

LNG Shipping News

AN LNG JOURNAL TITLE ON LNG CARRIERS

1 April 2021

Suez grounding leads to LNGC disruption

There was some disruption reported to LNGC trades following the grounding of the giant containership 'Ever Given' in the Suez Canal.

The vessel blocked the canal on 23rd March before being freed on 29th March.

At the time of the refloating, among the almost 370 vessels waiting to transit at both ends, were 16 LNGCs, according to local agents.

However, it could be a few days before the waterway can return to normal operations and a few weeks to clear the backlog, they said, as in normal circumstances, the canal can handle around 50 transits per day.

ICIS warned that the blockage could affect LNG cargoes, due to pass through the canal from Qatar to Europe, in particular to UK's

South Hook, Belgium's Zeebrugge, Italy's Rovigo and Poland's Swinoujscie terminals.

To give some idea of the number of LNGCs using the canal, according to ICIS LNG Edge ship tracking data, there were a 276 east to west laden LNGC transits, plus another 112 west to east laden LNGC transits last year.

The largest single gas producer using the canal was Russia's Yamal LNG with the second largest being the US with 34 cargoes taking the route in 2020.

Longer voyage

Vessels forced to take alternative routes, due to the disruption would obviously take longer to

complete a voyage. For example, the LNG Edge shipping calculator showed that a Qatari LNG cargo shipped to the UK via South Africa would take around 27 days, compared with about 17 days by using the Suez Canal.

Had the Suez Canal been disrupted in January this year when demand was at its highest driven by cold weather in Japan, it would have been much more serious, ICIS said.

At that time, the Panama Canal was congested slowing US cargoes bound for east Asia. As a result, some US cargoes started taking the longer route to east Asia via Suez and the Cape of Good Hope.

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Santos takes Barossa FID

Santos has taken a final investment decision (FID) to proceed with the \$3.6 bill gas and condensate Barossa LNG project, located offshore the Northern Territory.

The FID also kick-starts the \$600 mill investment in the Darwin LNG lifecycle extension and pipeline tie-in projects, which will extend the facility's life for around 20 years.

Santos Managing Director and CEO, Kevin Gallagher said: "Our strategy to grow around our five core asset hubs has not changed since 2016. As we enter this next growth phase, we will remain disciplined in managing our major project costs, consistent with our low-cost operating model.

"As the economy re-emerges from the COVID-19 lockdowns, these job-creating and sustaining projects are critical for Australia, also unlocking new business opportunities and export income for the nation. The Barossa and Darwin life extension projects are good for the economy and good for local jobs and business opportunities in the Northern Territory.

"Barossa and Darwin LNG life extension will create 600 jobs throughout the construction phase and secure 350 jobs for the next 20 years of production at the Darwin LNG facility.

"Less than a year since we

completed the acquisition of ConocoPhillips' northern Australia and Timor-Leste assets and despite the global economic impact of a once-in-a-hundred-year pandemic, it is a great achievement to have extended the life of Bayu-Undan following the approval of the infill drilling programme and now to have taken FID on the Barossa project.

"I am delighted to welcome our Barossa joint venture partner SK E&S as a partner in Bayu-Undan and Darwin LNG and appreciate their support for today's Barossa development decision," he said.

The Barossa development will comprise an FPSO, subsea production wells, supporting subsea infrastructure and a gas export pipeline tied into the existing Bayu-Undan to Darwin LNG pipeline. First gas production is targeted for the first half of 2025.

Long term SPA

At the end of last year, Santos announced the tolling arrangements had been finalised for Barossa gas to be processed through Darwin LNG and that Santos had signed a long-term LNG sales agreement

with Diamond Gas International, a wholly-owned subsidiary of Mitsubishi Corp, for 1.5 mill tonnes of Santos-equity LNG for 10 years with extension options.

Santos has also signed Memoranda of Understanding (MOU) with SK E&S and Mitsubishi to jointly investigate opportunities for carbon-neutral LNG from Barossa.

The FID is also the final condition required for completion of the 25% equity sell-downs in Darwin LNG and Bayu-Undan to SK E&S, which is also a partner in Barossa.

Completion of the SK transaction is expected to occur at the end of April and result in net funds to Santos of about \$200 mill, being the sale price of \$390 mill less the forecast cash flows from the 25% interests from the effective date of 1st October, 2019 to completion.

Santos continues to progress the binding sale and purchase agreement (SPA) for JERA to acquire a 12.5% interest in Barossa.

Completion of the sell-downs to SK E&S and JERA will see Santos' interests in Bayu-Undan and



Kevin Gallagher's Santos has taken FID on Barossa

Darwin LNG change to 43.4%, and in the Barossa project to 50%.

Earlier, Santos had awarded a contract for the construction, connection and operation of an LNG-FPSO to BW Offshore.

Under the terms of the contract there will be an upfront pre-payment and an option to buyout, and it was claimed to have achieved an overall reduction of around \$1 bill in capital expenditure.

The FPSO will be built in South Korea and Singapore before being towed and permanently moored in the field where it will process natural gas prior to its transport via pipeline to Darwin LNG. Condensate will be stored on the unit for offloading. ■

Corpus Christi Train 3 nears completion

Substantial Completion of Corpus Christi Train 3 was achieved on 26th March, 2021, according to operator Cheniere Energy.

Commissioning is complete and Cheniere's EPC partner Bechtel Oil, Gas and Chemicals, has turned over care, custody, and control of Train 3 to the operator.

Cheniere, its subsidiaries, and Bechtel have now declared sub-

stantial completion on eight liquefaction trains at the Corpus Christi and Sabine Pass liquefaction projects ahead of each train's guaranteed completion date and within project budgets, the company claimed.

With this achievement, financial results of LNG sales from Train 3 going forward will be reflected in Cheniere's statement of operations and its applicable affiliates.

In addition, the US Federal En-

ergy Regulatory Commission has approved Cheniere Energy's request to begin commercial service at the third Corpus Christi train.

Each train has the capacity to produce around 5 mill tonnes per year of LNG. ■

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Qatar Petroleum tenders for LNGCs

Qatar Petroleum (QP) has issued an 'Invitation to Tender' (ITT) to charter in LNGCs for its future LNG shipping requirements.

It was issued to a large group of LNG shipowners, QP said.

QP's future shipping requirements include serving the ongoing expansion projects in the North Field, which will raise Qatar's LNG production capacity from 77 mill tonnes per annum to 126 mill tonnes per annum by 2027.

In addition to the North Field Expansion Project, the ITT also

covers the shipping requirements for LNG volumes that will be produced from the US Golden Pass LNG export project, operated by QP.

Furthermore, it includes options to replace timecharters for a number of Qatar's LNGCs that are due to expire in the next few years.

HE Saad Sherida Al-Kaabi, Qatar's Minister of State for Energy Affairs and QP's President and CEO, said, "The release of this ITT package reflects the steadfast progress Qatar Petroleum is making on the expansion of our LNG production capacity both in Qatar and abroad."

Upon receiving the tender responses, QP said that it would review the bidders' technical and commercial capabilities with the objective of assigning selected shipowners to the shipyards' construction slots, which were re-

served at a number of Chinese and South Korean shipyards several months ago.

