LNG Unlimited

LNG JOURNAL PUBLICATION 2 July 2019

Shell sells upstream assets for Goldboro LNG in Nova Scotia

Pieridae Energy buys Shell Canada Energy assets in Alberta to boost export plan

LNG Journal editor

Pieridae Energy, the developer of the German-backed Goldboro LNG project in the Canadian Atlantic province of Nova Scotia, signed a purchase and sales agreement with Shell Canada Energy to acquire all of Shell's midstream and upstream assets in the southern foothills of Alberta province to boost its LNG feed-gas reserves.

The Calgary-based company is seeking to build a liquefaction plant with an initial two Trains northeast of the Nova Scotia capital, Halifax.

Alberta in Canada has natural gas at rock-bottom prices

Cash and shares

The purchase price of the Shell Alberta assets is C$190 million (US$145M), including C$175M in cash to be raised by Pieridae through the issuance of debt and equity.

The balance will be in the form of the issuance of Pieridae common shares to Shell with an aggregate value of C$15M. Its shares are on the venture list of the Toronto Stock Exchange for small commodities companies.

"Closing of the acquisition remains subject to satisfactory completion of due diligence by Pieridae on the assets," said a Pieridae statement.

The whole deal is expected to be finalized in the third quarter of 2019.

"This acquisition will be immediately accretive to the company and also allows us to enhance the sustainability of our existing asset base," said Pieridae's Chief Executive Alfred Sorensen.

"It also demonstrates solid progress for our flagship Goldboro LNG project. We said we would acquire additional gas supplies for the LNG facility and we have done that," added Sorensen.

"Not only does this deal help us secure the remaining conventional natural gas supply needed for the first Train of the Goldboro LNG project, it makes Pieridae a major player in the Alberta midstream and upstream industry," stated the CEO.

"But more than that, it creates a solid, ongoing foundation for the Company as we continue to build toward becoming the first Canadian company to market LNG off the east coast to global consumers," concluded Sorensen.

Shell has helped Goldboro LNG move forward as its own LNG Canada project in British Columbia survives as the only large-scale venture in BC from a dozen previously proposed.

Shell's plans will cost C$40 billion (US$30.2Bln) to implement compared with the C$10Bln projected cost of the Nova Scotia plant.

The conventional natural gas assets Pieridae controls are expected to allow the company to access up to US$1.5 billion in credit support from the German government to develop these upstream assets as part of the Goldboro project.

The Shell assets currently produce approximately 28,623 barrels of oil equivalent per day consisting of around 118.9 million cubic feet per day of natural gas, 5,646 barrels per day of natural gas liquids and 3,161 bbl/d of condensate and light oil.

Pieridae will also acquire three deep cut, sour gas processing plants (Jumping Pound, Caroline and Waterton) in the acquisition, with a combined capacity of approximately 750 MMcf/d, a 14 percent working interest in the Shantz sulphur forming plant and approximately 1,700 kilometres of pipelines.

Trading in Pieridae's shares had been halted on the TSX Venture exchange June 25 at the request of the company pending the announcement.

Pieridae's lack of large volumes of feed-gas has been a project weakness as all other aspects of the venture have moved forward.

The company has signed a 20-year take-or-pay contract with German utility Uniper which the Canadian company said was worth around C$35 billion (US$26.5Bln) over the life of the Goldboro LNG project. ■

UNLIMITED AGENDA

YPF of Argentina issues first bonds in a year as South American LNG and shale inspire confidence

LNG Journal editor

Argentine oil and gas producer, Yacimientos Petroleiferos Fiscales (YPF), has sold overseas bonds for the first time in more than a year amid a slow return of investor confidence as the company starts small-scale LNG exports and the nation's huge Vaca Muerta shale basin continues to be developed.

YPF issued $500 million of 10-year, dollar-denominated notes to yield 8.75 percent. The sale on June 24 was managed by the US Citigroup, the UK's HSBC Holdings and Itau Unibanco Holdings SA of Brazil.

