.

As of 31st December, 2017, the Partnership had total liquidity of \$433.6 mill - comprised of \$244.2 mill in cash and cash equivalents and \$189.4 mill in undrawn credit facilities. ■

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PNG looking to ramp up gas production for export

Papua New Guinea (PNG) oil and gas explorer and producer, Oil Search, has held meetings with ExxonMobil and Total to discuss the results of the downstream development options that were received by the PRL 15 joint venture partners last December.

As a result, the project to be proposed to the PNG Government is likely to include the construction of three LNG trains, with total capacity of around 8 mill tonnes per annum.

Two of these trains would probably be dedicated to Papua LNG, supplied with gas from the Elk-An-telope fields, with an additional expansion train underpinned by gas from the existing PNG LNG fields and the P'nyang field.

Oil Search said that it expected that discussions with the PNG Government on project gas agreements will commence late in the first quarter/early second quarter of this year, with a decision on the front end engineering and design (FEED) phase in the

second half of 2018, subject to partner approvals and progress in Government negotiations.

The company has recently opened an office in Japan and said it is increasingly confident about the demand outlook for PNG LNG, with a material shortfall in supply developing in the early 2020s.

Oil Search also said that it will be targeting key Northeast and Southeast Asian markets for off-take agreements.

****The facilities have since been shut down, due to a magnitude 7.5 earthquake that struck the PNG Highlands early on 26th February.

Oil Search said that all its staff and contractors, located at the

company's more than 20 operating sites, have now been accounted for and there have been no reports of any serious injuries.

Due to damage sustained to a number of its camp sites and to ensure the ongoing safety and welfare of staff, the company has commenced demobilising all non-essential personnel to Port Moresby. This exercise will continue over the next few days.

A review of Oil Search-operated wells, gathering systems, production facilities and other infrastructure is now underway, to establish whether there has been any material damage and what, if any, remedial work is required to ensure the integrity and safety of the assets. ■

NEWS NUDGE

More capacity available at Italian FSRU

OLT Offshore Toscana has said that regasification capacity is now available for March, 2018, following a 'declaration of the state of early warning' by the Italian Ministry of Economic Development.

Following the activation of the declaration, OLT Offshore LNG Toscana said that slot No 18, dated 7th March, 2018, is again available for allocation.

The relevant arrival window might be anticipated according to the terminal's technical requirements.

Applicants were to send an access request on 23rd February. ■

Nakilat in profit

Nakilat announced a net profit of QR847 mill with earnings per share of QR1.53 for financial year 2017 - down on the QR955.4 mill and QR1.72 eps recorded for 2016.

During the year, Nakilat said that it had successfully deployed the company's strategic plans towards maintaining its global leadership in LNG transportation and the integral role it plays in Qatar's LNG supply chain.

Despite the challenges facing the energy and maritime industry, the company achieved positive results across its operations that exceeded planned expectations in 2017 through enhanced operational efficiency and a re-

duction in general, administrative expenses and finance costs.

In addition, the net profit achieved in the fourth quarter of last year was higher than that achieved in 3Q17 and 4Q16, by 21% and 16%, respectively.

Complemented by strategic long-term agreements with well-established charterers, Nakilat said it had maintained steady cash flow and generated positive value for shareholders. Given the volatile market conditions, the company embarked on cost optimisation initiatives, capitalising on profitable business growth, and achieving cost savings.

The Board also recognised Nakilat's efforts at attracting and developing Qatari nationals to undertake various roles in the maritime industry, which resulted in the achievement of the 'Qatarisation Award for Supporting Qatarisation' at the energy and industry sector's annual Qatarisation review meeting 2017.

The Board recommended distributing cash dividends to shareholders equal to 10% of the nominal value of its capital, which is equivalent to one Riyal per share. The Board also decided to convene the annual general meeting on 20th March, 2018. ■



Nakilat has seen a dent in its revenues

TMS hands over LNGC maintenance to Wärtsilä

Wärtsilä has expanded its co-operation with the Athens based shipmanagement company, TMS Cardiff Gas Ltd.

