

LNG Unlimited

LNG JOURNAL PUBLICATION

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Chart Industries boosts its sales for US and European LNG needs

There are prospects of up to \$500M of new potential and large LNG orders in coming year
LNG Journal editor

Chart Industries, the US LNG equipment-maker and supplier to the liquid gas sector, posted a surge in annual sales to \$1.08 billion from \$842.9 million the previous year amid prospects of up to \$500M of potential large LNG-related orders in 2019.

Chart reported a rise in fourth-quarter sales to \$290.1M compared with \$296.4M in the same three months of 2017. Annual net income almost doubled to \$53.6M compared with \$27.7M in 2017.

Overhaul

During the quarter Chart completed the sale of a medical sector unit for \$133.5M while it closed the purchase for \$147M of Italian company VRV, an engineer and designer of cryogenic equipment that will complement Chart's own offerings.

Chart said orders in the quarter amounted to \$273.3M, including \$11.2M of orders from VRV during Chart's six-week period of ownership.

"Full-year 2018 packaged gas orders of \$281.2M were the highest in our history," said the Atlanta, Georgia-based company.

"We also had a record order year for Distribution & Storage in the European region as well as our LNG trailer product line," it added.

Chart said its Energy and Chemicals division booked \$86.9M of orders, including one for \$8M for the first LNG project for NiChe LLC, a joint venture of Dominion



Chart's primary cold box fabrication location is a 40-acre coastal facility in Louisiana on Gulf Coast

Energy and Rev LNG of the US.

"Thus far in the first quarter of 2019, E&C has also received a \$9M equipment order for SABIC's Saudi Arabian petrochemical plant, a \$7M order for a large customer's US Gulf Coast fractionation train, and an additional \$4.4M order for air-cooled heat exchangers," explained Chart.

On forthcoming order deliveries, Chart said that US LNG plant developer Tellurian Inc. received its final environmental report from the Federal energy Regulatory Commission, which allows them to proceed to the last step of receiving approval to construct and operate the Driftwood plant in Louisiana.

The Driftwood project will utilize Chart's patented and trademarked IPSMR process technology and equipment.

Chart's IPSMR process technology continues to receive positive feedback from the market, including being slated for use on several upcoming export terminal projects

"Our 2018 order strength and robust start to 2019 across the segments supports our confidence in our increased 2019 sales and adjusted earnings per share guid-

ance," said Jill Evanko, Chart's Chief Executive.

"In addition, we have potential LNG order opportunities in 2019 totaling \$400M to \$500M that could increase revenues in late 2019 and beyond," stated the CEO.

In its Distribution and Storage division, Chart reported fourth-quarter orders of \$69.6M.

"Demand for LNG fueling stations in Europe is increasing, and key customers continue to order LNG fuel systems for over the road trucking," said Chart.

Trucking orders

"LNG road-trucking orders tripled from 2016 to 2018 and are expected to continue to grow in double digits for the next three years," added the company.

"Additionally, with the International Maritime Organization 2020 regulations on the horizon, LNG marine bunkering bid activity is increasing," noted Chart.

In its outlook, Chart said sales are expected to be in the range of \$1.26Bln to \$1.31Bln for the full year of 2019, showing 17 percent to 22 percent growth.

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Chiyoda of Japan and McDermott of US take hits over costing problems at US Cameron LNG plant

LNG Journal editor

Chiyoda Corp., the Japanese engineering company with seven large-scale recent, current and future liquefaction contracts, has posted operational losses related to several LNG projects, including the Cameron LNG export plant in Louisiana being constructed in a joint venture with US firm McDermott International.

McDermott issued a statement after Chiyoda outlined losses on Cameron LNG and the Tangguh project in Indonesia.

McDermott said it would also be taking a hit on the Cameron engineering contract joint venture.

Dilemma

"Losses are mainly due to an increase in incremental construction costs for the Cameron LNG project," said Chiyoda in its fiscal third-quarter earnings report.