Production hull 'FLNG Tango' at Bahia Blanca in Argentina

Proceeds

Bankers said that proceeds from the sale would go towards working capital and refinancing existing debt.

State-owned YPF is traditionally among the country's biggest corporate borrowers and it hadn't issued bonds recently in international markets as an economic slowdown and a currency crisis affected investor confidence.

YPF is the largest investor in the Vaca Muerta shale basin of onshore oil and gas reserves in the northwest Argentine province of Neuquen.

Covering an area the size of a small European country, it has become one of the world's leading shale basins and has attracted international companies such as US majors ExxonMobil and Chevron Corp., Qatar Petroleum, French major Total and Equinor of Norway.

Argentina also loaded its first shipment of LNG on June 3 for export at the "Tango FLNG" facility deployed at the Argentine port of Bahia Blanca.

YPF said the shipment included 30,000 cubic metres of natural gas from the Vaca Muerta shale.

An LNG carrier, the Malta-registered and Japanese-built "Fuji LNG", lifted the cargo at Bahia Blanca after arriving on June 2 and then proceeded to Cheniere Energy's Sabine Pass plant in Louisiana, arriving on June 24, according to shipping data.

The "Tango FLNG" plant is chartered under a 10-year agreement from Belgian shipping company Exmar.

The vessel is the former floating liquefaction unit, "Caribbean FLNG", constructed for a cancelled venture in the South American state of Colombia and renamed before being sent to Argentina.

YPF did not at first specify the destination of the shipment, though said it was being helped by the marketing arm of US exporter Cheniere.

Argentina's medium-term aim in the LNG sector is to halt its own LNG imports, which will number at least nine large-scale cargoes or more for the Southern Hemisphere winter, and to become an exporter.

Growing natural gas production from the Vaca Muerta shale will eventually meet all of the nation's energy requirements and leave a surplus for export.

However, production costs for shale will have to be reduced to make exports economic and huge investment is needed in infrastructure to handle large-scale gas volumes and onshore liquefaction, though the floating LNG project is viewed as a good introduction to the export market for YPF. ■

American Gas Association praises measure to reduce speculative challenges to LNG projects

The American Gas Association has welcomed the balanced perspective taken in the draft guidance released by the White House Council on Environmental Quality in relation to the greenhouse-gas emissions of major energy, pipeline and liquefied natural gas projects.

The new draft guidance is aimed at helping to clarify how federal agencies should consider the greenhouse-gas impacts of major project permitting decisions when conducting environmental reviews under the US National Environmental Policy Act.

"The draft guidance from the White House Council on Environmental Quality will help facilitate the environmentally-responsible construction of natural gas pipelines and other infrastructure that our customers want and need," said AGA President and Chief executive Karen Harbert.

"Streamlining and clarifying the permitting process helps the natural gas industry provide timely, safe, reliable and affordable service to the 178 million Americans who enjoy the benefits of natural gas and the millions more that want it, but do not yet have access," added Harbert.

In particular, the draft guidance would help focus agency resources on evaluating the reasonably foreseeable greenhouse-gas impacts of agency permitting decisions, rather than "expending resources on evaluating remote or speculative matters" that do not have a sufficiently close causal relationship with an agency's permitting decision.

The guidance directs agencies to consider greenhouse-gas emissions when "substantial enough to warrant quantification."

Agencies do not have to consider how a project might impact greenhouse emissions if doing so would be "overly speculative."

It reverses a 2016 rule from the same Council under the previous presidency that directed agencies to analyze how the projects they approve will contribute to climate change.

President Donald Trump withdrew the previous guidance in April 2017.

Environmental groups have said the proposal would reduce environmental protection.

The US Congress has been divided along party lines on the proposal, with Republicans praising the Trump Administration for removing hurdles for energy development as the nation embarks on boosting domestic natural gas use in power generation and LNG exports.

