

LNG Shipping News

AN LNG JOURNAL TITLE ON LNG CARRIERS

17 August 2017

Will new routes support LNGC demand?

The growth of LNG carriers over the past decade has been synonymous with the growth in global LNG import and export capacity.

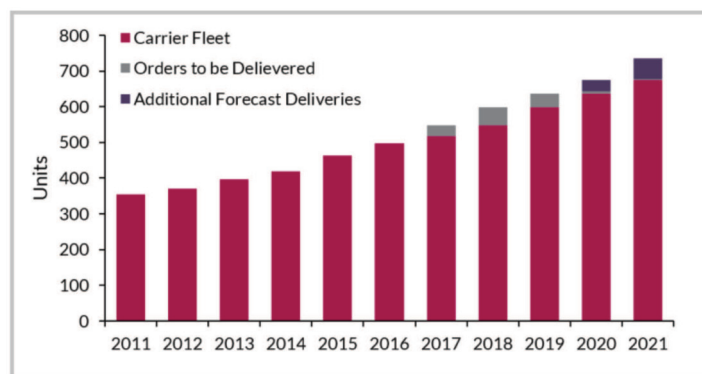
However, in recent years the increase in LNG cargoes coming to market has led to an oversupply problem, causing a significant decline in LNG spot prices, according to an industry note from Westwood Energy Global Group.

This oversupply has heavily impacted the LNGC market, resulting in the appetite for ordering vessels to dwindle. In 2016, orders amounted to only six units (excluding two options) - a 92% decline, compared to the number of LNGCs ordered in 2014.

The recent focus on the LNG market oversupply and the continuous growth in LNG export capacity is, however, masking the continuous increase in LNG demand, Westwood said.

Whilst increasing demand has been driven by traditional demand hubs, such as China and India, several new LNG importers, including Poland, Jordan, Malta, and Pakistan have also emerged in the last two years.

This is part of a trend of more countries seeking to use LNG to diversify their gas supply and improve power generation. Westwood expected this trend to continue, as 16 additional countries, including Bangladesh, India, Russia, and Sri Lanka, commission



Global LNGC fleet by year for 2011-2021

Source: Westwood Global Energy.

their first FSRUs over the 2017-2021 period.

These units are expected to unlock new import markets by providing a quick and cost-effective solution to the increasing local gas demand.

Mega projects

Over the forecast period (2017-2021), much of the LNG that will drive the supply increase, will come from mega projects, like Chevron's Wheatstone in Australia, as well as North American projects, such as Next Decade's Rio Grande and Cheniere's Corpus Christi.

This increase in demand will be driven by small and medium-sized projects dotted across the world. As a result, LNGCs will have to sail

longer distances from supply bases such as the US to Asia/Europe or East Africa to Asia and this could potentially lead to an increase in carrier demand.

This latter situation provides a silver lining to a recent gloomy market, as over 219 newbuilding LNGCs are expected to be delivered over the forecast period, including 17 new units that have been ordered since 2017.

The expected deliveries also include 92 LNGCs, which have yet to be ordered. Over 80% of LNGCs ordered in recent years have been the large conventional carriers (150,000-179,999 cu m). This indicates the significant design improvements the industry has made for greater cost and operational efficiencies.

Whilst oversupply is still expected to persist beyond the forecast period, continuous pro-gas energy policies in Asia, in combination with expanding LNG trade routes, are expected to support the demand for newbuild LNGCs, Westwood concluded.

SHIPPING NEWS AGENDA

MARKETING

Toshiba to market US gas **2**

BUSINESS

Timecharter changes brings warning **2**

Egypt to reduce imports **3**

Indonesian terminal development **3**

FINANCE



Cheniere exceeds forecast **5**

Teekay LNG sees red **5**

TECHNOLOGY

Wison wins AiP for FLNG **6**



Norsafe in large FLNG order **6**

Alfa Laval helps Arc7 trials **7**

LNG ORDERBOOK

LNG carrier orderbook **8**

LNG small scale fleet **10**

“Whilst increasing demand has been driven by traditional demand hubs...several new LNG importers have also emerged in the last two years.”

- Westwood Energy Global Group

Toshiba forms US LNG company

Earlier this month, Toshiba America Inc (TAI) announced the forming of Toshiba America LNG Corp (TAL).

This is a new operating company that will focus on the LNG market, the company said.

TAL is responsible for co-ordinating and assembling the necessary infrastructure chain to produce US LNG, which can then be marketed by the broader Toshiba group to key locations, such as Latin America, the Caribbean and Asia.

To become involved, TAL will

be one of five tolling customers at the Freeport LNG project in Quintana, Texas.

In addition, Toshiba has entered into a pipeline capacity agreement with an affiliate of the Enbridge Corp to bring US natural gas to the Freeport LNG facility and with Gulf LNG for tug services for the terminal. TAL said that it will be entering into other arrangements to facilitate the

delivery of US LNG.

TAL's management team includes Takayuki Shibano, who was appointed President and CEO. He joined Toshiba in 1987 as an engineer and has spent most of his career in Toshiba's energy operations; Cheryl Roberts was appointed Senior Vice President and CFO.