Minister Al-Kaabi added, "As we have previously announced, Qatar Petroleum entered into agreements with major South Korean and Chinese shipyards to reserve LNG ship construction capacity for building as many as 100 new LNG carriers to cater for the needs of North Field Expansion Project, as well as for Qatar Petroleum's future LNG carrier fleet requirements, in what will be the largest LNG shipbuilding programme in history.

"The release of this ITT package is a major milestone in our efforts towards securing the most qualified shipowners and operators for our future LNG carrier fleet," he said.

Qatargas will manage the shipowner selection programme on QP's behalf. ■



Qatar Petroleum's President and CEO, HE Saad Sherida Al-Kaabi is overseeing a huge tender for LNGCs

NEWS NUDGE

First production from two FLNGs

Petronas recently became the first energy company to produce LNG from two FLNGs.

This follows the first cargo delivery from the second FLNG, 'LNG Dua' (PFLNG DUA), sitting off the coast of Sabah on Malaysia's Borneo island.

'LNG Dua' has a production capacity of 1.5 mill tonnes per year and operates at the water depth of 1,300 m.

Its first delivery was loaded onto the LNGC 'Seri Camar' operated by MISC for shipment to a Thai buyer.

Petronas said that this confirmed the viability of unlocking stranded and deepwater gas fields with FLNGs that are more sustainable and economical.

The LNG exporter had introduced the world's first operational FLNG 'LNG Satu' in 2016. ■

Calcasieu Pass cargo due this year

Venture Global LNG's Louisiana Calcasieu Pass export terminal could ship its first cargo in late 2021.

Newswire reports suggested that if confirmed, this move would be a year ahead of schedule, the operator reportedly told US regulators.

The 23.4 mile TransCameron pipeline that would bring feedgas to the terminal from interstate pipelines will begin operations very soon, Venture Global also confirmed.

These disclosures were reported on 17th March and marked the first time Venture Global had confirmed the accelerated timing since it issued a tender earlier in the month for at least 12 cargoes from Calcasieu Pass for delivery starting this Autumn.

According to Platts, Venture Global made the comments in a filing to the US Federal Energy Regulatory Commission (FERC) requesting a waiver of certain rules on buy and sell transactions that would probably allow it to market

upstream gas producers' output directly to foreign buyers.

Venture Global claimed that Cheniere and the developers of the Golden Pass LNG export terminal in Texas and Driftwood LNG export terminal in Louisiana were granted waivers similar to the one being requested.

Calcasieu Pass anticipates that it will commence full operations of the export terminal in mid-2022, and plans for a phased operational start-up that, with the requisite review and approvals from commission staff, could see the first LNG exports in late 2021, Venture Global said in the filing, according to Platts.

The operator said it had raised the roof on its two LNG storage tanks and had received and fitted on foundations the initial liquefaction modules, which were built in Italy and transported to

the terminal.

Venture Global has been the most successful of the second wave US LNG export developers, having sold 8 mill tonnes per year of Calcasieu Pass' total off-take under long-term agreements before announcing a formal FID on the project in 2019.

It expected that it will contract

the remaining 2 mill tonnes capacity before the completion of construction, it said in the FERC filing.

In the filing, Venture Global also said it was making the request as a precaution, largely because of relationships between the terminal's gas suppliers and liquefaction off-takers. ■



Modular construction has enabled the possibility of Calcasieu Pass starting operations early

NFE to supply Baja California project

New Fortress Energy (NFE) has signed a gas supply agreement (GSA) with CF Energia SA de CV, a subsidiary of Mexico's Federal Electricity Commission (CFE).

Under the agreement, NFE will provide the equivalent of about 20,000-40,000 MMBtu per day to CFE's CTG La Paz and CTG Baja California Sur power plants in Baja California Sur, Mexico.

NFE will supply natural gas to the plant via the company's LNG receiving and regasification terminal at Pichilingue, Baja California Sur, Mexico. The terminal is anticipated to be complete and will begin the supply of natural gas to CFE in May.

"We are pleased to support

CFE's transition to cleaner, more affordable and reliable energy," said Wes Edens, NFE Chairman and CEO. "This contract will help create significant fuel savings and emissions reductions for the benefit of the people of Baja California Sur."

In another move NFE has revealed the pricing of its previously announced private offering of \$1.5 billion aggregate principal amount of senior secured notes due 2026.

The Notes will bear interest at 6.5% per annum and will be issued at an issue price equal to 100% of

principal, plus accrued interest, if any, from 12th April, 2021. The closing of the offering is subject to certain limited conditions.

Subject to certain exceptions and thresholds, the notes will be guaranteed on a senior secured basis by each domestic subsidiary and foreign subsidiary that is a wholly-owned restricted subsidiary of NFE that is a guarantor under its existing senior secured notes.

The notes will be secured by substantially the same collateral as the company's existing first lien

obligations under its existing senior secured notes.

NFE said that it intended to use part of the net proceeds to fund the cash for its acquisition of Golar LNG Partners and pay related fees and expenses.

However, the offering is not contingent on the completion of the acquisition, the company stressed.

NFE intends to use any remaining proceeds for general corporate purposes, including making investments in developing projects. ■

LNG FFA contracts up and running

Forward Freight Agreements (FFAs) will play a key role in an increasingly volatile LNG market, according to shipbroker Simpson Spence Young (SSY).

Intercontinental Exchange (ICE) - an operator of global exchanges and clearing houses - has launched LNG freight futures contracts based on Spark Commodities' price assessments.

These will supplement the existing Baltic routes used to settle LNG FFAs cleared and listed by CME.

The new contracts, the Spark30S Atlantic and Spark25S Pacific LNG Freight Future contracts, will be traded and settled in US dollars per day.

The first trading day was 22nd March, with the forward curve going up to and including December, 2023.

Phillip Tripodakis, a shipbroker with the SSY gas team, said;

"With an increasingly liquid LNG FFA market, both owners and charterers will be able to effectively manage and optimise their freight price exposure and capture best value from seasonal changes in the market.

"Spark-linked timecharters in conjunction with LNG FFAs will enable owners to hedge against shoulder month market lulls while maintaining exposure to lucrative seasonal upswings.

"In turn, charterers can make focused hedges against winter freight rate peaks while ensuring

they pay the bottom of the market in the shoulder months.

"From 2023 onwards, the LNG market should rebalance. We expect to see healthier rates across seasons, as demand growth for LNG continues unabated and a record amount of new LNG production comes on stream. Existing vessel capacity will be short to cover this additional demand for shipping.

"It's an exciting sector experiencing major changes and FFAs will be crucial going forward," he said.

Market participants can use the LNG FFA contracts to manage price risk in respect of round-trip voyages between the US Gulf Coast and Northwest Europe (Spark30 assessment); and Australia and Japan, South Korea, Taiwan and China (Spark25 assessment), in addition to the existing Baltic routes.

Rival broking house Clarksons claimed that during the Singapore morning session on 22nd March, 2021, it completed the first ICE LNG freight futures trades between Total, Vitol and Gunvor.

Later in the London trading day, an additional transaction was closed with Glencore.

Christian Greenop, who led the transaction from Clarksons FFA team, said: "We are happy to complete the first Spark30S Atlantic



GAC Singapore's Managing Director Henrik Althen (left) seen with Spark Commodities' Managing Director Tim Mendelssohn

and Spark25S Pacific trades on ICE and continue to work very hard in developing the LNG FFA market.

There is a great demand to hedge LNG freight exposure and we hope to see liquidity improving over the following months."