"This proposed guidance will help ensure that major energy projects in Wyoming and across the country can move forward without needless delays and litigation," said John Barrasso, Republican Senator for Wyoming and head of the Environment and Public Works Committee. ■

China import level rises as facilities to expand

Chinese liquefied natural gas imports increased in May compared with the year-ago period as new regasification facilities are planned, including in Hong Kong.

LNG shipments in May were 4.43 million tonnes, lower than in the previous month's 4.54MT, though higher by 6.90 percent than the 4.15 MT received in May 2018.

LNG imports for the first five months of 2019 rose 20.3 percent from a year earlier to 23.87MT, according to the nation's General Administration of Customs.

China imported a total of 4.54MT of LNG in April 2019 compared with 3.39MT in April 2018, a rise of 33.9 percent.

The total of LNG imports for the January-May period was given as 23.88MT versus 19.87MT in January-May 2018, an increase of about 20.3 percent.

Among the main suppliers of shipments to China in May 2019 were nations such as Qatar, Australia, Indonesia and Nigeria.

China's National Development and Reform Commission has also been working to encourage companies to expand the gas pipeline network, improve gas storage and is now seeing results in enabling the system to meet peak demand when required.

That's as Hong Kong Electric Co. and Castle Peak Power Co., two local power companies in the autonomous Chinese territory, said they had signed a supply deal for the former British colony's first imports of LNG and for the charter of a floating storage and regasification unit.

Hong Kong is moving to use more natural gas to fuel its electric power generation instead of coal or oil. ■

Indian group says floating LNG terminal at Jaigarh to start soon

LNG Journal editor

India's Jaigarh Port, south of Mumbai, awaits LNG FSRU

The Indian Hiranandani group said a floating storage and regasification import project at Jaigarh port, south of the West Coast city of Mumbai, is on scheduled to start commercial operations by the fourth quarter of 2019, a year behind schedule.

Chief Executive Darshan Hiranandani told an energy conference in Singapore that the floating storage and regasification unit would have additional infrastructure, including a pipeline of 60 kilometres.

Charter

The group's H-Energy subsidiary will operate the terminal with annual capacity of 4 million tonnes per annum of LNG and with reloading capabilities.

The FSRU charter is being finalized by H-Energy for a period of five years and the ship will arrive at the LNG jetty at Jaigarh just before the start-up.

Most of the onshore infrastructure work has almost been completed by Engineers India Ltd (EIL), a project construction company.

H-Energy said the West Coast facility would be of great benefit to Maharashtra state by providing clean fuel for transportation and for city-gas use.

"The LNG terminal will offer storage, regasification, re-loading, bunkering and truck-loading facilities to cater to the growing energy demand of Indian industries," said the company.

When operational, the regasified LNG will be supplied to customers through the pipeline connected to national gas grids at Dabhol.

The facility in the state of Maharashtra would be the fifth LNG import terminal located near Mumbai, with three of them located at Hazira, Dahej and Dabhol for use by importers Shell, Petronet LNG and Gas Authority of India respectively. A fourth is mechanically completed at Mundra. It is owned by Gujarat State Petroleum and the Adani Group, though has yet to be fully commissioned.

However, there is only one LNG terminal for the whole East Coast of India with about half-a-dozen others planned.

Indian Prime Minister Narendra Modi inaugurated the first East Coast facility in March 2019 at Kamarajar Port in Tamil Nadu.

The Kamarajar facility is owned by Indian Oil Corp., the refining and fuel marketing company, and has 5 MTPA of import capacity and two tanks each with storage of 180,000 cubic metres. ■

LNG imports for India rise for a second successive month

Indian liquefied natural gas imports increased for a second month of the current fiscal year as the nation received more cargoes from West Africa, while its market moved towards building more infrastructure.

LNG imports during May 2019 rose to 1.86 million tonnes (2.52 billion cubic metres), which was a 4.40 percent increase than the 1.78MT received in May 2018.