Under the recently signed maintenance agreement, Wärtsilä now undertakes the maintenance predictability for four TFDE LNGCs in TMS Cardiff Gas' fleet.

Eniram's data collection platform and advanced data analytics is used to help TMS Cardiff Gas to achieve optimal fleet operations, resulting in reduced fuel costs and emissions.

The maintenance agreement, signed in December, 2017, advances the performance monitoring of TMS Cardiff Gas' vessels. This agreement is an expansion to an earlier technical management agreement signed between the companies in 2014.

With the new agreement, the scope of Wärtsilä's services include, among others, Eniram's data collection platform and advanced data analytics that enables TMS Cardiff Gas to save costs and maximise overall profitability, while cutting its emissions.

Vessel performance

Wärtsilä's dynamic maintenance planning, in combination with Eniram's vessel digital performance management system, provides TMS Cardiff Gas with a comprehensive view of each vessel's performance, efficiency, and improvement possibilities, the company claimed.

The service company undertakes the maintenance and optimisation of the vessels' engines,



TMS Cardiff Gas, part of the TMS Group, has called upon Wärtsilä to service the vessels

allowing the customer to focus on its core business. Wärtsilä provides all the necessary spare parts for vessel maintenance, as well as field service resources for scheduled maintenance that has been planned according to the actual running hours of the engines.

A remote support service guarantees that the vessels' crews have access to Wärtsilä's support team around the clock, which facilitates troubleshooting on the spot and also minimises the service visits on board.

"Our vision is to be one of the world's leading LNG and LPG operators with the highest standards of excellence in terms of performance, reliability, and safety. The maintenance and upgrade service

needs of the tri-fuel main generator engines on our LNGCs are technically advanced and require detailed planning with a professional partner to ensure the engines' reliable performance and the vessels' operability.

"Through our five-year partnership with Wärtsilä and Eniram, we are confident that our fleet will continue to be our customers' premium choice," said George Kourelis, TMS Cardiff Gas general manager.

"We are delighted to expand our partnership with TMS Cardiff Gas. Wärtsilä's solid experience in gas technologies, combined with Eniram's expertise in digital performance management solutions, allows TMS Cardiff Gas to max-

imise the efficiency of its engines and optimise its operations," said Yiannis Christopoulos, Director Services Unit - Greece & Cyprus.

Established in 2011, TMS Cardiff Gas, part of the TMS Group, is an operator and manager, with a fleet of 10 modern gas carriers (six LNGCs and four VLGCs). ■

HHI installs gas system test bed

It has been reported that Hyundai Heavy Industries (HHI) has recently installed a single mixed refrigerant test bed facility for its patented ecoSMRT technology that re-liquefies vaporised gas from an LNGC.

The test bed was installed at HHI's headquarters in Ulsan and has received safety approval from Korea Gas Safety Corp.

This system is expected to be fitted on four LNGCs ordered at HHI by Greek and Russian interests last year.

SMR was developed by HHI jointly with Babcock subsidiary, Liquid Gas Equipment (LGE) and was given an approval in principle (AiP) by LR last year. ■

Sembcorp claims LNGC repairer top spot

Sembcorp Marine has once again claimed top spot in the list of LNGC repairers worldwide.

According to its Annual Report, Sembcorp Marine repaired and/or upgraded 34 LNGCs during 2017 giving it first place for the fifth time.

"We have continuously enhanced and broadened our LNG engineering solutions, repair and upgrade capabilities and facilities to provide holistic solutions to

LNG owners and managers," the company said.

The company also said that the outlook for LNGC repairs remained good going forward.

During 3Q17, Sembcorp signed an LOI with US-based SeaOne Caribbean to design and build at least two large patented compressed gas liquid (CGL) carriers.

Incorporating proprietary ship component ideas from subsidiary LMG Marin, the Neopanamax CGLs are designed to have a storage capacity of 2 bill cu ft.

The 366 m long vessels will be fitted with SeaOne's patented CGL technology and systems.