Ms Roberts is a global leader in finance with over 25 years

of experience in the energy industry; Veldanda (VV) Rao is Senior Vice President and COO. Rao is a senior energy professional with over 30 years of cross-functional, commercial and technical experience in LNG, gas and power, and over 20 years with various international markets including Asia, Middle Australia / New Zealand and South America. ■

New realities for LNG timecharters

The traditional long-term LNGC timecharter market is evolving with charter periods becoming shorter, a leading law firm said.

This trend has a number of commercial, financial and legal implications, warned the UK office of Norwegian law firm Wikborg Rein.

LNGC charter rates have plummeted and cross-basin trading has significantly reduced, largely due to prevailing negativity in the LNG market, although it is expected that this trend is likely to be relatively short-lived.

There are already signs of improvement in charter rates and project activity is likely to pick up when the oil price increases and the self-imposed restrictions on energy companies' capital budgets are eased. However, the trend of LNGCs being fixed on shorter-term and increasingly flexible contracts is likely to continue for the foreseeable future, Wikborg Rein said.

Twenty-year timecharters were traditionally the norm for new-buildings, often with charterers having the option to extend the

charter period to 30 years, as well as having the option to purchase the vessel on expiration.

The Snøhvit LNG project, for which Statoil chartered three LNGCs for 20 years from Norwegian and Japanese owners, is a good example of this traditional project-linked charter structure. The three vessels were effectively intended to function as floating pipelines transporting LNG from the Melkøya liquefaction plant in Northern Norway to Statoil's buyers under long-term LNG sale and purchase agreements (SPAs), the law firm explained.

There are several reasons for the current emergence of short term charters. First, certain owners have shown a willingness to take on the market exposure and risk that comes with shorter-term charter contracts. Some owners even appear to favour this type of contract in an attempt to capture

the peaks in the market when they repair their vessels.

Second, charterers have less appetite to commit to longer-term contracts than was previously the case. This is partly due to owners that are willing to provide vessels for shorter durations. This is also a reflection of the LNG market in general having become less rigid, with recently concluded SPAs and offtake agreements often being more flexible and lasting for shorter periods than in the past.

Market fluctuations

A consequence of short term charters is that owners are more exposed to the fluctuations in the LNG shipping market. Furthermore, owners have to accept more risk in respect of operating costs, as vessels are fixed on a flat-rate basis, as opposed to more traditional rate structures under which the operating costs are either

passed on to the charterer, escalated annually or subject to periodical reviews.

From a contract negotiation perspective, charterers need to consider that owners may be prepared to accept more charterer-friendly provisions for shorter-term contracts.

For example, the off-hire clause in LNG timecharters commonly provides charterers with the right to terminate the charter if the vessel remains off-hire for a specified number of consecutive days or in excess of a certain number of days within a certain time period.

The early termination of a 20-year charter is likely to have a far more severe impact on owners than the early termination of a five to seven year charter and therefore owners may be amenable to accept more stringent off-hire provisions for charters of a shorter duration. ■

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AG&P to develop Indonesian LNG terminal

Atlantic, Gulf and Pacific (AG&P) is to build and operate a \$980 mill LNG receiving terminal in Bantaeng, South Sulawesi.

The terminal will provide fuel to a 600 MW power plant in the area, the Philippine-based company said last week.

In a statement, AG&P said the modular components for the terminal will be constructed at its manufacturing base in Batangas province, south of Manila.

The company said the LNG receiving terminal will serve the

companies within the Bantaeng Industrial Park (KIBA), which signed a deal with Indonesia-based PT Energi Nusantara Merah Putih (ENMP) for the power plant's development plan.

"AG&P is thrilled to support this nationally important project in Bantaeng. We look forward in short order to LNG being available for the power plant and to indus-

try and consumers throughout Southern Sulawesi and nearby regions. AG&P will work hard to achieve this goal," Abhilesh Gupta, AG&P CFO and commercial head, said.

ENMP subsidiary, PT Pasifik Agra Energic, is the owner and developer of the integrated LNG receiving terminal, which will provide natural gas to the plant.

Another subsidiary PT Power Merah Putih is the owner and developer of the power plant, which will provide energy to KIBA.

AG&P said the project is currently in the engineering phase and is expected to reach financial closure within a year. ■

NEWS NUDGE

Vessel deliveries

Shell's first LNG bunker vessel 'Cardissa' has arrived in Rotterdam.

The seagoing bunker vessel was built by STX Offshore & Shipbuilding Co in South Korea for Shell and is powered by Wärtsilä DF dual-fuel engines. She will be used to deliver gas to LNG fuelled vessels in North-west Europe and will load at Gate's LNG breakbulk terminal at Rotterdam.

The LNG-powered vessel has a capacity of 6,500 cu m of LNG, and features an innovative transfer system, enabling it to use both large and small LNG terminals.

Shell also concluded a timecharter agreement with Victrol NV and CFT for a bunkering vessel with a capacity of 3,000 cu m of LNG. She will also be operating from Rotterdam and will be able to operate on Europe's inland waterways.

Also chartered by Shell is the 173,400 cu m 'Murex', which was delivered to Teekay LNG by DSME this month.

She is believed to be on her way to load at Sakhalin-2.

Thailand handles its first Q-MAX

On 5th August, the LNGC 'Bu Samra' delivered the first Q-Max cargo to Thailand's Map Ta Phut import terminal under a long-term sale and purchase agreement (SPA) with Qatargas.

The vessel carried the cargo as part of a deal between Qatar Liquefied Gas Co Ltd - 3 (Qatargas 3) and PTT Public Co Ltd.