The main operating terminals on India's West Coast are at Dahej, Hazira and Dabhol, near Mumbai, and there is one East Coast terminal at Kamarajar, 25 kilometres north of Chennai Port in Tamil Nadu.

The cumulative imports for the first two months of the fiscal year came to 3.81MT versus 3.60MT, a rise of around 5.70 percent on the corresponding period last year.

Indian LNG imports had risen 9.75 percent in April to 1.85MT compared with 1.68MT in the same month last year.

The cost of Indian imports for May was around $700 million versus $800M in the same month of 2018, according to the Ministry of Petroleum and Natural Gas. LNG imports for all of the last fiscal year had cost $9.6 billion.

Shipments to India in the whole of the previous fiscal year had amounted to almost 20MT, a rise of 2.6 percent.

Analysts said that India could easily import and use double its current capacity were it not for its lack of infrastructure.

The Ministry data also showed that production of domestic natural gas for the month of May 2019 was 2.73 Bcm, higher by 0.4 percent versus May 2018.

The cumulative gross output of natural gas was 5.39 Bcm for April and May 2019, a 0.1 percent up on 2018. ■

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NEWS NUDGES

US Delfin project delay

Delfin LNG has asked regulators for an extension of three years and six months to construct the plant and related facilities in Cameron Parish in Louisiana. The onshore facilities will transport natural gas to Delfin LNG's proposed deepwater port in federal waters offshore Louisiana. Delfin told the Federal Energy Regulatory Commission that due to the "detailed nature of the engineering design of the offshore facilities and the "the complexity of developing the necessary commercial arrangements", progress on the project has been slower than originally anticipated.

Yamal LNG for Japan

Russian natural gas company Novatek said that its Yamal LNG export plant in northern Siberia has shipped its first cargo to Japan. The shipment was unloaded at the Tobata LNG terminal under a delivery agreement with a Yamal project shareholder, the French energy major Total of France.

EPC accord updated

LNG Ltd. has extended its legally binding lump-sum, turnkey engineering, procurement, and construction contract with KBR Inc. of the US and SK E&C of South Korea for its Magnolia LNG plant in Louisiana. The agreement was first signed in November 2015. The updated accord is now valid until December 31 and incorporates the 0.8 million tonnes per annum capacity increase for Magnolia, which is undergoing the Federal Energy Regulatory Commission approval process for total capacity of 8.8 MTPA. ■

Inpex of Japan and partner Shell formally submit Abadi LNG plan

LNG Journal editor

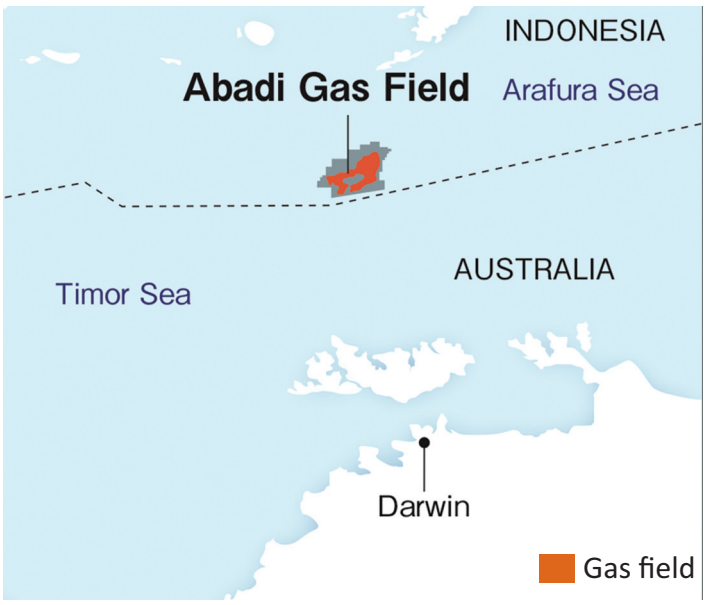
Inpex Corp. of Japan and Royal Dutch Shell have now formally submitted their new Plan of Development for the onshore liquefied natural gas project using feed-gas from the Abadi gas field in the Masela Block in the Arafura Sea of Indonesia.