Data provision

In addition, GAC has partnered with Spark Commodities by providing data to a platform that brings greater price transparency to the LNG market.

With many years of experience providing specialist support to LNG calls worldwide, GAC will contribute LNG-shipping related information and data.

"LNG is an important part of the global energy supply chain today, and we are excited to be a part of Spark's robust platform that provides a wealth of useful information and data that will

benefit the LNG shipping community," said Henrik Althen, GAC Singapore Managing Director.

"We hope to make it more convenient for operators and charterers of LNG carriers and FSRUs on the Spark platform to enjoy a full-service solution from GAC, supporting their shipping and logistics needs with a single click," he said.

"High quality data is critical to our customers," Tim Mendelssohn, Spark Managing Director added. "By partnering with GAC, we ensure that we can provide timely and accurate port costs and associated data via our platform, leveraging GAC's global expertise and reach in the LNG industry.

"It enables our calculations to be more granular and also gives us the opportunity to develop additional tools that can add value to both Spark and GAC customers," he said. ■

Projects falling by the wayside

Exelon's Annova LNG is to halt the development of its planned 6.5 mill tonnes per annum liquefaction facility in Brownsville, Texas.

The project developer cited "changes in the global LNG market" as the reason behind the decision, but it did not provide any additional information.

Elsewhere, Australia's Victoria State this week rejected an AGL Energy plan to build an LNG import terminal.

The State's Labour Government ruled against the project due to concern the import terminal would damage internationally recognised wetlands. It was opposed by an unusual coalition of environmental, indigenous and community groups alongside conservative politicians.

"It's very clear to me that this project would cause unacceptable impacts on the Western Port environment and the Ramsar wetlands. It's important that these

areas are protected," Victoria's Planning Minister, Richard Wynne, said in a statement.

AGL has already spent A\$130 mill on the Crib Point project.

The plan also involved a pipeline to be built by APA Group and an FSRU to be supplied by Høegh LNG.

AGL said it was considering its position.

The company first proposed importing LNG to Australia in 2016. Its plans were held up after opponents pressed for an extended environmental review, saying chlorinated, chilled seawater discharged by the FSRU could harm sea life and hurt tourism.

Meanwhile, Chevron Canada has stopped funding its proposed Kitimat LNG project in British

Columbia.

The energy company has been trying to sell its 50% stake for more than 15 months.

In a recent update, the Chevron Corp subsidiary said it had been continuing to work on Kitimat LNG activities that add value or were required for regulatory and operational compliance since putting up its 50% stake for sale in December, 2019.

Chevron is the operator of Kitimat LNG, while the other 50% is owned by Australia's Woodside Petroleum.

Originally, about 20 LNG terminals were proposed for the Canadian West Coast but the \$40 bill LNG Canada project managed by Shell Canada was the only one to reach the construction stage. ■

FGEN narrows FSRU bidding

FGEN LNG Corp, a subsidiary of Philippines-based First Gen Corp, has chosen two preferred bidders for its binding tender process to charter an FSRU.

The unit will be used for FGEN's interim offshore LNG terminal project in Batangas.

In a disclosure to the Philippine Stock Exchange, First Gen said the two preferred companies — BW Gas and Høegh LNG Asia — were informed that FGEN LNG intended to select the FSRU provider by the end of last month.

The Batangas LNG project will allow FGEN LNG to accelerate its ability to introduce LNG to the Philippines as early as the third quarter of 2022, to serve the natural gas requirements of existing and future gas-fired power plants of third parties and its LNG affiliates, the company said.

Later it was reported that a Shell Philippines subsidiary had won an approval to go ahead with an LNG import project.

The Philippines' Department of Energy (DOE) had issued a 'notice to proceed' to Shell Energy Philippines.

Local media reports quoted the DOE as saying that Shell's subsidiary plans to install a chartered FSRU in Tabangao, Batangas.

The proposed project would have up to 3 mill tonnes per annum capacity and it would deliver the fuel primarily to power plants, according to reports. ■

SOCAR to develop LNG projects

Azerbaijan's SOCAR Trading has set up a team to develop integrated LNG-to-power projects and aims to establish a carbon division this year, executives at the firm told Reuters.

SOCAR is already involved in a Maltese project by being part of the ElectroGas Malta consortium that built an onshore regasification facility to receive LNG, along with a power plant, which was completed in 2017.

SOCAR Trading took an equity stake and provided the LNG for the project.

"Ever since our first LNG to power project in 2017, we had the idea of replicating the LNG-to-Power concept elsewhere," Togrul Kocharli, SOCAR Trading's Chief De-

velopment Officer, said. "We now have set up a dedicated team."

The Geneva-based firm, part of Azerbaijan's state oil company, said its next LNG-to-power project will be in Sri Lanka where it is part of the Pearl Energy project to develop LNG facilities at Hambantota.

SOCAR is also eyeing opportunities in several African countries, including Senegal and Mozambique, Kocharli said, and will participate in a forthcoming tender to set up LNG capabilities at the Coega special economic zone in South Africa.

Another similar project earmarked for the Ivory Coast was on hold, due to a period of political uncertainty after the death of two government heads, Reuters said.

SOCAR traded 4 mill tonnes of LNG last year and hopes to reach 10 mill tonnes by 2025.

The trader also plans to set up a new carbon division, including trading and business development. "By the year-end we hope to have everyone recruited and working," Hayal Ahmadzada, head of trading at SOCAR, added. ■

NEWS NUDGE

Fos Cavaou - start of the open season

Elengy and its subsidiary Fosmax LNG are launching a call for capacity subscriptions at Fos Cavaou LNG terminal (Open

Season Fos Cavaou 2021).

Open Season Fos Cavaou 2021 was initiated in response to a high level of market interest expressed over the past few months, and aims to make available additional primary capacity achieved through technical & regulatory de-bottlenecking, as well as capacity extension

beyond 2030.

- 1 bill cu m per year from January, 2022,
- 2.5 bill cu m from January, 2024,
- 4.5 bill cu m from April, 2030 until 2045 or more.

The open season will consist of two phases:

- A non-binding call for inter-

est, which is expected to last for three months, in order to precisely assess the market needs.

- A binding Open Season, which is expected during the second half of 2021 to perform a market test based on binding commitments of the parties. ■



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EL Salvador FSRU financed

IDB Invest, a member of the IDB Group, has put together a \$128.3 mill package to finance an FSRU to be installed in El Salvador by Invenergy and BW LNG.

The project managers have acquired an LNGC that is being converted into a FSRU with 137,000 cu m storage capacity.

This FSRU will be used exclusively for the 378 MW Energía del Pacífico project, the first natural gas plant in the Northern Triangle, which is also being financed by IDB Invest.

IDB's financial package has a 15-year tenor and consists of a

\$85.8 mill loan from IDB Invest and a \$42.5 mill loan from the Chinese Co-financing Fund for Latin America and the Caribbean, made to FSRU Ltda de CV in El Salvador.

The FSRU will be anchored 1.2 km offshore from Acajutla in the department of Sonsonate. It will provide LNG storage and regasification services to Energía del Pacífico.



El Salvador's proposed FSRU project has been financed.
Photo credit -Wärtsilä

Once in operation, it is expected that this project and the Energía del Pacífico plant will increase the installed energy capac-

ity of El Salvador by 20% with the adoption of a new generation technology based on a cleaner and more cost-efficient fuel. ■

Cargoes -both long term and spot

There were several cargo deals concluded or under negotiation recently, both for long term and spot market supply.