Since 2011, Qatargas has supplied PTT with around 9 mill tonnes of LNG, delivering most of these cargoes in Q-Flex hulls.

In December 2012, Qatargas 3 and PTT signed the SPA for the delivery of 2 mill tonnes per annum of LNG for 20 years, starting in 2015.

"We look forward ... to LNG being available for the power plant and to industry and consumers throughout Southern Sulawesi and nearby regions."
-Abhilesh Gupta, AG&P CFO and commercial head

Egypt to reduce LNG imports

Egypt is planning to import 80 LNG cargoes during the 2017-18 financial year that began in July, down from the 118 cargoes imported last year.

Egypt has been trying to speed up the development of recent gas discoveries with a view to halting all imports by 2019.

"We were planning to import 154 cargoes of LNG in 2016-17 but we only imported 118 cargoes because of the increase in local gas production," Petroleum Minister Tarek El

Molla told Reuters last Sunday.

Egypt expects to increase its LNG production by 1 bill cu ft per day by the end of the current financial year to reach 6.2 bill cu ft per day.

Gas production is due to receive a boost from Italian national oil company Eni's Zohr field, dis-

covered in 2015 with an estimated 30 trill cu ft of gas on site, comes on stream.

The field is expected to come into production at the end of this year and will save Egypt billions of dollars in hard currency that would otherwise be spent on imports, Reuters said. ■

First Arc7 LNGC transits the NSR

Sovcomflot's ice-class LNGC 'Christophe de Margerie' was due to arrive at South Korea's Boryeong LNG terminal on 15th August.

She is carrying a natural gas cargo from Snohvit, Melkoya, Norway to South Korea, via the Northern Sea Route without icebreaker assistance.

The voyage is a landmark for the 172,600 cu m Arc 7 LNGC, the first of 15 Ice Class LNGCs built to lift cargoes from Yamal LNG in the Russian Arctic, which starts commercial production next year and which will load its commissioning cargoes this autumn.

'Christophe de Margerie' is only the fifth LNG carrier to

transit the NSR.

The vessel took on the test cargoes at Snohvit and was scheduled to complete the entire voyage in 15 days. ■



LNGC 'Christophe de Margerie'. Source: Alfa Laval

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Innovation. Experience. Performance.®

Cheniere results exceed expectations

Cheniere Energy Inc has reported a net loss of \$285 mill, or \$1.23 per share (basic and diluted), for the three months ended 30th June, 2017, compared to a net loss of \$298 mill, or \$1.31 per share (basic and diluted), for the comparable 2016 period.

For the first half of this year, the Houston-based energy company reported a net loss of \$231 mill, or \$0.99 per share (basic and diluted), compared to a net loss of \$619 mill, or \$2.71 per share (basic and diluted), for 1H16.

The decrease in the 2Q17 net loss was primarily, due to increased income from operations, decreased derivative loss, net and decreased loss on early repayment of debt, the company said.

However, the decrease was partially offset by an increased allocation of net income to non-controlling interest, due primarily to the amortisation of the beneficial conversion feature on Cheniere Partners' Class B units and increased interest expense, net of amounts capitalised.

In the three and six months pe-

riods, 48 and 91 LNG cargoes, were exported from the SPL Project, respectively, of which zero and seven, respectively, were commissioning cargoes.

Consolidated adjusted EBITDA for the three and six months periods was \$371 mill and \$854 mill, respectively, compared to a loss of \$4 mill and \$48 mill for the comparable 2016 periods. The increases were primarily due to a rise in income from operations.

"Today I'm pleased to announce our solid second quarter results, which are once again driven by execution and operational excellence across the company, and an increase in our full year 2017 guidance," said Jack Fusco, Cheniere's President and CEO. "The quarter was highlighted by the commencement of our long-term contract

with KOGAS and securing equity financing for the Midship Project. Subsequent to the end of the quarter, our long-term contract with Gas Natural Fenosa commenced and first LNG production occurred from Train 4 at Sabine Pass.

"We are revising our 2017 guidance upward as our operating results year-to-date have exceeded our expectations, primarily due to LNG trains entering service ahead of schedule and the ramp-up in LNG production levels occurring faster than we'd forecast earlier this year.

"During the second half of 2017, our focus remains on bringing Train 4 at Sabine Pass online safely and efficiently, executing on our commercialisation strategies, and delivering on our increased 2017 guidance," he said.



CEO Jack Fusco

As of 30th June, 2017, Cheniere had cash and cash equivalents of \$796 mill available. In addition, current and non-current restricted cash of \$1.75 bill (which included current and non-current restricted cash available to the company and its subsidiaries) were designated for the following purposes: \$1.28 bill for the SPL Project, \$103 mill for the CCL Project, \$286 mill for restricted purposes under the terms of Cheniere Partners' credit facilities and \$82 mill for other restricted purposes. ■

Teekay LNG goes into the red

Teekay LNG Partners reported a GAAP net loss attributable to the partners and preferred unitholders of \$16.1 mill for the second quarter of this year, compared to a profit of \$43.1 mill in the same period of 2016.

Adjusted net income attributable to the partners and preferred unitholders was \$17.9 mill in 2Q17, compared with \$53.8 mill in 2Q16. Distributable cash flow was \$40.6 mill, or \$0.51 per common unit, in 2Q17.