The project is expected to be operational by around 2026 with Inpex already completing preliminary front-end engineering design for an LNG plant with an annual initial capacity of 9.5 million tonnes.

Revised

The submission of the revised plan to the Indonesian government follows the signing in Japan on June 16 of a Heads of Agreement (HAO) between the government and Inpex, as the operator of the project on behalf of joint venture subsidiaries Inpex Masela and Shell Upstream Overseas.

"The Abadi gas field features excellent reservoir productivity and has one of the world's largest reserves, raising expectations of efficient development and stable LNG production operations over the long-term," said Inpex in an upbeat statement.



Abadi gas field will underpin Indonesian plant

Inpex said that the terms contained in the HOA signed on June 16, including cost estimation, the Production Sharing Contract (PSC) period and financial conditions are also written into the revised plan just submitted.

"Inpex anticipates that the revised plan will be approved at an early stage, after which the company will work in partnership with Shell toward reaching a final investment decision and ultimately commencing production," said Shunichiro Sugaya, President of Inpex Masela.

The revised plan incorporates the results of the pre-front end engineering and design (Pre-FEED) work conducted between March and October 2018.

In addition to submitting the revised development proposals, Inpex and Shell have filed an application to amend the PSC for the Masela Block. ■

Sempra plans strengthening of activities in California and Asia

Sempra Energy, the California-based utility and the newest US liquefied natural gas exporter with its liquefaction plant in Hackberry in Louisiana, said it was consistently working to strengthen its infrastructure to cope with extreme weather conditions in its home state and to supply LNG as clean energy to Asia to replace coal.

Sempra said its role includes taking a leadership position in modernizing North American natural gas pipelines and to increase safety and reliability.

It was also developing a comprehensive wildfire mitigation plan to help prevent electric equipment-related fires in California and to improve the ability of the power grid to meet extreme demand periods.

"In addition, the company expects to play a leadership role in the worldwide shift away from coal toward lower-emissions natural gas through the development of five LNG infrastructure projects in North America that should enable the delivery of LNG to consumers around the world," stated Sempra in its corporate sustainability report.

The Cameron facility is one of three LNG export plants Sempra is developing in the region, along with Port Arthur LNG in Texas and the Costa Azul plant on the Pacific Coast of Mexico.

The five projects referred to are the expansion of Cameron and Port Arthur.

Sempra expects to become one of the largest US exporters of LNG with targeted volumes of 45 million tonnes per annum.

"Delivering energy with purpose is how we improve the lives of those we serve and is an integral part of who we are," said Jeffrey W. Martin, Chairman and Chief Executive of Sempra. ■

MAN Energy Solutions says gas-injection power for LNG carriers is now mature technology

LNG Journal editor

German marine engine maker MAN Energy Solutions, a supplier of propulsion for many of the world's LNG-powered vessels as well as the most modern LNG carriers, said its two-stroke, dual-fuel portfolio has now logged more than 500,000 operational hours.

The landmark comes from the confirmed sales of more than 250 dual-fuel engines, all running on liquefied natural gas or other clean fuels such as liquefied petroleum gas or methanol.

Teekay LNG's 'Creole Spirit' has MEGI propulsion system

Packages

MAN, based in Augsburg, Germany, is best known in the LNG sector for its speciality power package in the electronically-controlled, gas-injection (MEGI) engine for LNG carriers and other vessels.

"The MEGI engines form the core of its two-stroke, dual-fuel portfolio and have notched many notable industry-firsts since their introduction to the market, including the very first ocean-going ships driven respectively by LNG, methanol, ethane and LPG," said the company.

The company was formerly known as MAN Diesel & Turbo and was rebranded a year ago under the MAN Energy Solutions name.