In the financial results, Chiyoda posted an operating loss in the third fiscal quarter of 107.79 billion yen (\$972 million), due to "significantly increased construction costs for ongoing LNG projects"



Chiyoda is also working on the Freeport LNG plant in Texas

and cited the Cameron LNG project of Sempra Energy and the Tangguh LNG expansion in Indonesia being built for operator BP of the UK.

Chiyoda, McDermott and the US Zachry Group have additionally just been awarded an engineering, procurement and construction contract for the Golden Pass export plant in Texas by Qatar Petroleum and ExxonMobil.

"The company expects a deterioration of cash flow and new financing may be required early in the

next fiscal year," stated Chiyoda.

"Chiyoda is implementing countermeasures to reduce costs, obtaining change orders, reviewing settlement conditions from ongoing projects including the Cameron LNG project, as well as making efforts to improve its cash flow," said the Japanese company.

One of Chiyoda's main shareholders is the trading house, Mitsubishi Corp.

Chiyoda has also been involved in several other LNG projects, including the Freeport LNG plant in Texas, Ichthys LNG in Australia for

Inpex Corp. and its partners and the Yamal LNG in Russia for Novatek, Total and Chinese stakeholders.

"Furthermore the company has been actively involved in front-end engineering and design work (FEED) for the Qatar expansion project, and FEED and engineering, procurement and construction (EPC) proposal preparation work for Nigeria LNG Train 7," explained Chiyoda.

Chiyoda's partner in Cameron LNG, McDermott, said it would be posting a fourth-quarter charge estimated at around \$168M.

"The charge is due to unfavorable labor productivity, and increases in subcontract, commissioning and construction management costs," said the US company.

McDermott noted that the Cameron LNG project, currently under construction in Hackberry, in Louisiana, was a world-scale facility incorporating proven technology and designed to produce nearly 14 million tonnes per annum of LNG.

Northeast Gateway FLNG facility set up in 2008 helps New England meet peak natural gas demand

US natural gas supply flows to meet the winter season peak demand in New England has been helped by the Northeast Gateway deepwater LNG import facility using floating storage and regasification units in Massachusetts Bay offshore Boston.

The Northeast Gateway is owned and operated by Exceleerate Energy, the US specialist in floating LNG import projects.

In addition to the New England facility, Exceleerate has established more than a dozen LNG import facilities in nations in South America, the Middle East and Asia.

Exceleerate said its Northeast Gateway reached a peak send-out flow rate of more than 800,000 million cubic metres per day of LNG on

February 1, 2019, during the recent freezing weather in the region.

The company said this was a first for the terminal and was completed by two of Exceleerate's FSRUs, the "Exemplar" and the "Express", discharging in parallel through the company's proprietary offshore buoys.

Exceleerate explained that during the coldest days of the year, demand for natural gas from residential customers rises in New England.

Historically, during these times, as natural gas deliverability becomes constrained in natural gas pipelines, power generators have to burn fuels such as oil.

"This year, LNG imports from the Northeast Gateway facility

have complimented the system by supplying energy during this peak demand, allowing generators to continue burning natural gas," stated Exceleerate.

At a flow rate of 800,000 million British thermal units per day, this represents approximately the average gas demand of power generators in the region during the recent January-February winter cold periods.

"Exceleerate's Northeast Gateway has helped New England prepare for the winter months by supplying natural gas to meet the increased energy demand of the region," said Exceleerate's Managing Director Steven Kobos.

"Deliveries of LNG directly into the Algonquin pipeline system

helps to bring much-needed market stability and fuel security to the Northeast," added Kobos.

The Northeast Gateway was first set up and commissioned more than 10 year ago about 20 kilometres offshore Boston.

The terminal consists of a dual submerged turret-loading buoy system which allows for the connection of the FSRUs that have been specifically designed to meet the conditions of the North Atlantic.

FSRUs act, in all aspects, like a land-based terminal and have the onboard capability to vaporize LNG and deliver natural gas directly into the existing subsea HubLine pipeline operated by Enbridge Inc.'s Algonquin Gas Transmission.