FEED studies are currently underway, Sembcorp said. ■

WORLD LNG CARRIER ORDERBOOK

Name	Containment System	Propulsion	Yard	Ordered	Delivery Date	Capacity	Primary Owner
Seri Camar	Moss	STRH	Hyundai Heavy	2013	01/02/2018	150000	MISC
Sk Serenity	KC-1	TFDE	Samsung	2014	01/02/2018	174000	SK Shipping
Magdala	GT NO 96	MEGI	DSME	2014	01/02/2018	173400	Teekay LNG
Gaslog Hong Kong	TZ Mk. III	XDF	Hyundai Heavy	2014	01/02/2018	174000	GasLog
Sk Spica	KC-1	TFDE	Samsung	2014	01/03/2018	174000	SK Shipping
Gaslog Genoa	TZ Mk. III	XDF	Samsung	2014	01/03/2018	174000	GasLog
Bw Lilac	GT NO 96	MEGI	DSME	2014	01/03/2018	173400	BWGas
Oceanic Breeze	Moss	STRH	Mitsubishi H.I.	2013	31/03/2018	155300	K-Line
LNG Sakura	Moss	TFDE	Kawasaki	2015	31/03/2018	177000	MOL
Myrina	GT NO 96	MEGI	DSME	2014	01/04/2018	173400	Teekay LNG
Seri Cemara	Moss	STRH	Hyundai Heavy	2014	01/04/2018	150000	MISC
British Partner	GT NO 96	MEGI	DSME	2014	01/04/2018	173400	BP
Marvel Falcon	GTT Mark III Flex	XDF	Samsung	2014	15/04/2018	174000	MOL
Castillo De Merida	TZ Mk. III	MEGI	Imabari	2014	01/05/2018	178000	Elcano
CESI Lianyungang	Membrane	TFDE	Hudong-Zhonghua	2012	01/05/2018	174000	China LNG Shipping Holdings
Flex Ranger	TZ Mk. III	MEGI	Samsung	2013	01/05/2018	174000	Flex LNG
Pacific Breeze	Moss	TFDE	Kawasaki	2013	01/06/2018	180000	K-Line
Mitsubishi Nagasaki 2316	Moss	STRH	Mitsubishi H.I.	2014	01/06/2018	153000	NYK
Diamond Gas Orchid	Moss	STaGE	Mitsubishi H.I.	2015	01/06/2018	165000	NYK
Pan Europe	GT NO 96	TFDE	Hudong-Zhonghua	2014	01/06/2018	174000	Teekay LNG
Megara	GT NO 96	MEGI	DSME	2014	01/07/2018	173400	Teekay LNG
Flex Rainbow	TZ Mk. III	MEGI	Samsung	2013	25/07/2018	174000	Flex LNG
Energy Liberty	SPB	TFDE	Japan Marine United Corp (Jmu)	2014	01/08/2018	165000	MOL
Rudolf Samoylovich	GT NO 96	TFDE - Azipod	DSME	2014	01/08/2018	172410	Teekay LNG
Diamond Gas Rose	Moss	STaGE	Mitsubishi H.I.	2015	01/08/2018	165000	NYK
Enshu Maru	Moss	STRH	Kawasaki	2014	30/08/2018	164000	K-Line
Castillo De Caldelas	TZ Mk. III	MEGI	Imabari	2014	01/09/2018	178000	Elcano
Daewoo 2462 MOL E.On	GT NO 96	TFDE	DSME	2015	01/09/2018	180000	MOL
Vladimir Vize	GT NO 96	TFDE - Azipod	DSME	2014	01/09/2018	172410	MOL
Kinisis	GT NO 96	MEGI	DSME	2015	15/09/2018	173400	Chandris
Daewoo 2442	GT NO 96	MEGI	DSME	2014	01/10/2018	173400	BP
Daewoo 2427	GT NO 96	TFDE - Azipod	DSME	2014	01/10/2018	172410	Dynagas
Marvel Eagle	Moss	TFDE	Kawasaki	2014	15/10/2018	155000	MOL
Daewoo 2443	GT NO 96	MEGI	DSME	2014	01/11/2018	173400	BP
Boris Davydov	GT NO 96	TFDE - Azipod	DSME	2014	01/11/2018	172410	Dynagas
Marvel Hawk	GTT Mark III Flex	XDF	Samsung	2014	01/12/2018	174000	MOL
Mitsubishi Nagasaki 2321	Moss	STaGE	Mitsubishi H.I.	2015	01/12/2018	177000	NYK
Nikolay Zubov	GT NO 96	TFDE - Azipod	DSME	2014	01/12/2018	172410	Dynagas
Jmu Tsu 5071	SPB	TFDE	Japan Marine United Corp (Jmu)	2014	01/01/2019	165000	NYK
Samsung 2150	GTT Mark III Flex	XDF	Samsung	2014	01/01/2019	174000	MOL
Maran Gas Spetses	GT NO 96	MEGI	DSME	2015	01/01/2019	173400	Maran Gas Maritime
Daewoo 2444	GT NO 96	MEGI	DSME	2014	01/01/2019	173400	BP
Mitsubishi Nagasaki 2323	Moss	STaGE	Mitsubishi H.I.	2015	01/01/2019	177000	MOL