"This is a massive milestone that highlights the success of the dual-fuel strategy we have laid over the past decade," said Bjarne Foldager, Senior Vice President of the Two-Stroke Business at MAN Energy Solutions, which is part of the Volkswagen Group.

"The engines' efficiency, in all fuel modes, is the best in the market, which gives shipowners enormous flexibility," he added.

"Half a million hours of dual-fuel operation stands testament to our leadership in this critical market segment," said Foldager.

"On behalf of MAN Energy Solutions, I would like to express my thanks and appreciation to our customers for their support, and the trust they have placed in these future-proof solutions," he stated.

The company explained that service reports have also been positive.

"Recent experience from a 174,000 cubic metres capacity LNG carrier powered by a MEGI engine logged reliability and availability figures of 99 percent," it said.

Foldager added that with references in every major marine segment, the MAN dual-fuel portfolio can rightly be considered as mature technology.

With 2020 and the new International Maritime Organization emissions legislation fast approaching, MAN said that the MEGI and MELGI engines continue to act as standard bearers for environmentally friendly, reliable propulsion technology.

"Furthermore, their use of the diesel combustion principle ensures that they can easily adapt to run on whatever fuels the industry may prefer in the future," said the company.

With the marine industry waiting to see how fuel prices and availability evolve after 2020, which will have a significant impact on the choice of new engines, MAN expects, the choice of retrofitting to MEGI or MELGI engines to be a key alternative. ■

LNG fuel advance for Rotterdam and Baltic

Containerships, an Intra-Europe subsidiary of the French global container market participant, the CMA CGM Group, said it took delivery of its second vessel with liquefied natural gas capability to operate in its Baltic services from the Dutch Port of Rotterdam.

The new dual-fuel vessel that can be powered by LNG or diesel is called "Containerships Polar" and has been delivered from the Chinese shipyard where it was constructed.

The LNG-capable ship complies with all current and future clean-shipping regulations from the International Maritime Organization and Northwest Europe's Emission Control Areas.

"The 'Containerships Polar' will be phased into the redesigned service for Northern Europe, the Baltics and Russia from the Port of Rotterdam on June 23," said CMA CGM, the parent company based in the French port of Marseilles.

CMA CGM said that at the start of May, the container vessel with capacity of 1,380 twenty-foot equivalent units (TEU) had started its voyage from the Guangzhou Wenchong Shipyard in southern China's Pearl River Delta to Northern Europe.

It will now operate alongside its LNG-capable sister ship, the "Containerships Nord", in serving the Baltic routes.

CMA CGM also said that the vessel's first LNG bunkering will be carried out at the end of June in Rotterdam where it will receive around 200 metric tons of LNG via ship-to-ship bunkering.

Two more LNG-powered vessels, the "Containerships Arctic" and the "Containerships Aurora", are expected to join the fleet by the end of 2019. ■

Woodside restarts Pluto LNG export plant after technical issue

LNG Journal editor

Woodside Petroleum, the operator of two LNG export plants in Western Australia, said it had successfully completed additional work at its Pluto liquefaction facility following scheduled maintenance and production had restarted.

Woodside had discovered technical issues during maintenance at the single-Train facility and had initially said it would remain offline for all of June.

Normal service is resumed at Pluto LNG export plant

Asia supplier

The Pluto plant is on the Burrup Peninsula of Western Australia about 190 kilometres northwest of the port of Karratha.

The facility has 4.8 million tonnes per annum of output and is a lucrative business for Woodside and its foundation customers are the Japanese utilities Tokyo Gas and Kansai Electric.

Woodside said the mixed refrigerant compressor had experienced vibration on restart and the problem was now fixed. The company had made arrangements to meet obligations to customers, including the purchase of third-party cargoes.

Woodside also operates the North West Shelf plant near Karratha and is a stakeholder in the Wheatstone facility, the third onshore plant in Western Australia operated by US major Chevron Corp.