Italian FSRU makes big impact with new agenda

OLT Offshore LNG Toscana, the Italian floating storage and regasification unit deployed offshore Tuscany, is working at almost 100 percent of its capacity less than a year after the implementation of new allocation mechanisms via auction.

The company operates the "FSRU Toscana", moored 22 kilometres off the coast between the cities of Livorno and Pisa and connected to the Italian national gas transmission grid through a 36.5km pipeline from the shore to the mainland operated by Snam Rete Gas.

OLT Offshore is providing national peak-shaving services for the sixth consecutive year and is now contributing more to Italian energy security and diversification of its supply sources.

"Thanks to the new allocation mechanism, from October 2018, 38 out of 41 slots available in the 2018-2019 gas year have been allocated, coming from six different countries, for a total of about 5,848,343 cubic metres of capacity allocated, equivalent to about 92 percent of the annual regasification capacity of the terminal," explained the company.

OLT Offshore added that through the introduction of the regasification and storage bundled service, which allowed the allocation of the regas capacity via auction, and then through the replacement of the previous allocation mechanism with an auction system, Italy was able to receive LNG from all over the world.

"Indeed, this new capacity allocation procedure is able to interpret the market's requests, especially in the short term," said OLT Offshore.

Shell executive says Prelude FLNG cannot be a rushed job

LNG Journal editor

Royal Dutch Shell said it was taking its time to start commercial operations from its Prelude floating liquefied natural gas project offshore northwest Australia to make sure everything went according to plans.

Shell senior executive Zoe Yujnovich gave an update on the progress of the Prelude FLNG venture in a speech in the Australian city of Melbourne.

'Round the clock'

"Our Prelude teams are working around the clock in an involved commissioning process," said Yujnovich.

"We're not rushing the process. We're taking the time to do this safely and remaining in control," she added, explaining that Prelude was a multi-decade facility.

"While we all find near-term milestones exciting, the success of Prelude will be measured by delivering sustained performance



Zoe Yujnovich speaks about newest of Shell projects

over a much longer time horizon," she stated.

The Shell executive said that it was expected that condensate would be the first product to be exported from the Prelude hull, followed by LNG and then liquefied petroleum gas.

Prelude will add 3.6 million tonnes per annum of LNG to Shell's output. The production hull

is the first deployment of Shell's FLNG technology and comprises a 488-metre long facility to extract and liquefy gas at sea before it is exported to customers.

The project hull is located about 475 kilometres north-north-east of the town of Broome in Western Australia.

It is anchored in the Browse Basin and will be the world's third FLNG venture to start operations when it comes on stream, after one developed by Petronas of Malaysia and a second offshore Cameroon in West Africa by European energy company Perenco and partners.

For the Shell project, the Concerto gas field and the nearby Prelude field, with combined resources of around 3 trillion cubic feet, are being used to produce the LNG.

The Prelude joint venture is owned 67.5 percent by Shell and 17.5 percent by Inpex.

A further 10 percent is held by LNG buyer Korea Gas Corp. and 5 percent by CPC Corp. of Taiwan.

Chevron plans more LNG for South Korean partner GS Caltex

Chevron, the US major whose assets include with two large liquefied natural gas plants in Western Australia, said it signed a sales and purchase agreement with GS Caltex Corp. for the delivery of LNG to South Korea from Chevron's global supply portfolio.

As a joint venture between Chevron and South Korean energy company GS Energy, GS Caltex has signed a long-term agreement and will begin receiving LNG in October 2019.

Chevron's President of Global Gas, Hugh Connett, stated the agreement is another indication of the significance of the long-standing relationship between Chevron and GS Caltex.

"We're proud of our partner-

ship with GS Caltex and we welcome this opportunity to build on that relationship by supplying LNG to South Korea's growing market," said Connett.

Chevron has an existing LNG SPA with GS Caltex executed in 2009.

Chevron's plants include the onshore Wheatstone LNG plant in the Pilbara region of Western Australia, the newest facility that brought its second Train on stream in June 2018.