DFDE = dual fuel diesel engines, STRH = steam turbine reheat / ultra steam turbine, MEGI = marine electric gas injection, DRL = slow speed diesel, FSRU = vessel with regas capacity, FLNG = floating LNG production unit
Data last updated = 15th February 2018

Name	Yard	Containment System	Capacity	Propulsion	Delivery Date	Ordered	Primary Owner
Maran Gas Chios	GT NO 96	MEGI	DSME	2015	01/01/2019	173400	Maran Gas Maritime
Pan Africa	GT NO 96	TFDE	Hudong-Zhonghua	2014	01/01/2019	174000	Teekay LNG
Maran Gas Hydra	GT NO 96	MEGI	DSME	2015	01/01/2019	173400	Maran Gas Maritime
Hyundai Samho S856	TZ Mk. III	MEGI	Hyundai Heavy	2015	01/01/2019	174000	Teekay LNG
Gaslog Gladstone	TZ Mk. III	XDF	Samsung	2014	01/01/2019	174000	GasLog
Hyundai Samho S857	TZ Mk. III	MEGI	Hyundai Heavy	2015	01/01/2019	174000	Teekay LNG
Daewoo 2445	GT NO 96	MEGI	DSME	2014	01/02/2019	173400	BP
Kawasaki Sakaide 1734	Moss	STRH	Kawasaki	2015	01/03/2019	177000	MOL
Kawasaki Sakaide 1735	Moss	STaGE	Kawasaki	2015	01/03/2019	177000	MOL
Daewoo 2446	GT NO 96	MEGI	DSME	2014	01/03/2019	173400	BP
Mitsubishi Nagasaki 2326	Moss	STaGE	Mitsubishi H.I.	2015	01/03/2019	180000	NYK
Mitsubishi Nagasaki 2327	Moss	STRH	Mitsubishi H.I.	2015	01/03/2019	180000	NYK
Hyundai Ulsan 2937	GTT Mark III Flex	XDF	Hyundai Heavy	2016	01/04/2019	180000	SK Shipping
Jmu Tsu 5073	SPB	TFDE	Japan Marine United Corp (Jmu)	2014	01/05/2019	165000	MOL
Diamond Gas TBN		STaGE	Mitsubishi H.I.	2015	01/05/2019	165000	Mitsubishi
Hyundai Ulsan 2964	GTT Mark III Flex	MEGI	Hyundai Heavy	2017	01/05/2019	180000	Knutzen
Flex Constellation	GT NO 96	MEGI	DSME	2017	01/06/2019	173400	John Fredriksen
Hyundai Ulsan 2963	GTT Mark III Flex	MEGI	Hyundai Heavy	2017	01/06/2019	180000	Knutzen
Hyundai Ulsan 2938	GTT Mark III Flex	XDF	Hyundai Heavy	2016	01/07/2019	180000	SK Shipping
Daewoo 2430	GT NO 96	TFDE - Azipod	DSME	2014	01/07/2019	172000	Teekay LNG