In the first quarter of 2019, Pluto achieved output of 1.08MT, slightly lower than 1.10MT logged in the year-ago quarter and returned revenues of US$591M.

The Pluto cargoes were sold at an average price of US$10.0 per MMBtu compared with US$9.0 per MMBtu in the same quarter of 2018.

The plant has been on stream since 2012 and Woodside is planning an expansion that is expected to add 10 MTPA of output from two additional Trains.

Woodside has said that after its strong performance in 2018 and in early 2019 it was looking forward to sanctioning more than US$30 billion of new LNG projects. ■

Barossa gas field owners make progress on Darwin LNG supply

Australian LNG player Santos said that the Barossa natural gas field joint venture has entered into exclusive negotiations with the Darwin LNG stakeholders to the supply of backfill feed-gas and extend the lifespan of the ConocoPhillips-operated facility that came on stream in 2006.

Santos explained that the arrangement gives the Barossa venture an exclusive commercial negotiation period to reach a processing services agreement as well as settle on a tariff in anticipation of a final investment decision early in 2020.

The offshore Barossa gas field is located 300 kilometres north of Darwin and is part of the Santos Northern Australia portfolio.

The Darwin plant exports around 3.5 million tonnes per annum of LNG from a single liquefaction Train to Japanese utilities Tokyo Electric Power, now under the JERA Global Trading banner, and Tokyo Gas.

Santos has an 11.5 percent stake in Darwin LNG in Australia's Northern Territory.

Adelaide-based Santos is also operator of the Gladstone LNG plant in Queensland and a stakeholder in Papua New Guinea LNG and its expansion project.

The Barossa project entered the front-end engineering and design phase of development in April 2018 and in May 2019 announced the contract to supply the Subsea Production System (SPS) and associated SPS installation support.

"This exclusivity confirms the confidence we had to commit to long-lead items last month and maintain project schedule to deliver gas to DLNG as early as possible," said Santos Chief Executive Kevin Gallagher.

"Clearly, it also confirms Barossa's status as the lead candidate for the supply of backfill gas to Darwin LNG," he added.

"Bids have also been received and are being evaluated for the FPSO, gas export pipeline and development drilling. We're getting on with the job," stated Gallagher.

Santos holds a 25 percent interest in the Barossa-Caldita joint venture along with partners ConocoPhillips (37.5 percent and operator) and South Korea's SK E&S (37.5 percent). ■

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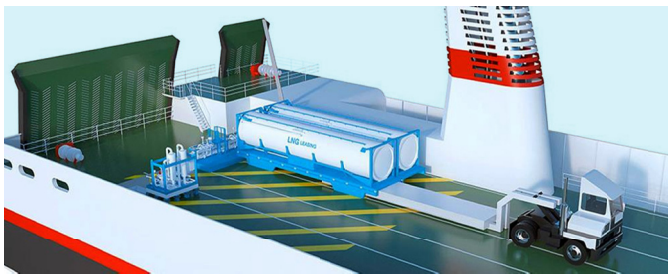

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French LNG tank GTT receives China orders for container ships being built for France's CMA CGM

LNG Journal editor

GTT, the French maritime LNG storage technology company, has received an order from the Chinese Jiangnan Shipyard for the tank designs for five new LNG-fuelled container ships of 15,000 TEU capacity each.

The ships will be built on behalf of France's global container line CMA CGM, based in the French Mediterranean port of Marseilles.

Jiangnan Shipyard will build LNG-fuelled container ships

Delivery

GTT said their delivery will be staggered between the second half of 2021 and the first half of 2022.

GTT will design the LNG fuel tanks, with a capacity of 14,000 cubic metres per ship.

The Mark III Flex membrane containment system, developed by GTT, has been chosen for its space optimisation allowing a maximum usage of cargo capacity.

"Less than 18 months after the first order for LNG-fuelled container ships, we are delighted to confirm, with this new order, the interest and effectiveness of our solutions to address the emerging environmental challenges for shipping," said Philippe Berterottiere, Chairman and Chief Executive of GTT.