Voyage revenues were \$100.9 mill for the quarter as against \$99.2 mill in 2Q16.

GAAP net (loss) income and adjusted net income fell in 2Q17 compared to the same period of 2016, primarily due to a favourable settlement last year of a disputed charter contract termination in the partnership's 52%-owned joint venture with Marubeni Corp; unscheduled off-hire in 2Q17 for repairs to an LNGC; lower revenues from the six LPG carriers chartered to IM Skaugen from uncollected hire; sales of three conventional tankers in 2Q16 through 1Q17; and

lower spot rates earned for some of the vessels in the Teekay LNG-Marubeni joint venture and in the partnership's 50% owned joint venture with Exmar.

The decreases were partially offset by the deliveries of two MEGI LNGC newbuildings between August, 2016 and March, 2017 and deliveries of three LPG carriers between June, 2016 and March, 2017 in the Exmar LPG joint venture.

Non-cash items

GAAP net (loss) income was also affected during the period by various non-cash items, such as the write-down of the 'European Spirit' conventional tanker; an increase in unrealised foreign currency exchange losses relating to the Euro and NOK-denominated debt; and a decrease in unrealised losses on non-designated deriva-

tive instruments.

Mark Kremin, President and CEO of Teekay Gas Group, said; "During the second quarter, the partnership continued to generate stable cash flows supported by a diversified portfolio of long-term charters totalling \$11.4 bill in forward fixed-rate revenues with a weighted-average remaining contract duration of 13 years.

"During the quarter, our first joint venture LNGC chartered to Shell, the 'Pan Asia', successfully completed sea trials and is expected to deliver in the fourth quarter of 2017 at which time it will commence its 20-year charter contract. In addition, we continue to progress the financing for all our committed growth projects delivering through early-2020.

"We also continue to focus on our upcoming debt maturities and

I am pleased to report that, following our Awilco LNG charter contract extensions to December, 2019 on two modern LNGCs, we were able to successfully extend approximately \$180 mill of 2018 debt maturities to mid-2020," he said.

In July, the Teekay LNG/Marubeni joint venture secured short-term charter contracts on two vessels, the 'Magellan Spirit' and the 'Awra Spirit'. The 'Magellan Spirit' commenced a six-month contract (plus two three-month option periods) in July and the 'Awra Spirit' will start a 15-month charter contract in 4Q17.

As of 30th June, 2017, the partnership had total liquidity of \$351.1 mill (comprised of \$191.1 mill in cash and cash equivalents and \$160 mill in undrawn credit facilities). ■

Wison wins AiP for its FLNG design

Wison Offshore & Marine (Wison) has received Approval in Principle (AiP) from Bureau Veritas (BV) for its newly-developed large-scale FLNG storage and regasification terminal.

Featuring scalable storage capacity up to the equivalent size of a Q-Max, this is claimed to be the first large-scale FSRU barge design that has been granted AiP by a classification society.

With this AiP, Wison is now capable of providing comprehensive range of FSRU solutions for LNG

import markets with various scales of demand, the company said.

This full-size floating LNG terminal solution offers an economical alternative to the conventional LNG regasification vessels (LNGRV) especially for markets with long-term demand. The barge design lowers initial capital investments -

up to 20%, compared with LNGRV of equivalent size - as well as O&M costs, while enabling uninterrupted service throughout project lifecycle, Wison claimed.

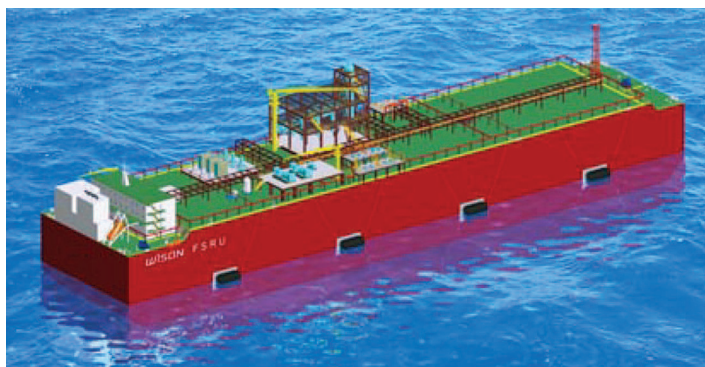
David Chen, Wison Offshore & Marine's Senior Solution Manager, added, "Wison large-scale FSRU is a fit-for-purpose facility designed with practical operation considerations. It features scalable storage capacity from 150,000 cu m to 265,000 cu m and a base case design of 750 mill cu ft per day regasification capacity expandable to fit project needs. Designed for near-shore/at-shore application, the FSRU can also be deployed offshore with a single point mooring system."

Wison is soon to deliver world's first FSRU barge under an EPC

contract and world's first FLNG barge was recently delivered to Exmar.

Last month, BV granted an AiP for Wison's 50 MW floating LNG power supply barge (50 MW W-FSRP).

When commenting on the FSRU AiP, Jiahui Wu, Technical Manager of BV China, said, "Based on the excellent co-operation on the 25,000 cu m Exmar FSRU project currently under execution at Wison shipyard, BV is very pleased to support Wison to further develop this large-scale FSRU design targeting a wider range of international clients. We are glad to work with Wison in bringing innovative solutions enabling more countries to access LNG as a clean and affordable energy."