Wheatstone Train 2 is the last of five LNG production units built by Chevron and its joint venture partners in the state of Western Australia over the past 10 years at a combined cost of more than US\$85 billion.

The US major also operates the

Gorgon plant on Barrow Island in Western Australia.

Wheatstone, with a total capacity of 8.9 million tonnes per annum, was the eighth LNG project to be completed in Australia when it came on stream.

Chevron's partners in Wheatstone are Kuwait Foreign Petroleum Exploration Company, Australia's Woodside Petroleum, Kyushu Electric Power Co, and a joint venture part-owned by the world's biggest LNG buyer, Japan's Jera Co. Inc.

The Gorgon plant is owned by Chevron and the Australian subsidiaries of Royal Dutch Shell and ExxonMobil with Japanese utilities Osaka Gas, Tokyo Gas and Jera owning micro stakes.

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NEWS NUDGES

Tellurian signs Indian accord

Tellurian Inc., developer of the US Driftwood LNG export plant in Louisiana, said it had signed an accord with Petronet LNG of India whereby Petronet was exploring the possibility of investing in the Driftwood project. "Petronet is India's largest LNG importer, operating 20 million tonnes per annum of receiving terminal capacity with an additional 2.5 MTPA of capacity under construction at its Dahej expansion and a further 5 MTPA proposed at Gangavaram," said Tellurian President and Chief Executive Meg Gentle.

Inpex profits increase

Inpex Corp., operator of the Ichthys LNG project in the Northern Territory of Australia, said it had shipped 20 cargoes since commercial operations began in October 2018, including 11 LNG by the year-end. The number was included in the nine-month earnings from April to December 2018 as it posted sales of 700.5 billion yen (\$6.3Bn), down 0.4 percent from the same period of 2017. Inpex said its nine-month net income rose by 17.2 percent to 62.6Bn yen (\$566 million) compared with 53.4Bn (\$483M) in the same period of the previous year.

GTT gains Greek order

French maritime storage technology company GTT said it received an order from the South Korean shipyard of Samsung Heavy Industries concerning the tank design of a new 174,000 cubic metres capacity LNG carrier on behalf of the ship-owner Minerva Gas, a subsidiary of Minerva Marine of Greece. GTT said its membrane containment system, the Mark III Flex-plus, has been selected for the design of the tanks and the delivery of the ship is planned during the third quarter of 2021.

Egypt's liquefaction plants remain economic options for feed-gas to be supplied by Israel and Cyprus

LNG Journal editor

The two Egyptian liquefaction plants located near the port of Alexandria will remain low-cost options for East Mediterranean natural gas producers such as Egypt itself, Israel and the island of Cyprus looking to export LNG and to use the existing capacity for 12.7 million tonnes per annum.

Egypt is seeking to build up exports of LNG from their facilities at Idku and Damietta and future LNG production has been discussed at a three-day energy conference in Cairo held at the Egypt International Exhibition Centre.

Capacities

The Idku LNG export plant first came on stream in 2005 and has capacity to export up to 7.2 million tonnes per annum from two liquefaction Trains. It has two storage tabs with a combined capacity of 280,000 cubic metres.

Idku has been on stream again since 2017 under the operatorship of Royal Dutch Shell, which acquired original operator BG Group.

The Damietta plant, the first completed in 2004, is still idle but the resolution of a legal dispute between the owners and the Egyptian government has now been reached.

The facility has capacity of 5.5 MTPA of output and has two storage tanks each of 150,000 cubic metres capacity.

Damietta is owned by Union Fenosa Gas, a joint venture between Spain's Gas Natural, now known as Naturgy, and Eni. They hold 80 percent of the shares and the remaining 20 percent belongs to Egyptian Natural Gas Holdings Co. (EGAS) and Egyptian General Petroleum Co.

The head of Shell in Egypt, Gasser Hanter, played down the idea of any remaining political obstacles to bringing feed-gas



Damietta LNG plant was Egypt's first and completed in 2004

supplies to Egypt from countries such as Israel or Cyprus.