In the long term sector, Total and Shenergy Group have signed binding agreements for the supply of up to 1.4 mill tonnes per annum of LNG from the French energy major, as well as for a joint venture to be set up to expand LNG marketing in China.

The joint venture (Total 49%, Shenergy Group 51%) will sell LNG, supplied by Total, to customers in Shanghai and throughout the neighbouring Yangtze River Delta regions, one of the main LNG markets in China. In addition, Total will supply LNG to Shanghai Gas, the natural gas subsidiary of Shenergy Group, for its distribution business.

LNG for the joint venture and Shanghai gas distribution business will be sourced from Total's global LNG portfolio through a long-term LNG Sale and Purchase agreement (SPA) ramping up to 1.4 mill tonnes per annum for 20 years.

The gas will be delivered to Shenergy's Chinese LNG terminals.

Sinopec deal

Remaining with China, China Petroleum & Chemical Corp (Sinopec) has signed a long term SPA with Qatar Petroleum (QP) to purchase 2 mill tonnes per annum of LNG for 10 years.

Zhang Yuzhuo, Chairman of

Sinopec, said that the long-term LNG contract with QP was a first and of significant importance: "We look forward to further co-operation with Qatar Petroleum in the future. Sinopec has always advocated for the development of green and clean energy and the long-term LNG supply agreement will not only meet the needs of the Chinese market but will also demonstrate Sinopec's commitment to a low-carbon, green, safe, responsible and sustainable development path," Zhang commented. "We firmly believe that it's the responsibility of the entire industry and every company to reach peak carbon emissions and achieve carbon neutral, which is needed for the industry's transformation and development."

In the spot market, Pakistan is seeking a further eight spot LNG cargoes.

State-owned Pakistan LNG has released a new tender inviting firms to submit bids for the eight cargoes for delivery over the April/June period.

Pakistan LNG offered eight windows for the cargo deliveries, according to the tender document posted on its website, the first of which was 30th April.

Argentina's state-owned energy

company leasa has received offers from 14 companies to supply 24 LNG cargoes at an average price of \$6.50 per MMBtu.

BP was awarded 15 cargoes, followed by Gunvor with five, two to Total, while Naturgy and Trafigura received one cargo each.

All the offers are expected to be awarded for a total \$330 mill, according to the Argentine energy secretariat.

The cargoes will be delivered during the winter months at the Escobar regasification terminal in Buenos Aires province.

Elsewhere, neighbouring Brazilian Mines and Energy Ministry has granted permission to Shell and domestic steel producer Gerdau to import LNG, according to the official gazette.

It has authorised the companies to import a total of 36.5 mill cu m and the permit is valid through 31st March, 2024.

The official gazette also said that Royal Dutch Shell's local subsidiary is to import LNG from various other countries into the Brazilian market.

Shell is expected to import LNG by ship and then sell the LNG to the thermal power plant operators, gas distributors and consumers in the unregulated gas market. ■

NEWS NUDGE

Höegh shareholders approve amalgamation

At a special general meeting of Höegh LNG Holdings on Wednesday in Bermuda, its shareholders approved the amalgamation and de-listing of shares, as originally proposed.

As previously announced, Leif Höegh & Co Ltd (LHC) and funds managed by Morgan Stanley Infrastructure Partners (MSIP) will, through a 50/50 joint venture, Larus Holding Limited (JVCo), acquire the remaining issued and outstanding shares of HLNG not currently owned by LHC or its affiliates.

This will occur by an amalgamation between Larus Limited, a subsidiary of JVCo, and Höegh, subject to certain conditions. It will be owned jointly by LHC and MSIP on a 50/50 basis. All of the company's shares (other than those owned by LHC and its affiliates) will be cancelled for NOK23.50 per share.

On 22nd March, 2021, the holders of Höegh's outstanding senior unsecured bond issues maturing in February, 2022 and January, 2025 approved the amendment proposal in relation to the amalgamation, which is expected to close in the first half of 2021. ■

The LNGC of 2030 - an ABS viewpoint

LNGC design has responded to market changes; next it will need to reflect dramatic increases in efficiency, writes Peter Fitzpatrick, ABS' Vice President, Strategy and Development.

With vessel sizes having standardised to serve installed terminal infrastructure and with a choice of containment and propulsion systems, it could be that the sector is set for a period of smaller, incremental changes.

In fact the LNGC of 2030 will need to evolve further, reflecting prevailing industry trends around the adoption of new technologies and more efficient operations to drive lower carbon emissions.

Using LNG as fuel puts gas carriers on a clean fuel pathway but by 2030, in anticipation of required improvements in the Energy Efficiency Design Index (EEDI), we may see some ideas coming to the fore.

So will the LNG ship of 2030 still have the design speed we see today? For an answer, it is necessary to look first at what we can expect from the key areas of the LNGC design and operation.

Emerging technologies

The first of these key areas concerns the cargo containment system, as the continued need to reduce boil-off gas (BOG) will be ever present as new ideas make the propulsion plant more efficient.

Many owners have already adopted some sort of reliquefaction capability. This will be essential in the LNGC of 2030, as dramatic improvements in insulation materials are not expected.

Although slow speed engines may still be the most efficient option available, we can expect to see increased adoption of shaft generators, batteries and even fuel cells that all look to reduce the overall energy demand.

Electric propulsion may again return on certain routes as the ability to plug and play batteries, fuel cells, gas turbines into the ships power system will provide additional flexibility, mitigating obsolescence risks, having the ability to upgrade a component without major changes to the ships power train.

Though hull forms may not change radically in the next decade, new ships will have to demonstrate compliance with the EEDI. For example, we will likely see ideas such as air lubrication, advanced antifouling and even wind propulsion becoming more common.

Future gas carriers appear poised to be more connected,

with increased use of smart technologies to collect and process data. This will enable a more efficient operation of 'just in time shipping' from loading to discharge that looks to maximise cargo delivery with the least amount of fuel consumed across the whole operation.

With further growth in spot trading, ships will need to be better connected and make greater use of operational data, voyage and fleet management technology. Operational technology connectivity will also increase to provide more inputs to optimise performance and maintenance schedules.

A future gas carrier is also likely to experience reduced methane slip as engine-makers increase mitigation measures. A more radical approach to efficiency could be active BOG reduction with proactive insulation or sub-cooling of cargo.

A large improvement - perhaps as much 30% - will be needed to comply with tightened EEDI requirements after 2030. To meet IMO emissions reduction targets, which might be achieved using an advanced waste heat recovery system, a power take off system



ABS' Peter Fitzpatrick

and a 10% reduction of the power requirement.

This suggests that designers will have no option but to reduce design speed to meet the expected EEDI requirements, but other alternative technologies are emerging. Interpreting these changes in terms of LNG carrier design, if we believe that the minimum practical boil off rate of 0.07-6% per day has been reached, LNG carriers will generate more BOG than is required by the engines.

The result may be that a full reliquefaction system or a sub-cooling unit could be fitted as standard in future vessels. Another option could be to store the BOG energy in batteries and use it during the ballast journey. ■

DNV awards LNGC rotor sail AiP

Class society DNV has awarded an Approval in Principle (AiP) to Daewoo Shipbuilding & Marine Engineering (DSME) for a new rotor sail wind propulsion system designed for large tankers and LNGCs.