Wison has won an AiP for its barge design

Mumbai FSRU bids on the table

The Shapoorji Pallonji Group has submitted a bid to build an LNG regasification terminal at Mumbai Port Trust.

Shapoorji Pallonji Infrastructure Capital Co (SP Infra), a unit of the Mumbai-based conglomerate, is one of the two companies that have reportedly submitted bids to develop an FSRU that can handle 3.5 mill tonnes per annum of LNG at Mumbai port.

According to local media, the Mumbai Port Trust LNG FSRU project, estimated to cost over Rs2,690 crore, including Rs1,500 crore for the FSRU, has received environment and coastal regulation zone (CRZ) clearances from the Indian Ministry of Environment, Forest and Climate Change.

A Mumbai Port Trust spokesman reportedly said Cabinet approval for the project was still awaited ahead of finalising the tender, but confirmed that Shapoorji Pallonji has placed a bid.

Norsafe to supply LSA to FLNG

Norsafe has secured its largest offshore contract to supply lifesaving appliances (LSAs) to ENI's Coral South floating LNG (FLNG) facility located in Area 4, about 50 km from the Mozambique coast.

This order is for eight freefall systems containing 5 x GES 50 MKIII with HD-50 davits and 3 x GES 45 with HD-45 davits, to the FLNG facility under construction at Samsung Heavy Industries.

The davits will be delivered in November, 2018 and the lifeboats in February, 2021.

The GES 50 MKIII freefall lifeboat will take up to 70 persons and can drop from a height of 47 m, while the GES 45 has a capacity of up to 60 persons, having a maximum drop height of 40 m.

"I am delighted that Norsafe has secured such a prestigious contract to supply the first FLNG facility in

Africa. It is testament to the dedication and hard work of our global teams that we have managed to secure so much business this year," said Dag Songedal, Norsafe CEO. "We will continue to listen to our clients and develop products and services to meet their requirements in a cost-effective way."



Norsafe has won a large contract to fit out an FLNG

Alfa Laval in first Yamal LNGC trials

Few deliveries have been more complex than those for the Yamal LNG project, in which the first new Arctic Ice Class vessel completed its trials and is now due in South Korea with its first commercial cargo.

The trials were overseen by two Alfa Laval Field Service Engineers.

Each of the 15 Arc 7 newbuildings will carry a range of Alfa Laval equipment, including two 35 tonne Alfa Laval Aalborg OL boilers with dual-fuel burners, a secondary thermal fluid heating system and an Alfa Laval Gas Combustion Unit (GCU) for dealing with boil-off gas.

The first of these vessels, Daewoo 2418 - 'Christophe de Margerie' - was delivered by Daewoo Shipbuilding & Marine Engineering (see page 3). On board for all of the trials, including gas and ice trials, were Alfa Laval field service engineers, Frank Larsen and Jong Rak Ahn.

"This whole thing is a big co-operation," said Larsen. "Getting everything right demands that we work closely with the yard, the

Russian class society and the end customer."

In most projects, field service engineers first get involved during the commissioning process. But in the case of the Yamal LNG project, the two engineers followed the vessels from the very start. "Our work actually started two years ago with the software implementation for this unique equipment," Larsen explained. "So when it came to the trials of the 'Christophe de Margerie', we knew the systems well."

The aim of the trials was to ensure that the vessel performs according to specifications, from its engine and navigation to its cargo operations. But given the completely new design of the Yamal LNGCs, it was also to ensure harmony between the marine and off-shore equipment types on board,

creating a more standardised package for future Yamal LNG deliveries.

Complex

The trials were complex and demanding, extending over the better part of a year. First, there was an early general trial, followed by a gas trial in South Korea and more recently, an ice trial in Siberia's ultra-cold waters.

Adjusting and tuning the boiler systems was a key focus of the trials, given the importance of keeping the vessels running at temperatures as low as -50 deg C. "Our dual-boiler systems maintain the temperature of the other systems, as well as the accommodation, all of which would freeze immediately without them," said Ahn. "To reduce cost and environmental impact, the systems are designed to work primarily with boil-off gas."

There was also considerable focus on the GCU, which is specially engineered to use outside air rather than the heated air of the engine room. Following a 10-day test of all valves, signals and connections in South Korea, the GCU was tested at full load in icy conditions. "There's a huge

temperature difference between the +30 deg C in Korea and the -30 deg C in Russia's Kara Sea," said Larsen. "But we were pleased to see that the GCU performs just fine in both extremes."

"Naturally there were calibrations and adjustments needed for the different equipment on board," Larsen added. "But we managed our many tasks and got it all running as it should be, not only in Korea, but also on the ice."

“

Getting everything right demands that we work closely with the yard, the Russian class society and the end customer

”

- Frank Larsen and Jong Rak Ahn, Alfa Laval field service engineers



Frank Larsen (left) and Jong Rak Ahn (right)

NEWS NUDGE

NOVATEK to slash Arctic LNG-2 construction costs

Novatek claimed to be able to cut construction costs for the Arctic LNG-2 natural gas plant by 30%, compared to the \$27 billion it took to build Yamal LNG, the company's CEO, Leonid Mikhelson, told Russian Prime Minister Dmitry Medvedev, according to TASS news agency.

Arctic LNG-2 is Novatek's second LNG production project after Yamal. The company is investigating the possibility of building a new LNG plant on the Gydan Peninsula connected to the Utrenneye oil and gas condensate reserves.