He pointed to Egypt's hosting of an East Mediterranean Gas Forum in January 2019 that brought together governmental representatives from the region and recent commercial agreements.

"I think we're in the normal project development stage. You just have to go through the project development process," said Hanter.

In recent months Israel has agreed to send pipeline exports to Egypt, while Cyprus has reached a provisional deal for sending pipeline supplies from its Aphrodite gas field.

Hanter said the economics of Egypt's LNG export plants remained compelling.

"Partly, this was because the Egyptian plants had been built in a different commercial environment, and costs had since risen," he said.

"If you want to build something similar to that today, you're looking at a large number of billions of dollars," added Hanter.

Noble Energy, the US company with natural gas assets in the East Med offshore Israel, signed multi-infrastructure agreements in September 2018 to support delivery of natural gas from the Israeli Leviathan and Tamar fields to Egypt.

Noble said the accords were significant steps forward in supplying natural gas to regional customers through existing infrastructure.

The US company's partners in the Tamar and Leviathan fields are subsidiaries of Israel's Delek Group.

Noble operates the Leviathan and Tamar fields with just under a 40 percent holding. Tamar has been on stream since 2013 and supplies Israel and customers in Jordan, while the Leviathan field is scheduled to come on stream in 2019.

Noble said that its agreements would secure capacity to deliver natural gas to Egyptian company Dolphinus from the Leviathan field while also allowing for interruptible sales from Tamar into Egypt.

Pipeline

Noble said it was acquiring an effective 39 percent equity interest with Middle East partners in the Eastern Mediterranean Gas Company (EMG), which owns the EMG pipeline.

The EMG Pipeline is 90 kilometres in length and is located primarily offshore, connecting the Israel pipeline network from Ashkelon to the Egyptian pipeline network near El Arish.

Mexican government questions future LNG needs and puts contract pressure on US pipeline supplies

LNG Journal editor

The Mexican Federal Electricity Commission (CFE) plans to renegotiate contracts with North American pipeline developers such as TransCanada Corp. and a subsidiary of US utility Sempra Energy as it attempts to downgrade pipeline natural gas and LNG and to use other fuels to meet increasing power demand.

The CFE is the anchor customer for most of the 4,630 kilometres of natural gas pipelines added by the private sector in Mexico since 2012, and for the 3,150 kilometres of projects either under construction or scheduled to enter service soon.

Presidential input

The new Mexican President, Andres Manuel Lopez Obrador, came to office in December and since then has been questioning the energy reform measures brought in by the previous government.

He said in his campaign that he would aim to halt expensive imports of fuel such as gasoline and LNG.

The Mexicans are the largest customers for US LNG, along with South Korea, and have received more than 100 cargoes in the past two years.

Mexico over the previous three years had expanded its natural gas network to facilitate a shift away



Mexican natural gas pipeline network and US connections

from oil and diesel-fueled power and to take advantage of abundant LNG cargoes from the Gulf Coast and economically-priced shale-gas received by pipeline from the US.

CFE Chief Executive Manuel Bartlett has said that the CFE would no longer concentrate on natural gas and would instead prioritize the modernization of the country's existing hydroelectric, diesel, fuel oil and coal-fired power plants to meet rising demand.

The country's President Lopez Obrador used a press conference on February 11 to criticize Mexico's 2013 reforms which ended the state's monopoly over the energy sector and brought in measures to liberalise the natural gas market.

The President specifically ques-

tioned the creation of CFEnergia, a subsidiary of CFE dedicated to importing and marketing natural gas.

Lopez Obrador asked why CFEnergia must make fixed capacity and 'force majeure' payments to pipeline developers such as TransCanada, Sempra subsidiary Infraestructura Energetica Nova (IEnova) and Mexico's independent Carso Energy, all companies with pipeline projects facing delays due to local opposition and legal challenges.

"If the pipelines can't be built, as is happening with seven large gas pipelines, we have to pay even though there is no gas," said Lopez Obrador.