Maran Gas Syros	GT NO 96	MEGI	DSME	2014	01/07/2019	173400	Maran Gas Maritime
Gaslog Windsor	GTT Mark V	XDF	Samsung	2016	01/07/2019	180000	GasLog
MOL HUDONG-ZHONGHUA 1/4	GT NO 96	MEGI	Hudong-Zhonghua	2017	01/07/2019	174000	MOL
Kawasaki Sakaide 1729	Moss	TFDE	Kawasaki	2014	01/08/2019	155000	MOL
Daewoo 2431	GT NO 96	TFDE - Azipod	DSME	2014	01/08/2019	172000	Teekay LNG
Flex Courageous	GT NO 96	MEGI	DSME	2017	01/08/2019	173400	John Fredriksen
Jmu Tsu 5072	SPB	TFDE	Japan Marine United Corp (Jmu)	2014	01/09/2019	165000	MOL
Daewoo 2432	GT NO 96	TFDE - Azipod	DSME	2014	01/09/2019	172410	MOL
Mitsubishi Nagasaki 2322	Moss	STaGE	Mitsubishi H.I.	2015	01/09/2019	177000	MOL
Daewoo 2466	GT NO 96	MEGI	DSME	2016	01/10/2019	173400	Maran Gas Maritime
Daewoo 2433	GT NO 96	TFDE - Azipod	DSME	2014	01/10/2019	172000	Teekay LNG
MOL HUDONG-ZHONGHUA 2/4	GT NO 96	MEGI	Hudong-Zhonghua	2017	01/10/2019	174000	MOL
Daewoo 2467	GT NO 96	MEGI	DSME	2016	01/11/2019	173400	Maran Gas Maritime
Daewoo 2489	GT NO 96	MEGI	DSME	2015	01/11/2019	173400	BWGas
Daewoo 2434	GT NO 96	TFDE - Azipod	DSME	2014	01/11/2019	172000	Teekay LNG
Marvel Swan	GTT Mark III Flex	MEGI	Imabari	2015	01/01/2020	178000	K-Line
MOL HUDONG-ZHONGHUA 3/4	GT NO 96	MEGI	Hudong-Zhonghua	2017	01/01/2020	174000	MOL
MOL HUDONG-ZHONGHUA 4/4	GT NO 96	MEGI	Hudong-Zhonghua	2017	01/04/2020	174000	MOL
HHI NYK/EDF	GTT Mark III Flex	XDF	Hyundai Heavy	2018	30/04/2020	174000	NYK
Daewoo 2478	GT NO 96	MEGI	DSME	2017	31/05/2020	173400	Maran Gas Maritime
Samsung 2213	GTT Mark V	XDF	Samsung	2017	01/06/2020	180000	GasLog
HHI Cardiff		XDF	Hyundai Heavy	2018	01/06/2020	174000	Cardiff Marine
HHI Sovcomflot		XDF	Hyundai Heavy	2018	01/06/2020	174000	Sovcomflot
Daewoo 2469	GT NO 96	MEGI	DSME	2016	30/06/2020	173400	Maran Gas Maritime

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Data last updated = 15th February 2018