CMA CGM has more than 500 vessels operating worldwide and has been among the first to order ships with LNG propulsion.

The deal will be valued at $750 million approximately in total, with each vessel worth around $150 million, according to an earlier Chinese shipyard statement.

The International Maritime Organization and nations such as China are implementing emission controls for shipping fuel use in ports to reduce pollution.

An IMO cap on harmful sulfur emissions comes into force in 2020 and is forcing shipping companies to switch to have exhaust-cleaning equipment or alternative fuels such as LNG or low-sulfur traditional bunkering fuels for in-port and general use.

Jiangnan Shipyard said the new ships are equipped with bigger membrane LNG fuel tanks inside the hull, which is expected to provide strong support to long-haul container transportation.

CMA CGM had previously ordered nine new ultra-large LNG-powered ships from China in 2017 and they start being delivered from China's Hudong-Zhonghua shipyards from 2020.

The nine 22,000 TEU ships are being built with LNG storage tanks designed so that they load their entire bunker requirement for a round voyage before embarking on the journey.

CMA CGM and French energy company Total signed an agreement in 2018 covering the supply of around 300,000 tonnes of LNG per annum for 10 years starting from 2020.

This volume will help fuel CMA CGM's nine newbuilds as well as the five dual-fuel vessels set to be ordered from the Jiangnan Shipyard. ■

South Korean shipyards expect LNG orders from Qatar and Russia and hope for Mozambique newbuilds

Major shipbuilders in South Korea are expecting huge orders for new liquefied natural gas carriers to be placed in the second half of 2019 from the expansion of the Qatar LNG plant at Ras Laffan and from the advance of projects in Mozambique, the US and Russia.

So far in 2019, South Korean shipbuilders had secured 21 of 24 LNG carrier orders placed worldwide and more are on the way.

The scope of the expansion at the Ras Laffan production complex involves an additional four Trains, each with 7.8 MTPA of output.

This will take nameplate output up to 110 MTPA from 77 MTPA when the expansion is completed by 2023 and 2024.

With orders for around 40 LNG carriers expected to be placed in the next year, South Korean shipbuilding executives expect to receive a large portion.

Qatar Petroleum had asked executives of Korean shipyards to free up berths for a wave of Qatari LNG newbuilds.

Samsung Heavy Industries, Hyundai Heavy Industries and Daewoo Shipbuilding & Marine Engineering specialize in constructing the Qatari Q-Flex and Q-Max tanker with between 210,000 cubic metres and 266,000 cubic metres capacity.

Between 2004 and 2007, Qatar ordered 45 LNG carriers from the Korean yards when Daewoo built 19 Qatari carriers, Samsung constructed 18 vessels and Hyundai received orders for eight ships.

Qatar is also seeking builders for at least 40 LNG carriers in the next 12 months.

Analysts said the South Korean shipbuilders face solid demand over the next few years which will improve profitability at the yards and benefit the whole Korean economy.

Samsung is expecting to be the first Korean yard to secure a new large order in the second half as the company has reportedly been named as a partner for the Arctic LNG II project being developed in the Gydan Peninsula of northern Siberia by Russian natural gas company Novatek.

According to executives, Samsung would join forces with the shipbuilder Zvezda in the Russian Far East to make ice-breaking LNG carriers for the project. Details of the agreement have yet to be disclosed, though Samsung is expecting to be responsible for delivering 15 to 20 LNG carriers worth between $3 billion and $4Bln.

Hyundai and Daewoo are attempting to win orders from the Mozambique LNG project led by Anadarko Petroleum of the US, which is seeking to order 16 LNG carriers.

Executives have said that Mozambique LNG representatives completed on-site inspections of the three main South Korean builders, as well as Japan's Mitsubishi Heavy Industries shipyard in Nagasaki and Kawasaki Heavy industries at Kobe and Sakaide. ■