"There are seven delayed gas pipelines that will mean an outlay over the medium term of \$21 billion," he claimed.

TransCanada and IEnova are joint developers of the 800-kilometre Sur de Texas-Tuxpan subsea gas pipeline from the US, which is scheduled to enter service in weeks and is backed by a 25-year supply agreement with CFE.

However, the start-up dates of TransCanada's Tuxpan-Tula and Tula-Villa de Reyes pipelines, which are essential for the subsea pipeline to operate at its full 2.6 billion cubic feet per day capacity, remain unknown due to an impasse between TransCanada and the government of the Mexican state of Hidalgo.

The CFE is calling for the pipeline contracts to be rewritten.

"A reconstruction of these contracts is needed that allows the transmission of gas to our country, but without these prices and these sanctions that are absolutely absurd for the CFE," said CEO Bartlett.

Sempra's IEnova unit issued a statement on February 11 highlighting the company's history of operating in Mexico, and the fact that "all of the company's natural gas pipeline contracts with CFE were awarded under open, international public tender processes" and complied with international industry standards.

"IEnova is a Mexican company that has operated in the market for 22 years. It has generated more than 40,000 direct and indirect jobs and provided service to more than 500,000 Mexican consumers in 17 states across the country. In all of its operations, IEnova has strictly adhered to the law and absolute ethics and integrity," it stated, while adding IEnova has suffered problems.

"IEnova has a pipeline that entered in operation in May 2017," said the Sempra subsidiary.

"However, the service to CFE was interrupted by acts of sabotage suffered in August of 2017. The acts were reported to federal and local authorities," it added.

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Japan spot LNG prices \$2.70 lower in January

Japanese spot LNG cargo prices were at an average of \$8.30 per million British thermal units in January 2019 on a contracted basis, \$0.90 per MMBtu lower than the previous month, though \$2.70 per MMBtu down on January 2018 when the trading level was \$11.00 per MMBtu.

Prices for delivered spot cargoes in January 2019 were at an average of \$10.50 per MMBtu, slightly lower than the previous month, though \$0.40 per MMBtu higher than in January 2018.

The price of a cargo contracted in December 2018 was \$9.20 per MMBtu and the delivered cargo price for a December cargo was \$10.60 per MMBtu.

The North Sea Brent crude oil price that influences Japanese long-term contract prices also impacts spot LNG and other energy markets.

It was at \$86 per barrel in early October 2018 before dropping by more than \$25 per barrel in November and December and is now at just over \$60 per barrel.

The spot cargo numbers come from the commerce division of the Japanese Ministry of Economy, Trade and Industry and are only issued if a minimum number of two trades are recorded.

Overall Japanese LNG declined by almost 1 percent in 2018 as coal and nuclear provided more competition for power generation, though the costs of the LNG shipments soared by more than 20 percent.

The 2018 imports amounted to 82.85 million tonnes, down 0.9 percent on the 83.63MT received in 2017.

The nation's latest annual import bill was 20.8 percent higher than in 2018 at 4,730 billion yen (\$43.14Bn), according to Finance Ministry data.

Yemen government considers a re-start of LNG plant at Balhaf

LNG Journal editor

The Oil Minister said Yemen said he wished to resume production of liquefied natural gas at the Gulf of Aden liquefaction and export facility that has been halted since mid-April 2015 because of the conflict.

The closure of the Balhaf plant with 6.7 million tonnes per annum of production from two Trains has affected cargo deliveries, mainly to South Korea.

Indicator

The Yemen LNG plant had been an indicator of the impending conflict after it first stopped production and evacuated foreign workers in January 2015.

The plant had continued production over a period of about two years from 2013 amid unscheduled shutdowns because of attacks on its feed-gas pipeline by saboteurs.

It briefly re-opened in 2015 and managed to export 1.52 million tonnes before shutting down in April 2015 for a longer term for security reasons.

In addition to supplying the South Koreans under long-term contracts the plant had also



Plant is still intact after shutdown because of conflict

started shipping spot cargoes in 2014 and 2015 to countries such as India, Japan and China.