WORLD SMALL SCALE LNG FLEET*

Built	Name	CBM	Cargo Type	Trading area	Trading in LNG?	Ship Owner / Operator
1974	Seagas	187	LNG	Sweden	Yes	AGA
1988	Kayoh Maru	1,517	LNG	Japan	Yes	Daiichi
1993	Aman Bintulu / Lucia Ambition	18,928	LNG	Malaysia - Japan	Yes	Perbadanan/NYK
1996	Surya Aki	19,475	LNG	Indonesia - Japan	Yes	MCGC
1997	Aman Sendai	18,928	LNG	Malaysia - Japan	Yes	Perbadanan/NYK
1998	Aman Hakata	18,800	LNG	Malaysia - Japan	Yes	Perbadanan/NYK
2000	Tripura (ex Surya Satsuma)	23,096	LNG	Indonesia - Japan	Yes	MCGC
2003	Pioneer Knutsen	1,100	LNG	Norway	Yes	Knutsen
2003	Shinju Maru No.1	2,540	LNG	Japan	Yes	Shinwa
2005	North Pioneer	2,500	LNG	Japan	Yes	Japan Liquid Gas
2007	Sun Arrows	19,531	LNG	Malaysia - Russia - Japan	Yes	Mitsui
2008	Kakurei Maru	2,536	LNG	Japan	Yes	Hogaki Zosen
2008	Shinju Maru No.2	2,540	LNG	Japan	Yes	Shinwa
2009	Coral Methane	7,551	LNG/LPG/Ethylene	Northwest Europe/Baltics	Yes, sometimes	Anthony Veder
2010	Norgas Creation	10,000	LNG/LPG/Ethylene	Worldwide	No	Norgas Carriers
2010	Norgas Innovation	10,000	LNG/LPG/Ethylene	Worldwide	No	Norgas Carriers
2011	Akebono Maru	3,556	LNG	Japan	Yes	Chuo Kaiun
2011	Norgas Bahrain Vision	12,000	LNG/LPG/Ethylene	Worldwide	No	Teekay
2011	Norgas Conception	10,000	LNG/LPG/Ethylene	Worldwide	No	Norgas Carriers
2011	Norgas Invention	10,000	LNG/LPG/Ethylene	Worldwide	No	Norgas Carriers
2011	Norgas Unikum	12,000	LNG/LPG/Ethylene	Worldwide	No	Teekay
2012	Coral Energy	15,600	LNG	Northwest Europe/Baltics	Yes	Anthony Veder
2013	Coral Anthelia	6,500	LNG/Ethylene			Anthony Veder
2013	JX Energy TBN	2,500	LNG	Japan	Yes	JX Energy
2013	Kakuyu Maru	2,500	LNG	Japan	Yes	Tsurumi Sunmarine
2014	LNG-Oil combi**	2,000	LNG	Germany	Yes	Veka
2014	Short Sea LNG Tanker **	4,000	LNG	Germany	Yes	Veka
2015	10 small carriers TBN**	5,000	LNG			Bimantara Group
2015	Jahre TBN**	6,200	LNG	Norway	Yes	Donsotank/Jahre Marine
2015	JS Ineos Ingenuity	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2015	JS Ineos Insight	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2015	JS Ineos Intrepid	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2015	LNG Barge TBN	3,000	LNG	US Coast	Yes	LNG America
2015	LNG bunker barge 1†	2,250	LNG	China	Yes	Anhui Huaqiang Natural Gas
2015	LNG bunker barge 2†	2,250	LNG	China	Yes	Anhui Huaqiang Natural Gas
2015	LNG bunker barge 3†	2,250	LNG	China	Yes	Anhui Huaqiang Natural Gas
2015	LNG Inland bunker**	800	LNG	Germany	Yes	Veka
2015	Norgas TBN**	17,000	LNG/LPG/Ethylene	Worldwide		Norgas Carriers
2015	Norgas TBN**	17,000	LNG/LPG/Ethylene	Worldwide		Norgas Carriers
2015	PetroChina TBN	30,000	LNG	China		PetroChina
2015	TBN	14,000	LNG	China	Yes	Zhejiang Huaxiang
2015	TBN 1	27,500	LNG	China?		Danyang?
2015	TBN 2	27,500	LNG	China?		Danyang?
2015	TBN 3	27,500	LNG	China?		Danyang?
2016	Clean Jacksonville	2,200	LNG	US Coast	Yes	CME
2016	Dalian TBN	28,000	LNG	China	Yes	Dalian Inteh Group
2016	Hai Yang Shi You 301	30,000	LNG	Bali FSU	Yes	CETS (CNOOC)
2016	JS Ineos Indepence	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2016	JS Ineos Innvation	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2016	JS Ineos Inspiration	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2016	LNG Prime	2,250	LNG	Northwest Europe	Yes	Veka Deen LNG
2016	Navigator Aurora	35,000	Ethane/Ethylene	Markus Hood - Stenungsund	Ethane, for Borealis	Navigator
2016	Gaschem Beluga	36,000	Ethane/Ethylene	US - Teeside	Ethane, for Sabic	Gaschem Services
2016	Gaschem Orca	36,000	Ethane/Ethylene	US - Teeside	Ethane, for Sabic	Gaschem Services