A rotor sail system incorporates the installation of cylindrical columns (rotors) on the ship's deck to generate additional power by using the force of the wind and column rotation during operation. The technology offers a large driving force while being compact and simple to install, DNV claimed.

"We are carrying out a number of different research projects to cope with the strengthening of global environmental regulations," said Dong-Kyu Choi, Head of DSME R&D Institute. "We will further

focus on developing eco-friendly ship technologies that are immediately applicable to ships."

Recently, wind sail technology has drawn increasing attention from the global shipbuilding industry as expectations rise for the system to be a viable alternative to reduce ship fuel consumption and carbon emissions. DSME plans to produce its own system - an industry first for South Korean shipbuilding.

"We are pleased to deliver the AiP, which is a milestone for the

development of wind-assisted propulsion systems. DNV has comprehensive expertise in this area and we look forward to being a partner in enabling the further development of these technologies," said Vidar Dolonen, DNV's Regional Manager in South Korea and Japan.

DNV has developed a standard for the certification of wind-assisted propulsion systems in response to inquiries for their independent assessment. After a joint development project with DSME and a review of the system's

main plans and documents against the relevant DNV rules for the classification of ships, DNV issued an AiP statement confirming that no significant obstacles exist to prevent the concept from being realised.

"In this time of growing pressure to de-carbonise, wind-assisted propulsion systems are an increasingly attractive and reliable solutions to shipowners and operators," said Hasso Hoffmeister, DNV Senior Principal Engineer. ■

LNGFRU classed by Bureau Veritas

Bureau Veritas (BV) has completed the classification of the 'Torman' LNGFRU at Tema, Ghana in sheltered waters.

This unit is combined with an FSU to deliver gas to onshore consumers.

This development at Gasfin's facility - involving the 'Torman' LNGFRU and a MOSS type LNGFSU - both classed by BV - paves the way for the first deliveries of LNG to a terminal in sub-Saharan Africa and will contribute to meeting Ghana's growing cleaner energy demand, the class society said.

The 95 m long, newly built FRU was constructed at CSSC Jiangnan Shipyard in China and fitted with two IMO type-C tanks, and has a storage capacity of 28,000 cu m. It was designed for a regasification capacity of around 1.7 mill tonnes

of LNG per year and will be in operation for around 20 years.

Classification and certification work, successfully conducted by BV, included the design, review, approval, material certification, and construction surveys of the LNGFRU at Jiangnan shipyard, as well as in Tema.

In addition, BV Solutions Marine & Offshore - the consultative arm of BV Marine & Offshore - ensured verification and surveys associated with the design, fabrication, and incorporation of the natural gas send-out heater skid system onto the 'Torman' LNGFRU.

While the unit is in service, BV will be supporting Gasfin's man-

agement, reassuring stakeholders of the structural soundness of the unit and its safety, through regular conformity checks to its classification rules and international standards.

Kerem Kiper, BV's Vice President of Middle East, Africa, and India, commented: "This is a great achievement for all the teams involved. This project proves that alternative solutions to produce and store electricity are available. It opens up new opportunities in Africa for LNG floating units. I am proud of the BV team as we continue to demonstrate our expertise across the LNG value chain."



'Torman' seen in Tema has been classed by BV

'BW Magna' receives two Air liquide units

Air Liquide has fitted two Turbo-Brayton cryogenic units on the 'BW Magna' FSRU.

The company's patented solution was chosen by owner BW LNG to help store the natural gas in liquid form in the best condition.

The FSRU is berthed at Port of Açú in Brazil and is used to supply natural gas to the largest LNG-to-power complex in Latin America built by Gás Natural Açú (GNA) at Açú Port.

Commercial operations of the complex first plant is due to start in the second quarter of this year.

BW LNG has signed a 23-year contract to store and regasify natural gas at sea before transferring it to the electricity generation plant operated by GNA. The FSRU can hold 174,000 cu m of natural gas in its four cryogenic tanks.

For this project, Air Liquide supplied a boil-off gas reliquefaction solution in order to maintain the cargo at cryogenic temperature based on the principle of sub-cooling.

The Turbo-Brayton cryogenic units sub-cool the LNG and sends it back directly in the tanks, preventing it from evaporating and increasing the pressure. In cases when the energy dispatch of the Açú thermo-electric plant is not required, the units will prevent the FSRU's cargo losses.

NEWS NUDGE

Excelerate strengthens team

Don Hubbard has joined Excelerate Energy's development team as Vice President of Gas and Power.

He joined Excelerate on 1st March, 2021.

"Even with an abundance of LNG in the market, access to clean, reliable power is lacking in many regions of the world. Integrated power solutions are key to reducing energy poverty," said Daniel Bustos, Excelerate's CCO. "We are fortunate to have Don join our team. As customers look for more integration in accessing reliable energy solutions, his experience

and expertise support our expanding project development portfolio."

With more than 30 years of experience in the finance and energy infrastructure sectors, Hubbard has developed LNG to Power projects, LNG regas terminals, gas pipelines, and both greenfield power plant and power plant conversion projects.

In addition, Antonio Pinho has joined the team as Commercial Director for Brazil.

He joined the company on 4th March, 2021, and will provide new leadership for Excelerate's Rio de Janeiro office.

Since 2012, Excelerate has provided regasification services to Brazil, complementing the country's hydropower and diminishing pipeline imports.

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- FLNG
- FSRUs
- Bunkering vessels
- Bunkering stations
- Port power applications

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Wärtsilä signs maintenance agreements with NYK LNG

Wärtsilä has signed two long-term optimised maintenance agreements with NYK LNG Ship Management.

The 15-year agreements cover the Wärtsilä 50DF dual-fuel engines and other equipment installed on two LNGCs. The contracts were signed in December, 2020 and took effect from January, 2021.

They were designed to maximise operational availability and ensure long-term maintenance cost predictability through the utilisation of data input to optimise all maintenance procedures.

The agreements also include

Wärtsilä's Expert Insight, a predictive maintenance product that leverages artificial intelligence (AI) and advanced diagnostics to monitor equipment and systems in real-time.

This enables specialists at Wärtsilä Expertise Centres to support customers proactively with advice and appropriate resolutions to avoid potential operational disturbances and thus increase the vessels' uptime and availability.

Technical support provided by Wärtsilä and the application of the company's digital technology will both enhance the reliability of the ships' operations, and allow accurate budgeting of the long-term maintenance costs.

"As part of our Lifecycle Solutions approach, these agreements are designed to improve our customers' business performance and competitiveness. By including Expert Insight into our offering, we are adding considerable

value to the proposition since it takes predictive maintenance to a completely new level," claimed Henrik Wilhelms, Director, Agreement Sales, Wärtsilä Marine Power.

The agreements' full scope includes all scheduled parts, workshop services, field services, maintenance planning, remote operational support, Expert Insight's asset diagnostics and anomaly detection, and dynamic maintenance planning. ■

NEWS NUDGE

Chinese newbuildings

China's Shenzhen Gas has signed a contract to build an LNGC at Hudong-Zhonghua Shipbuilding.

The newbuilding will be of 79,960 cu m and marks Shenzhen Gas' entry into LNGC owning.

She will be fitted with GTT's NO96 containment system

The contract includes an op-

tion for another vessel and will serve Shenzhen's terminal at Yantian, which has an annual capacity of 800,000 tonnes.