French energy company Total is operator of the facility and its other shareholders are the Yemeni state energy company, Hunt Oil of the US and three South Korean companies, Korea Gas Corp., SK Innovations and Hyundai Corp.

The government of Abd-Rabbu Mansour Hadi, backed by its allies Saudi Arabia and the United Arab Emirates, controls the southern port city of Aden and areas holding Yemen's oil and gas fields.

The opposition Houthi group, backed by Iran, controls the capital Sanaa and an oil terminal at

Ras Issa on the western coast.

Yemen's oil output has also plunged since 2015 when the Saudi-led military coalition intervened in Yemen's war to try to restore Hadi's government.

The Hadi government's Oil Minister Aws Abdullah al-Awd has now said that he aims to restart LNG production and boost oil output.

"Our country has been affected by the war for the past three years, but thank God, now things are coming back. Hopefully 2019 will be good for Yemen," said the Oil Minister.

"In 2020, we hope to be exporting our LNG production to customers in Asia," he added.

Perenco benefits from FLNG but may offload some UK wells

Perenco, the European energy company with a stake in the Cameroon floating LNG production project in West Africa as well as natural gas fields and infrastructure in the UK area of the North Sea, is carrying out a strategic review and may sell some assets.

Perenco is a private company owned by the French Perrodo family of the late Hubert Perrodo, founder of the business.

His son Francois Perrodo is Chairman of the company, whose UK headquarters are in London's Mayfair.

Analysts said the review could lead to the sale of Perenco's UK natural gas business and possibly

other assets. Perenco is one of the biggest operators in the southern North Sea, producing about 15 percent of the UK's gas production in fields offshore the eastern regions of Yorkshire and Norfolk.

Perenco has operated in Cameroon since 1993 in close collaboration with the national energy company Societe Nationale des Hydrocarbures.

The producing operations of Perenco in Cameroon are based around concessions in Rio del Rey, Moudi and the Ebome fields.

In 2018 Perenco and SNH chose to develop an LNG project in cooperation with Golar LNG. This led to the production hull, the "FLNG

Hilli Episeyo", being deployed offshore the Cameroon port of Kribi.

In its last FLNG update, Perenco said the FLNG hull, the "Hilli Episeyo", chartered from Golar, now handles 180 million standard cubic feet per day of natural gas for exports of an annual 1.2 million tonnes of LNG.

Perenco is one of the main operators of UK natural gas production and one of the largest infrastructure owners with 45 offshore platforms, 14 subsea wells, a network of more than 2,400 kilometres of pipelines and two onshore UK gas terminals at Bacton in Norfolk and Dimlington in East Yorkshire.

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Nova Scotia LNG project backed by Germany sets up three share transactions for funding

LNG Journal editor

Pieridae Energy, developer of the German-backed Goldboro LNG export project in the Canadian province of Nova Scotia, has entered into agreements for a private placement of shares with a group of banks and brokers and two other transactions to raise some funding.

The Calgary-based company, headed by Chief Executive Alfred Sorensen, is on the venture list of the Toronto Stock Exchange for small commodities companies.

Share transfers

The placement is for 7.5 million common shares priced at C\$2 each for gross proceeds of up to C\$15.0 million (US\$11.35M), plus a further C\$5M in a non-brokered offering, while an Alberta bank plans to make a C\$10M strategic investment for a total of C\$30M (US\$22.7M) in transactions.

Pieridae proposes to produce 10 million tonnes per annum of LNG at the planned Nova Scotia plant.

The final investment decision for the LNG venture is now ex-

Shipping Days	Goldboro	Corpus Christi	Sabine Pass	Northern Australia	Qatar
Zeebrugge (Belgium)	6	12	11.5	23	14
Isle of Grain (UK)	6	12	11	23	14
Cochin (India)	18	23	23	8	4
Barcelona (Spain)	7	12	12	19	10
Dubai (UAE)	17	22	22	12	1
Rio (Brazil)	10	12	12	22	18

Goldboro project claims to have global shipping advantage

pected by June 2019. German utility Uniper is one of the Goldboro project's customers and Pieridae has also received confirmation of eligibility in principle for up to US\$1.5 billion of untied loan guarantees from the German federal government.