The company said that it intends to make an investment decision in 2019, while the first stage of the Arctic LNG-2 plant is scheduled to come on stream in late 2022 or early 2023.

Shell sells Moss-type LNGCs

Broking sources have reported the sale of the 135,270 cu m LNGCs 'Gallina' and 'Galea'.

The 2002 Japanese-built Moss-type LNGCs were thought sold to Middle East interests for around \$45 million each.

WORLD LNG CARRIER ORDERBOOK

Name	Segment	Yard	Containment System	Propulsion	Capacity	Delivery Date	Ordered	Primary Owner
Flex Constellation	LNGC	DSME	GT NO 96	MEGI	173,400	Jun-19	2017	John Fredriksen
Flex Courageous	LNGC	DSME	GT NO 96	MEGI	173,400	Aug-19	2017	John Fredriksen
Hyundai Ulsan 2964	LNGC	Hyundai Heavy	TZ Mk. III Flex	MEGI	180,000	May-19	2017	Knutsen
Hyundai Ulsan 2963	LNGC	Hyundai Heavy	TZ Mk. III Flex	MEGI	180,000	Jun-19	2017	Knutsen OAS Shipping AS
Samsung SLNG 1	LNGC	Samsung	KC-1		7,500	May-19	2017	Korea Line
Samsung SLNG 2	LNGC	Samsung	KC-1		7,500	Dec-19	2017	Korea Line
MOL HUDONG-ZHONGHUA 1/4	LNGC	Hudong-Zhonghua	GT NO 96	MEGI	174,000	Jul-19	2017	MOL
MOL HUDONG-ZHONGHUA 2/4	LNGC	Hudong-Zhonghua	GT NO 96	MEGI	174,000	Oct-19	2017	MOL
MOL HUDONG-ZHONGHUA 3/4	LNGC	Hudong-Zhonghua	GT NO 96	MEGI	174,000	Jan-20	2017	MOL
MOL HUDONG-ZHONGHUA 4/4	LNGC	Hudong-Zhonghua	GT NO 96	MEGI	174,000	Apr-20	2017	MOL
KEPPEL NANTONG 2	LNGC	Keppel Nantong			7,500	Aug-19	2017	Stolt-Nielsen
KEPPEL NANTONG 1	LNGC	Keppel Nantong			7,500	May-19	2017	Stolt-Nielsen Gas
Hyundai Mipo 8250	LNGC				7,500	Sep-18	2016	
Samsung 2212	LNGC	Samsung	GTT Mark V	XDF	180,000	Jun-19	2016	GasLog
Samsung 2213	LNGC	Samsung	GTT Mark V	XDF	180,000	Sep-19	2016	GasLog
Daewoo 2466	LNGC	DSME	GT NO 96	MEGI	173,400	Oct-19	2016	Maran Gas Maritime
Daewoo 2467	LNGC	DSME	GT NO 96	MEGI	173,400	Nov-19	2016	Maran Gas Maritime
Hyundai Ulsan 2937	LNGC	Hyundai Heavy	TZ Mk. III Flex	XDF	180,000	Feb-19	2016	SK Shipping
Hyundai Ulsan 2938	LNGC	Hyundai Heavy	TZ Mk. III Flex	XDF	180,000	Apr-19	2016	SK Shipping
Coral Energice	LNGC				18,000	Nov-17	2015	
Daewoo 2489	LNGC	DSME	GT NO 96	MEGI	173,400	Feb-19	2015	BWGas
Kinisis	LNGC	DSME	GT NO 96	MEGI	173,400	Sep-18	2015	Chandris
China Merchants Jiangsu CMHI-188	LNGC	China Merchant	Membrane		45,000	Feb-18	2015	Landmark Capital
Daewoo 2458	LNGC	DSME	GT NO 96	MEGI	173,400	Jan-19	2015	Maran Gas Maritime
Daewoo 2456	LNGC	DSME	GT NO 96	MEGI	173,400	Jan-19	2015	Maran Gas Maritime
Daewoo 2459	LNGC	DSME	GT NO 96	MEGI	173,400	Apr-19	2015	Maran Gas Maritime
Mitsubishi Nagasaki 2332	LNGC	Mitsubishi H.I.		STaGE	165,000	Feb-19	2015	Mitsubishi
Daewoo 2462	LNGC	DSME	GT NO 96	TFDE	180,000	Jul-17	2015	MOL
Kawasaki Sakaide 1731	LNGC	Kawasaki	Moss	TFDE	177,000	Dec-17	2015	MOL
Kawasaki Sakaide 1734	LNGC	Kawasaki	Moss	STaGE	177,000	Jun-18	2015	MOL
Mitsubishi Nagasaki 2323	LNGC	Mitsubishi H.I.	Moss	STaGE	180,000	Aug-18	2015	MOL
Kawasaki Sakaide 1735	LNGC	Kawasaki	Moss	STaGE	177,000	Sep-18	2015	MOL
Mitsubishi Nagasaki 2322	LNGC	Mitsubishi H.I.	Moss	STaGE	177,000	Jun-19	2015	MOL
Diamond Gas Orchid	LNGC	Mitsubishi H.I.	Moss	STaGE	165,000	Feb-18	2015	NYK
Mitsubishi Nagasaki 2326	LNGC	Mitsubishi H.I.	Moss	STaGE	180,000	Mar-18	2015	NYK
Mitsubishi Nagasaki 2325	LNGC	Mitsubishi H.I.	Moss	STaGE	165,000	May-18	2015	NYK
Mitsubishi Nagasaki 2327	LNGC	Mitsubishi H.I.	Moss	STRH	180,000	Jun-18	2015	NYK
Mitsubishi Nagasaki 2321	LNGC	Mitsubishi H.I.	Moss	STaGE	177,000	Dec-18	2015	NYK
Hyundai Samho S856	LNGC	Hyundai Samho	TZ Mk. III	MEGI	174,000	Jan-19	2015	Teekay LNG
Hyundai Samho S857	LNGC	Hyundai Samho	TZ Mk. III	MEGI	174,000	Jan-19	2015	Teekay LNG
Imabari Saijo 8200	LNGC	Imabari		MEGI	178,000	Oct-21	2015	Trinity LNG Transport SA
Daewoo 2441	LNGC	DSME	GT NO 96	MEGI	173,400	Apr-18	2014	BP
Daewoo 2442	LNGC	DSME	GT NO 96	MEGI	173,400	Oct-18	2014	BP
Daewoo 2443	LNGC	DSME	GT NO 96	MEGI	173,400	Nov-18	2014	BP
Daewoo 2444	LNGC	DSME	GT NO 96	MEGI	173,400	Jan-19	2014	BP
Daewoo 2445	LNGC	DSME	GT NO 96	MEGI	173,400	Feb-19	2014	BP
Daewoo 2446	LNGC	DSME	GT NO 96	MEGI	173,400	Mar-19	2014	BP
Bw Tulip	LNGC	DSME	GT NO 96	MEGI	173,000	Sep-17	2014	BWGas
Bw Lilac	LNGC	DSME	GT NO 96	MEGI	173,000	Dec-17	2014	BWGas
Patris	LNGC	DSME	GT NO 96	MEGI	174,000	Jan-18	2014	Chandris
Boris Vilkitsky	LNGC	DSME	GT NO 96	TFDE - Azipod	172,410	Aug-17	2014	Dynagas
Fedor Litke	LNGC	DSME	GT NO 96	TFDE - Azipod	172,410	Sep-17	2014	Dynagas
Daewoo 2427	LNGC	DSME	GT NO 96	TFDE - Azipod	172,410	Oct-18	2014	Dynagas
Daewoo 2428	LNGC	DSME	GT NO 96	TFDE - Azipod	172,410	Nov-18	2014	Dynagas
Daewoo 2429	LNGC	DSME	GT NO 96	TFDE - Azipod	172,410	Dec-18	2014	Dynagas