Hudong is already building two similar LNGCs for Japan's K-Line, under a charter contract to Petronas.

These 239 m long vessels and 9 m draught LNGCs will feature WinGD's dual-fuel X-DF engine and also GTT's NO96 containment system.

Another contract revealed involved Shenzhen-based Equator

Fund placing an order with China Merchants Heavy Industry for the construction of a 45,000 cu m LNGC.

This LNGC will be fitted the LNT A-Box design, and delivery is scheduled in 2023.

BW LNG has taken delivery of a new LNGC, 'BW Lesmes' from Daewoo Shipbuilding & Marine Engineering (DSME).

Through its social media channels, BW LNG said that vessel has a capacity of 174,000 cu m of LNG and is powered by an ME-GI

dual-fuel 2-stroke engine with reliquefaction capabilities.

Elsewhere, Turkey's new Botas owned FSRU, 'Ertugrul Gazi', has left Hyundai Heavy Industry's shipyard.

She was originally due to arrive in Turkey at the end of last year.

Brokers have reported that the 126,190 cu m 1981-built LNGC 'Ramdane Abane' has been sold for recycling for just under \$4 mill on the basis of 'as is' Arzew, Algeria. ■

Monthly Large LNGC Values*

Newbuildings (174,000 cu m)	\$184.66 mill
Five years old (160,000 cu m)	\$141.19 mill
Total Fleet (511 ships)	\$55.21 bill
Orderbook (130 ships)	\$24.84 bill

Source: VesselsValue (30/03/21)

*The above is updated each month courtesy of VesselsValue

LNG rate assessments

Spot market (155,000-165,000 cu m)

Region	This week	Change*
East of Suez	\$30,000	-
West of Suez	\$32,000	+\$2,000
12 mos T/C	\$53,000	+\$4,000

*Since last report (18/03/21)

Source: Fearnleys (24/03/21)



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	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	Pelita Energy	18,800	LNG	Malaysia - Japan	Yes	Perbadanan/NYK
2000	Triputra	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	Coral Favia	10,000	LNG/LPG/Ethylene	Worldwide	No	Anthony Veder
2010	Coral Fraseri	10,000	LNG/LPG/Ethylene	Worldwide	No	Anthony Veder
2011	Akebono Maru	3,556	LNG	Japan	Yes	Chuo Kaiun
2011	Coral Furcata	10,000	LNG/LPG/Ethylene	Worldwide	No	Anthony Veder
2011	Coral Fungia	10,000	LNG/LPG/Ethylene	Worldwide	No	Anthony Veder
2011	Vision Spirit	12,000	LNG/LPG/Ethylene	Worldwide	No	Teekay
2011	Unikum Spirit	12,000	LNG/LPG/Ethylene	Worldwide	No	Teekay
2012	Coral Energy	15,600	LNG	Northwest Europe/Baltics	Yes	Anthony Veder
2013	JX Energy TBN	2,500	LNG	Japan	Yes	JX Energy
2013	Kakuyu Maru	2,500	LNG	Japan	Yes	Tsurumi Sunmarine
2013	Coral Anthelia	6,500	LNG/Ethylene			Anthony Veder
2015	LNG Barge TBN	3,000	LNG	US Coast	Yes	LNG America
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	PetroChina TBN	30,000	LNG	China		PetroChina
2016	Clean Jacksonville	2,200	LNG	US Coast	Yes	CME
2016	LNG Prime	2,250	LNG	Northwest Europe	Yes	Veka Deen LNG
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	Hai Yang Shi You 301	30,000	LNG	Bali FSU	Yes	CETS (CNOOC)
2017	Oizmendi	600	LNG	Bilbao	Yes	Itsas Gas
2017	Green Zeebrugge	5,000	LNG	Northwest Europe	Yes	NYK
2017	Coralius	5,800	LNG	Northwest Europe/Baltics	Yes, for Skangas	Anthony Veder
2017	Cardissa	6,500	LNG	Northwest Europe	Yes	Shell
2017	LNG-Gorskaya TBN	7,300	LNG	Russia	Yes	LNG-Gorskaya
2017	LNG-Gorskaya TBN	7,300	LNG	Russia	Yes	LNG-Gorskaya

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 = 3rd February 2021

Built	Name	CBM	Cargo Type	Trading area	Trading in LNG?	Ship Owner / Operator
2017	LNG-Gorskaya TBN	7,300	LNG	Russia	Yes	LNG-Gorskaya
2017	Coral EnergICE	18,000	LNG	Northwest Europe/Baltics	Yes	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	Coral Encanto	30,000	LNG	China	Yes	Anthony Veder
2018	HUA XIANG 8	13,720	LNG	China	Yes	Zhejiang Huaxiang
2018	LNG London	3,000	LNG	Northwest Europe	Yes	Shell
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	Kairos	7,500	LNG	Baltic	Yes	Bernhard Schulte
2018	Bunker Breeze	0	LNG	Barcelona	Yes	Suardiaz Energy Shipping
2019	SM Jeju LNG1	7,500	LNG	Korea	Yes	Korea Line
2019	Gas Agility	18,600	LNG	NWE	Yes	MOL
2019	Flexfueller 001	1,480	LNG	Amsterdam	Yes	Titan LNG
2020	Avenir Advantage	7,500	LNG	Mediterranean	Yes	Stolt-Nielsen Gas
2020	Avenir Accolade	7,500	LNG	Mediterranean	Yes	Stolt-Nielsen Gas
2020	SM Jeju LNG2	7,500	LNG	Korea	Yes	Korea Line
2020	CNTIC VPOWER Global	28,000	LNG	Myanmar	Yes	Dalian Inteh Group
2020	Q-LNG 4000	4,000	LNG	US Coast	Yes	Q-LNG Transport/Harvey Gulf
2020	Avenir Aspiration	7,500	LNG		Yes	Stolt-Nielsen Gas
2020	FueLNG Bellina	7,500	LNG	Singapore	Yes	FueLNG
2020	Kaguya	3,500	LNG	Japan	Yes	CLS
2020	Optimus	6,000	LNG	NWE	Yes	Elenger
2020	ENN TBN	8,500	LNG	China	Yes	ENN
2020	Flexfueller 002	1,480	LNG	Antwerp	Yes	Titan LNG
2020	Ecobunker Tokyo Bay	2,500	LMG	Japan	Yes	Ecobunkers
2021	Stolt TBN (option)	7,500	LNG		Yes	Stolt-Nielsen Gas
2021	Knutsen TBN	30,000	LNG	Mediterranean	Yes	Knutsen OAS
2021	Dmitry Mendelev	5,800	LNG	Russia	Yes	Gazprom Neft
2021	PE TBN	12,000	LNG	Singapore	Yes	MOL
2021	JMU TBN	2,500	LNG	Japan	Yes	JMU
2021	TBN	18,600	LNG	Mediterranean	Yes	MOL
2021	TG TBN	500	LNG	Korea	Yes	Trans Gas
2022	Stolt TBN	20,000	LNG	Worldwide	Yes	Stolt-Nielsen Gas
2022	Stolt TBN	20,000	LNG	Worldwide	Yes	Stolt-Nielsen Gas
2022	Clean Cañaveral	5,400	LNG	USG	Yes	PNE
2023	Cryopeak TBA	4,000	LNG	West Canada	Yes	Cryopeak
2022	Knutsen TBN	5,000	LNG	Spain	Yes	Knutsen OAS
2023	Knutsen TBN	12,500	LNG	Spain	Yes	Knutsen OAS
2024	Stolt TBN (option)	20,000	LNG	Worldwide	Yes	Stolt-Nielsen Gas
2024	Stolt TBN (option)	20,000	LNG	Worldwide	Yes	Stolt-Nielsen Gas
2026	Stolt TBN (option)	20,000	LNG	Worldwide	Yes	Stolt-Nielsen Gas
2026	Stolt TBN (option)	20,000	LNG	Worldwide	Yes	Stolt-Nielsen Gas