The company has additionally signed a 20-year supply agreement with Uniper for 5 MTPA of its production and has embarked on a strategy of securing feed-gas resources for liquefaction.

"The company anticipates using the net proceeds of the Offering for working capital and general corporate purposes. The Offering is expected to close on or about February 28, 2019," said a statement.

"It continues to pursue preparatory work in relation to a final investment decision for the Goldboro LNG facility, including the procurement of additional natural gas prone properties, and gas exploration and development activities," it added.

The syndicate of Canadian banks and brokers are co-led by KES 7 Capital Inc., National Bank Financial Inc. and Laurentian Bank Securities Inc., with KES 7 and NBF acting as joint book runners.

In addition, Pieridae has granted the agents an over-allotment option, exercisable for a period of 30 days from closing, to sell additional shares representing 20 percent of the base offering at the offering price should there be demand.

Pieridae said that placement there may also be a C\$5M share sale of common shares to insiders and other investors.

"Certain directors and executive officers of Pieridae are expected to subscribe for common shares in the non-brokered offering, either directly or indirectly," said the company.

Participating in the brokered private placement, and subject to normal course closing provisions, Alberta Investment Management Corp. (AIMCo) has agreed to make a strategic investment in Pieridae on behalf of certain of its clients.

AIMCo has agreed to purchase 5M common shares at C\$2.00 for an additional C\$10M.

"AIMCo continues to provide Pieridae with exceptional financial support in this very difficult commodity price environment," said Pieridae CEO Sorensen.

"The investment from AIMCo and others will provide us with additional financial flexibility as we move toward a final investment decision," he added.

First German LNG terminal for Elbe River makes deals and regulatory progress with Dutch backing

German LNG Terminal, the joint venture company developing the European nation's first regasification facility at Brunsbuettel on the Elbe River near the port of Hamburg said it had reached another long-term commercial capacity agreement.

"The parties agreed on the commitment of a substantial part of the terminal capacity. Negotiations with other interested parties are ongoing," said the company.

It explained that as a result of strong market demand, it would apply for permits with a total terminal capacity of 8 billion cubic metres per annum of natural gas, or 6 million tonnes of LNG.

The Brunsbuettel project is a joint venture involving two Dutch

companies, natural gas operator Gasunie, global storage company Vopak as well as German energy firm Oiltanking GmbH, a subsidiary of the Marquard & Bahls AG of Hamburg.

RWE, one of Europe's leading energy companies and utilities based in the German city of Essen, has already booked "a considerable part" of the capacity from the planned terminal.

RWE said its contract follows a successful 2018 "open season" in which market interest was tested for the facility planning at the time to import around 4 MTPA LNG. Now the capacity has increased by 50 percent.

Rolf Brouwer, Managing Director of German LNG Terminal, said

the project was strongly moving forward.

"This additional commercial agreement demonstrates that the market has confidence in the prospects of LNG in Germany," he said without disclosing the name of the counterparty.

"The added value of the proposed multi-services terminal we offer to the market has been recognised and adopted by the global LNG community," he added.

"The German federal government has clearly recognised the benefits of LNG and, accordingly, has stipulated in its coalition treaty to develop LNG infrastructure in Germany," stated Brouwer.

The company said that it was hopeful that a final investment

decision would be taken in 2019, construction work would begin in 2020 and commercial operations are scheduled for 2022.

"The terminal will contribute to energy diversification in Germany and will support the introduction of LNG as a cleaner fuel alternative in maritime and road transport, lowering the environmental impact of both shipping and heavy goods vehicles transport," said the joint venture.

"The terminal will combine a variety of services such as unloading and loading of LNG ships, temporary storage of LNG, regasification and send out into the German natural gas network and LNG distribution by trucks," it added.

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