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 = 16 August 2017

Name	Segment	Yard	Containment System	Propulsion	Capacity	Delivery Date	Ordered	Primary Owner
Castillo De Caldelas	LNGC	Imabari	TZ Mk. III	MEGI	178,000	Aug-17	2014	Elcano
Castillo De Merida	LNGC	Imabari	TZ Mk. III	MEGI	178,000	Nov-17	2014	Elcano
Gaslog Houston	LNGC	Hyundai Heavy	TZ Mk. III	XDF	174,000	Jan-18	2014	GasLog
Samsung 2130	LNGC	Samsung	TZ Mk. III	XDF	174,000	Jan-18	2014	GasLog
Gaslog Hong Kong	LNGC	Hyundai Heavy	TZ Mk. III	XDF	174,000	Feb-18	2014	GasLog
Samsung 2131	LNGC	Samsung	TZ Mk. III	XDF	174,000	Jan-19	2014	GasLog
Flex Endeavour	LNGC	DSME	GT NO 96	MEGI	172,400	Jan-18	2014	John Fredriksen
Flex Enterprise	LNGC	DSME	GT NO 96	MEGI	172,400	Jan-18	2014	John Fredriksen
Kawasaki Sakaide 1720	LNGC	Kawasaki	Moss	TFDE	164,000	Mar-18	2014	K-Line
Daewoo 2457	LNGC	DSME	GT NO 96	MEGI	173,400	Apr-19	2014	Maran Gas Maritime
Seri Cemara	LNGC	Hyundai Heavy	Moss	STRH	150,000	Apr-18	2014	MISC
Jmu Tsu 5070	LNGC	Japan Marine United Corp	SPB	TFDE	165,000	Jul-17	2014	MOL
Daewoo 2424	LNGC	DSME	GT NO 96	TFDE - Azipod	172,410	Dec-17	2014	MOL
Samsung 2148	LNGC	Samsung	Mark III Flex	TFDE	177,000	Feb-18	2014	MOL
Jmu Tsu 5073	LNGC	Japan Marine United Corp	SPB	TFDE	165,000	Apr-18	2014	MOL
Kawasaki Sakaide 1729	LNGC	Kawasaki	Moss	STRH	155,000	Apr-18	2014	MOL
Samsung 2149	LNGC	Samsung	Mark III Flex	TFDE	177,000	May-18	2014	MOL
Kawasaki Sakaide 1728	LNGC	Kawasaki	Moss	STRH	155,000	Jun-18	2014	MOL
Samsung 2150	LNGC	Samsung	Mark III Flex	TFDE	177,000	Aug-18	2014	MOL
Daewoo 2426	LNGC	DSME	GT NO 96	TFDE - Azipod	172,410	Sep-18	2014	MOL
Jmu Tsu 5072	LNGC	Japan Marine United Corp	SPB	TFDE	165,000	Dec-18	2014	MOL
Daewoo 2432	LNGC	DSME	GT NO 96	TFDE - Azipod	172,410	Sep-19	2014	MOL
Jmu Tsu 5071	LNGC	Japan Marine United Corp	SPB	TFDE	165,000	Aug-17	2014	NYK
Mitsubishi Nagasaki 2316	LNGC	Mitsubishi H.I.	Moss	STRH	153,000	Jan-18	2014	NYK
Sk Spica	LNGC	Samsung	KC-1	TFDE	174,000	Sep-17	2014	SK Shipping
Sk Serenity	LNGC	Samsung	KC-1	TFDE	174,000	Jan-18	2014	SK Shipping
Pan Asia	LNGC	Hudong-Zhonghua	GT NO 96	TFDE	174,000	Sep-17	2014	Teekay LNG
Eduard Toll	LNGC	DSME	GT NO 96	TFDE - Azipod	172,410	Oct-17	2014	Teekay LNG
Magdala	LNGC	DSME	GT NO 96	MEGI	173,400	Jan-18	2014	Teekay LNG
Pan Americas	LNGC	Hudong-Zhonghua	GT NO 96	TFDE	174,000	Jan-18	2014	Teekay LNG
Myrina	LNGC	DSME	GT NO 96	MEGI	173,400	Apr-18	2014	Teekay LNG
Pan Europe	LNGC	Hudong-Zhonghua	GT NO 96	TFDE	174,000	Jun-18	2014	Teekay LNG
Megara	LNGC	DSME	GT NO 96	MEGI	173,400	Jul-18	2014	Teekay LNG
Rudolf Samoylovich	LNGC	DSME	GT NO 96	TFDE - Azipod	172,410	Aug-18	2014	Teekay LNG