For more information please visit <http://small-lng.com>

*Includes multi-gas, ethylene and LNG bunker ships with 40,000 cubic metres LNG cargo capacity or less

TBN = To Be Nominated indicates ships are still at construction/planning stage

** = project shelved † = Data to be verified Data last updated = 12th February 2018

Built	Name	CBM	Cargo Type	Trading area	Trading in LNG?	Ship Owner / Operator
2016	Ocean Yield TBN**	36,000	Ethane/Ethylene	US - Teeside	Ethane, for Sabic	Gaschem Services
2017	Cardissa	6,500	LNG	Northwest Europe	Yes	Shell
2017	Yuan He 1	30,000	LNG	China	Yes	CSR
2017	ENGIE Zeebrugge	5,000	LNG	Northwest Europe	Yes	NYK
2017	CME TBN†	2,200	LNG	US Coast	Yes	CME
2017	CME TBN†	2,200	LNG	US Coast	Yes	CME
2017	Coral EnergICE	18,000	LNG	Northwest Europe/Baltics	Yes	Anthony Veder
2017	Coralius	5,800	LNG	Northwest Europe/Baltics	Yes, for Skargas	Anthony Veder
2017	JS Ineos Invention	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2017	JS Ineos Intuition	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2017	LNG-Gorskaya TBN	7,300	LNG	Russia	Yes	LNG-Gorskaya
2017	LNG-Gorskaya TBN	7,300	LNG	Russia	Yes	LNG-Gorskaya
2017	LNG-Gorskaya TBN	7,300	LNG	Russia	Yes	LNG-Gorskaya
2017	Navigator Eclipse	35,000	Ethane/Ethylene	US	Ethane	Navigator
2017	Navigator Nova	35,000	Ethane/Ethylene	US	Ethane	Navigator
2017	Navigator Prominence	35,000	Ethane/Ethylene	US	Ethane	Navigator
2017	Oizmendi	600	LNG	Bilbao	Yes	Itsas Gas
2018	Shell Bunker Barge TBN 2	6,500	LNG	Northwest Europe	Yes	Shell
2018	Shell Bunker Barge TBN 3	6,500	LNG	Northwest Europe	Yes	Shell
2018	Shell Bunker Barge TBN 4	3,000	LNG	Northwest Europe	Yes	Shell
2018	Bernhard Schulte TBN	7,500	LNG	Baltic	Yes	Bernhard Schulte
2018	CME TBN†	2,200	LNG	US Coast	Yes	CME
2018	Evergas TBN	32,000	Ethane/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2018	Evergas TBN	32,000	Ethane/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2018	Evergas TBN	32,000	Ethane/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2018	Evergas TBN	32,000	Ethane/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2019	KLine TBN	7,500	LNG	Korea	Yes	Korea Line
2019	KLine TBN	7,500	LNG	Korea	Yes	Korea Line
2019	Stolt TBN	7,500	LNG	Mediterranean	Yes	Stolt-Nielsen Gas
2019	Stolt TBN	7,500	LNG	Mediterranean	Yes	Stolt-Nielsen Gas
2020	Stolt TBN (option)	7,500	LNG		Yes	Stolt-Nielsen Gas
2020	Stolt TBN (option)	7,500	LNG		Yes	Stolt-Nielsen Gas
2020	Shell Bunker Barge	4,000	LNG	US Coast	Yes	Q-LNG Transport / Harvey Gulf
2020	Total TBN	18,600	LNG	NWE	Yes	MOL
2021	Stolt TBN (option)	7,500	LNG		Yes	Stolt-Nielsen Gas

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