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 = 3rd February 2021

WORLD LNG CARRIER ORDERBOOK

Name	Containment system	Propulsion	Yard	Delivery date	Capacity	Primary Owner
Bw Lesmes	GTT 96 GW	MEGI	DSME	01/03/2021	174000	BWGas
Marvel Swan	Unknown	XDF	Samsung	01/03/2021	173400	Navigare
Lngships Empress	GTT MK III Flex	XDF	Samsung	01/03/2021	174000	TMS Cardiff Gas
Hellas Diana	GTT MK III Flex	XDF	Hyundai	01/03/2021	174000	Latsco Shipping
Lngships Athena	GTT MK III Flex	XDF	Hyundai	01/03/2021	174000	TMS Cardiff Gas
Lng Adventure	GTT MK III Flex	XDF	Samsung	01/03/2021	174000	NYK
Lngship Manhattan	GTT MK III Flex	XDF	Hyundai	01/04/2021	174000	TMS Cardiff Gas
Celsius Charlotte	Unknown	XDF	Samsung	01/05/2021	180000	Celsius Shipping
Diamond Gas Crystal	GTT MK III Flex	XDF	Hyundai	01/05/2021	174000	NYK
Flex Vigilant	GTT MK III Flex	XDF	Hyundai	01/05/2021	174000	Flex LNG
Energy Integrity	GTT 96 GW	MEGI	DSME	01/05/2021	173400	Alpha Gas
Yiannis	GTT 96 GW	MEGI	DSME	01/06/2021	174000	Maran Gas Maritime
Mu Lan	GTT 96 L03+	XDF	Hudong-Zhonghua	01/06/2021	174000	CSSC
Bw Helios	GTT 96 GW	MEGI	DSME	01/06/2021	174000	BWGas
Energy Intelligence	GTT 96 GW	MEGI	DSME	01/06/2021	174000	Alpha Gas
Gaslog Wellington	GTT MK III Flex+	XDF	Samsung	01/06/2021	180000	GasLog
Isabella	GTT 96 GW	XDF	DSME	01/06/2021	174000	Maran Gas Maritime
Aristarchos	GTT MK III Flex	XDF	Hyundai	01/06/2021	174000	Capital Gas
Mol Hestia	Unknown	MEGI	DSME	01/07/2021	174000	MOL
Minerva Chios	GTT MK III Flex+	XDF	Samsung	01/07/2021	174000	Minerva Marine
Minerva Limnos	GTT 96 GW	MEGI	DSME	01/07/2021	173400	Minerva Marine
Adamastos	GTT MK III Flex	XDF	Hyundai	01/08/2021	174000	Capital Gas
Samsung 2314	Unknown	XDF	Samsung	01/08/2021	180000	Celsius Shipping
Gaslog Winchester	GTT MK III Flex+	XDF	Samsung	01/08/2021	180000	GasLog
Attalos	GTT MK III Flex	XDF	Hyundai	01/08/2021	174000	Capital Gas
Asklipios	GTT MK III Flex	XDF	Hyundai	01/09/2021	174000	Capital Gas
Daewoo 2504	GTT 96	XDF	DSME	01/09/2021	174000	Maran Gas Maritime
Global Sea Spirit	GTT 96 GW	XDF	DSME	01/09/2021	173400	Nakilat
Samsung 2306	GTT MK III Flex	XDF	Samsung	01/09/2021	174000	NYK
Diamond Gas Victoria	GTT MK III Flex	XDF	Hyundai	01/09/2021	174000	NYK
Hellas Athina	GTT MK III Flex	XDF	Hyundai	01/09/2021	174000	Latsco Shipping
Samsung 2355	GTT MK III Flex	XDF	Samsung	01/10/2021	174000	NYK
Daewoo 2507	GTT 96 GW	XDF	DSME	01/10/2021	174000	Maran Gas Maritime
Hyundai Ulsan 2939	GTT MK III Flex	XDF	Hyundai	01/10/2021	180000	SK Shipping
Daewoo 2506	GTT 96	MEGI	DSME	01/11/2021	174000	Maran Gas Maritime
Hyundai Samho 8025		XDF	Hyundai	01/12/2021	174000	H-Line
Tenergy	GTT MK III Flex	XDF	Hyundai	01/12/2021	174000	Tsakos Energy Navigation
Samsung 2336	GTT MK III Flex	XDF	Samsung	01/12/2021	174000	JP Morgan
Global Sealine	GTT 96 GW	XDF	DSME	01/12/2021	173400	Nakilat
Samsung 2307	GTT MK III Flex	XDF	Samsung	01/12/2021	174000	NYK
Hyundai Samho 8032	GTT MK III Flex	XDF	Hyundai	01/01/2022	174000	NYK
Gui Ying	GTT 96 L03+	XDF	Hudong-Zhonghua	01/01/2022	174000	CSSC
Daewoo 2508	Unknown	XDF	DSME	01/03/2022	174000	Maran Gas Maritime