Pan Africa	LNGC	Hudong-Zhonghua	GT NO 96	TFDE	174,000	Jan-19	2014	Teekay LNG
Daewoo 2430	LNGC	DSME	GT NO 96	TFDE - Azipod	172,410	Jul-19	2014	Teekay LNG
Daewoo 2431	LNGC	DSME	GT NO 96	TFDE - Azipod	172,410	Aug-19	2014	Teekay LNG
Daewoo 2433	LNGC	DSME	GT NO 96	TFDE - Azipod	172,410	Oct-19	2014	Teekay LNG
Daewoo 2434	LNGC	DSME	GT NO 96	TFDE - Azipod	172,410	Nov-19	2014	Teekay LNG
Yuan He 1	LNGC	Ningbo Xinle Shipbuilding			30,000	Aug-17	2013	
Cesi Tianjin	LNGC	Hudong-Zhonghua	Membrane	TFDE	174,000	Sep-17	2013	China LNG Shipping Holdings
Hudong-Zhonghua H1719a	LNGC	Hudong-Zhonghua	Membrane	TFDE	174,000	Jan-18	2013	China LNG Shipping Holdings
Qi Yuan	LNGC	Dalian Inteh		DFDE	28,260	Aug-17	2013	Dalian Inteh
Samsung 2107	LNGC	Samsung	TZ Mk. III	MEGI	174,000	Jan-18	2013	Flex LNG
Samsung 2108	LNGC	Samsung	TZ Mk. III	MEGI	174,000	Mar-18	2013	Flex LNG
Oceanic Breeze	LNGC	Mitsubishi H.I.	Moss	STRH	155,300	Jul-17	2013	K-Line
Kawasaki Sakaide 1718	LNGC	Kawasaki	Moss	TFDE	180,000	Aug-17	2013	K-Line
Bishu Maru	LNGC	Kawasaki	Moss	TFDE	164,700	Sep-17	2013	K-Line
Seri Camar	LNGC	Hyundai Heavy	Moss	STRH	150,000	Oct-17	2013	MISC
SK Resolute	LNGC	Samsung	TZ Mk. III	XDF	182,000	Oct-17	2013	SK Shipping
Sk Audace	LNGC	Samsung	TZ Mk. III	XDF	182,000	Jan-18	2013	SK Shipping
Macoma	LNGC	DSME	GT NO 96	MEGI	173,400	Sep-17	2013	Teekay LNG
Hudong-Zhonghua H1720a	LNGC	Hudong-Zhonghua	Membrane	TFDE	174,000	May-18	2012	China LNG Shipping Holdings
Trinity J/V (Mitsui & Co.)	LNGC	Imabari	GTT Mark III Flex	MEGI	178,000	Jan-20		K-Line
MOL E.On.	LNGC	DSME	GT NO 96	TFDE	179,900	Apr-18		MOL

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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	Norgas Carriers
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	Norgas Carriers
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

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** = project shelved † = Data to be verified Data last updated = 24th May 2017

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
2016	Shell Bunker Barge TBN 1	6,500	LNG	Northwest Europe	Yes	Shell
2016	Shell Bunker Barge TBN 2	6,500	LNG	Northwest Europe	Yes	Shell
2016	Shell Bunker Barge TBN 3	6,500	LNG	Northwest Europe	Yes	Shell
2016	Shell Bunker Barge TBN 4	3,000	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	Coralus	5,800	LNG	Northwest Europe/Baltics	Yes, for Skangas	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
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
2021	Stolt TBN (option)	7,500	LNG		Yes	Stolt-Nielsen Gas

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