LNG Unlimited
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Spot LNG cargoes will point to Europe as Asian market evolves

Market liberalization finally took place in Malaysia as well as in Thailand

LNG Journal editor

Japanese and Chinese demand for LNG cargoes is still substantial for Northern Hemisphere winter season

Increasing and new liquefied natural gas production from US and Australian liquefaction and export plants met lukewarm Asia-Pacific demand growth and with no other viable outlet spot LNG shipments were sold at a discount into European terminals, something that is forecast to be repeated this year.

"In 2020, Europe will again be called upon to save the day. However, unlike 2019, European gas inventory will start the year at record high levels," said UK-based energy analysts Wood Mackenzie in an Asian report.

Flexibility

"Europe will thus need to rely even more on flexible supply, or increased demand creation from within the power sector, compared to last year," said Wood Mackenzie.

"Both indicate an even lower Title Transfer Facility (TTF) price for 2020 which in turn suggests lower spot prices in Asia," added the report.

"However, ever-present is the risk to LNG supplies from Qatar should US-Iran tensions escalate in 2020 to a point of causing disruption to shipping through the Strait of Hormuz," it stated.

Wood Mackenzie noted in its Asian overview that market liberalization finally took place in Malaysia and Thailand.

Royal Dutch Shell last year imported a spot LNG cargo into Malaysia, breaking the monopoly of state-backed energy company Petronas for the first time.

"With third-party access now successfully tested, the purchasing arm of Malaysia's power generation company is expected to look for additional cargoes in 2020," said the Asian report.

In neighbouring Thailand, the Electricity Generating Authority of Thailand (Egat) imported its first LNG cargo in December 2019.

This was the first test of the country's third-party access regulation, after previously being monopolized by Thai state oil and gas company PTT.

The report added that in South Korea, new power and industrial consumers are also looking to self-procure, joining the likes of POSCO, SK E&S, GS Energy, and others who already independently import and bypass state-owned Korea Gas Corp.

"Low LNG spot prices have helped make the case for these emerging buyers. The incumbents, whether Petronas, PTT or Kogas, have a supply portfolio of long-term supply contracts with relatively high prices," explained Wood Mackenzie.

"Being able to self-purchase LNG from the spot market will provide additional margin for these end users, and boost competitiveness in their respective markets," it added.

Additionally, China's gas and LNG demand continues to face headwinds.

China's gas demand growth decelerated in 2019 to around 9 percent from 17 percent in 2018.

"The trade war (with the US) has had a domino effect on China's domestic economy," said the report.

"The economic slowdown affected overall energy demand and limited the government's fiscal ability to create gas demand," it stated.

"With the Power of Siberia pipeline in operation and first gas from Russia to northern China, next winter's LNG requirements could be limited," said the Wood Mackenzie report.

"In addition, domestic gas production is still ramping up at a faster pace than previous years. Should this persist in 2020, gas imports will face slower growth," it added.

"Despite a moderation in coal-to-gas switching in 2019, gas has shown resilience and gained a higher share in the energy mix, still outpacing coal and oil," said the report.

■

Noble of US gives East Med Leviathan natural gas field progress report amid floating FLNG plans

LNG Journal editor

Noble Energy, the US exploration and production company, has explained the solid progress made by the Leviathan Eastern Mediterranean natural gas field offshore Israel since it was brought on stream at the year-end to supply Egypt and Jordan.

Noble said first gas sales from Leviathan commenced on December 31, 2019.

"All four wells and both subsea flowlines are currently fully operational, with well productivities in line with or better than pre-production expectations," said Houston-based Noble.

"Venting operations associated with start-up were successful, resulting in no impact to onshore communities and with emissions levels substantially below permitted limits," added the US company.

"Natural gas sales have been established to Israel, Jordan, and Egypt," said Noble. "Gas sales to Jordan began on January 1, with gas exports to Egypt beginning on January 15. Gas sales into Egypt are utilizing the East Mediterranean Gas Pipeline as planned," added Noble.

"Interconnects between the Israeli, Jordanian and Egyptian pipeline networks are now fully operational," stated the company.

Noble said that combined gross natural gas sales from the Leviathan and the nearby Tamar gas field have averaged 1.5 billion cubic feet equivalent per day in January 2020, with peak days up to 1.7 Bcfe per day.

The partner of Noble in the Leviathan venture is the Delek Group of Israel.

Leviathan field resources are around 21.4 trillion cubic feet while the Tamar gas field reserves amount to 11.2 Tcf.

The Israeli group's East Med energy operations are carried out by its subsidiary, Delek Drilling.