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 = 3rd March 2021

Name	Containment system	Propulsion	Yard	Delivery date	Capacity	Primary Owner
Hudong-zhonghua H1829a	GTT 96 L03+	XDF	Hudong-Zhonghua	01/03/2022	170520	CSSC
Samsung 2319	GTT MK III Flex	XDF	Samsung	01/03/2022	174000	JP Morgan
Elisa Aquila	GTT MK III Flex	XDF	Hyundai	01/03/2022	174000	NYK
Clean Cajun	Unknown	XDF	Hyundai	01/04/2022	200000	Dynagas
Hyundai Samho 8033	GTT MK III Flex	XDF	Hyundai	01/06/2022	173000	NYK
Hyundai Samho 8026	GTT MK III Flex	XDF	Hyundai	01/06/2022	174000	H-Line
Hudong-zhonghua H1830a	GTT 96 L03+	XDF	Hudong-Zhonghua	01/06/2022	170520	CSSC
Samsung 2337	GTT MK III Flex	XDF	Samsung	01/07/2022	174000	JP Morgan
Clean Copano	Unknown	XDF	Hyundai	01/07/2022	200000	Dynagas
Hyundai Samho 8091	Unknown	XDF	Hyundai	01/08/2022	174000	Knutzen
Hyundai Ulsan 3185		XDF	Hyundai	01/08/2022	174000	Korea Line
Daewoo 2509	Unknown	MEGI	DSME	01/08/2022	174000	BWGas
Daewoo 2510	Unknown	MEGI	DSME	01/09/2022	174000	BWGas
Prism Diversity	Unknown	XDF	Hyundai	01/09/2022	180000	SK Shipping
United Prosperity	Not Applicable	XDF	Hudong-Zhonghua	01/10/2022	174000	China LNG Shipping
Hyundai Samho 8092	Unknown	XDF	Hyundai	01/10/2022	174000	Knutzen
Hyundai Ulsan 3186		XDF	Hyundai	01/10/2022	174000	Korea Line
Hyundai Ulsan 3187		XDF	Hyundai	01/11/2022	174000	JP Morgan
Hyundai Samho 8093	Unknown	XDF	Hyundai	01/11/2022	174000	Knutzen
Minerva Amorgos	GTT MK III Flex+	XDF	Samsung	01/11/2022	174000	Minerva Marine
Hyundai Ulsan 3243	Unknown	XDF	Hyundai	01/12/2022	174000	Knutzen
Daewoo 2514	Unknown	TFDE - Azipod	DSME	01/12/2022	172500	Sovcomflot
Hyundai Ulsan 3188		XDF	Hyundai	01/12/2022	174000	JP Morgan
Hyundai Samho 8094	Unknown	XDF	Hyundai	01/12/2022	174000	Knutzen
United Glory	Unknown	XDF	Hudong-Zhonghua	01/01/2023	174000	China LNG Shipping
Samsung 2364	GTT MK III Flex+	XDF	Samsung	01/01/2023	174000	MISC
Hyundai Ulsan 3111	GTT MK III Flex	XDF	Hyundai	01/01/2023	174000	Capital Gas
Hyundai Ulsan 3244	Unknown	XDF	Hyundai	01/02/2023	174000	Knutzen
Samsung 2365	GTT MK III Flex+	XDF	Samsung	01/02/2023	174000	MISC
Samsung 2426	Unknown	XDF	Samsung	01/03/2023	174000	Pan Ocean
Hyundai Ulsan 3189	Unknown	XDF	Hyundai	01/03/2023	174000	JP Morgan
Zvezda 041	GTT MK III	TFDE - Azipod	Zvezda SSK	01/03/2023	172600	Smart LNG
Daewoo 2515	Unknown	TFDE - Azipod	DSME	01/04/2023	172500	MOL
United Fortune	Unknown	XDF	Hudong-Zhonghua	01/04/2023	174000	China LNG Shipping
Hyundai Samho 8095	Unknown	XDF	Hyundai	01/05/2023	174000	Knutzen
Hyundai Ulsan 3190	Unknown	XDF	Hyundai	01/05/2023	174000	JP Morgan
Hyundai Samho 8096	Unknown	XDF	Hyundai	01/06/2023	174000	Knutzen
Samsung 2425	Unknown	XDF	Samsung	01/07/2023	174000	Maran Gas Maritime
Daewoo 2516	Unknown	TFDE - Azipod	DSME	01/07/2023	172500	Sovcomflot
Hyundai Samho 8105		XDF	Hyundai	01/08/2023	174000	Sovcomflot
Hyundai Ulsan 3191	Unknown	XDF	Hyundai	01/09/2023	174000	Korea Line
Daewoo 2517	Unknown	TFDE - Azipod	DSME	01/09/2023	172500	Sovcomflot
Zvezda 042	GTT MK III	TFDE - Azipod	Zvezda SSK	01/09/2023	172600	Smart LNG
Hyundai Ulsan 3198	Unknown	XDF	Hyundai	01/10/2023	174000	Korea Line

Name	Containment system	Propulsion	Yard	Delivery date	Capacity	Primary Owner
Daewoo 2518	Unknown	TFDE - Azipod	DSME	01/10/2023	172500	MOL
Zvezda 043	GTT MK III	TFDE - Azipod	Zvezda SSK	01/10/2023	172600	Smart LNG
Zvezda 044	GTT MK III	TFDE - Azipod	Zvezda SSK	01/11/2023	172600	Smart LNG
Daewoo 2519	Unknown	TFDE - Azipod	DSME	01/12/2023	172500	MOL
Zvezda 045	Unknown	TFDE - Azipod	Zvezda SSK	01/12/2023	172600	Smart LNG
Samsung 2393	Unknown	XDF	Samsung	01/01/2024	174000	NYK
Samsung 2394	Unknown	XDF	Samsung	01/02/2024	174000	NYK
SHI Maran 1	GTT MK III Flex	XDF	Samsung	15/02/2024	174000	Maran Gas Maritime
SHI Maran 2	GTT MK III Flex	XDF	Samsung	15/02/2024	174000	Maran Gas Maritime
SHI #1	GTT MK III Flex	XDF	Samsung	15/02/2024	174000	Maran Gas Maritime
SHI #2	GTT MK III Flex	XDF	Samsung	15/02/2024	174000	Maran Gas Maritime
Hyundai Ulsan 3221	Unknown	XDF	Hyundai	01/07/2024	174000	Pan Ocean
Hyundai Ulsan 3222	Unknown	XDF	Hyundai	01/08/2024	174000	Pan Ocean
Samsung 2395	Unknown	XDF	Samsung	01/08/2024	174000	NYK
Zvezda 046	Unknown	TFDE - Azipod	Zvezda SSK	01/08/2024	172600	Smart LNG
Samsung 2396	Unknown	XDF	Samsung	01/09/2024	174000	NYK
Zvezda 047	Unknown	TFDE - Azipod	Zvezda SSK	01/09/2024	172600	Smart LNG
HHI 2/9	GTT MK III Flex	XDF	Hyundai	15/09/2024	174000	MOL
HHI 3/9	GTT MK III Flex	XDF	Hyundai	15/09/2024	174000	MOL
HHI 4/9	GTT MK III Flex	XDF	Hyundai	15/09/2024	174000	MOL
HHI 5/9	GTT MK III Flex	XDF	Hyundai	15/09/2024	174000	MOL
HHI 6/9	GTT MK III Flex	XDF	Hyundai	15/09/2024	174000	K-Line
HHI 7/9	GTT MK III Flex	XDF	Hyundai	15/09/2024	174000	K-Line
HHI 8/9	GTT MK III Flex	XDF	Hyundai	15/09/2024	174000	K-Line
HHI 9/9	GTT MK III Flex	XDF	Hyundai	15/09/2024	174000	K-Line
HHI 1/9	GTT MK III Flex	XDF	Hyundai	15/09/2024	174000	MOL
Hyundai Ulsan 3223	Unknown	XDF	Hyundai	01/10/2024	174000	JP Morgan
Zvezda 048	Unknown	TFDE - Azipod	Zvezda SSK	01/10/2024	172600	Smart LNG
Hyundai Samho 8100	Unknown	XDF	Hyundai	01/11/2024	174000	Knutsen
Zvezda 049	Unknown	TFDE - Azipod	Zvezda SSK	01/11/2024	172600	Smart LNG
Zvezda 050	Unknown	TFDE - Azipod	Zvezda SSK	01/12/2024	172600	Smart LNG
Zvezda 051	Unknown	TFDE - Azipod	Zvezda SSK	01/08/2025	172600	Smart LNG
Zvezda 052	Unknown	TFDE - Azipod	Zvezda SSK	01/09/2025	172600	Smart LNG
Zvezda 053	Unknown	TFDE - Azipod	Zvezda SSK	01/10/2025	172600	Smart LNG
Zvezda 054	Unknown	TFDE - Azipod	Zvezda SSK	01/11/2025	172600	Smart LNG
Zvezda 055	Unknown	TFDE - Azipod	Zvezda SSK	01/12/2025	172600	Smart LNG

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 = Data last updated = 3rd March 2021



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