All four Leviathan wells and subsea flowlines are fully operational and customers are now being supplied

Egyptian company Dolphinus Holdings is the main recipient of Leviathan gas via the EMG pipeline.

The EMG pipeline runs from Ashkelon in Israel to El Arish in Egypt.

The Leviathan field, located about 80 miles (130km) west of Haifa, was discovered in December 2010.

Delek and Noble have also signed a 15-year agreement to supply 1.6 Tcf to Jordan's National Electric Power Company and Israeli customers.

There is also a planned floating LNG project attached to the development plan and is in the study stage.

The proposal is for building an LNG production hull for the Leviathan project to be deployed in Israel's exclusive economic zone.

Greece's FLNG Balkans terminal planned for off Thrace launches market test second phase

Gastrade, a Greek utility company and developer of the Alexandroupolis floating LNG terminal, has launched the second phase of a market test for the project to gauge demand in Greece and the Balkan states.

"The project aims to provide a new gateway for gas supply to southeast European markets and will offer to the region security of supply, diversification of gas routes and sources, price flexibility and enhanced competition," said Gastrade.

The first phase of a market test was conducted in late 2018 and was completed with great success after 20 companies expressed interest in the project.

Gastrade now says there is a revised and extended deadline for expressions of interest for the Alexandroupolis Independent Natural Gas System Project set for February 2020.

The venture comprises a floating storage and regasification unit for the reception, storage and regasification of LNG, a mooring and a system of a subsea and onshore gas transmission pipelines, through which natural gas will be delivered to the Greek National Natural Gas Transmission System (NNGTS) and onwards to the final consumers.

The FSRU will be stationed in the sea off Thrace in northeast Greece, 17.6 kilometres southwest of the town of Alexandroupolis.

The pipeline will be connecting the FSRU to the NNGTS near the village of Amphitriti, 5.5km northeast of Alexandroupolis.

In December 2019, Greek gas company DEPA and Gastrade signed a final agreement for the acquisition of a 20 percent share in Gastrade by DEPA.

Then on the 8th of January 2020, Bulgartransgaz, the Bulgarian gas transportation company, concluded terms of an agreement for a 20 percent participation in Gastrade.

The FSRU venture and gas hub have been listed by the European Union as a project of European Common Interest, thus attracting EU grants.

The Alexandroupolis FSRU project will double Greece's current LNG import capacity.

"For Bulgaria, Romania, Serbia and other markets in southeast Europe, the project will transmit natural gas through the Interconnector Greece-Bulgaria which is under construction and the other existing or planned pipelines in the region," explained Gastrade.

"This is the binding bidding phase for capacity reservations in the project," it added.

"Companies that have already expressed interest in the first phase of the market test are eligible to submit binding offers to Gastrade," it stated.

The test guidelines set out the terms under which new interested participants are also allowed to enter this second phase of the test.

The deadline for interested participants to submit their offers is the 24th of February 2020.

In the first phase of the Market Test, 20 companies submitted relevant Expressions of Interest for a total of up to 12.2 billion cubic metres (bcm) per year of reserved regasification capacity at the floating terminal.

Third of US states oppose new rules on LNG by rail

A total of 16 US states, including New York, California and Maryland are opposing proposals to transport liquefied natural gas by railcars because of what they see as the risk of potential accidents.

Lawyers for the states opposed to delivering LNG by rail have urged the Department of Transportation's Pipeline and Hazardous Materials Safety Administration (PHMSA) to withdraw the proposal pending the completion of safety studies and the development of an environmental impact statement.

The American Association of Railroads, an industry group that supports shipping LNG by rail, said that US railroads already moved much of the hazardous materials transported nationwide without releases caused by an incident.

The states in opposition to transporting LNG by rail have asked their attorneys general to block the proposition.

US regulators have said that specially-built railcars, whose design has been approved by the Department of Transport, would be able to move LNG across country.

The PHMSA in December 2019 approved the use of trains to ship LNG from northeast Pennsylvania to southwest New Jersey.

A company called Energy Transport Solutions, a subsidiary New Fortress Energy, is aiming to use rail transportation for Pennsylvania shale-gas produced of at a small-scale liquefaction plant to transport volumes to a planned terminal on the Delaware River for shipping to global markets.

The company is developing two such small-scale projects in the Marcellus Shale Basin in Northeast Pennsylvania that would have a combined capacity of 7.3 million gallons per day, according to regulatory filings. ■

Pavilion starts European LNG and gas trading from Spain

LNG Journal editor

Pavilion Energy, the Singapore LNG and natural gas market participant, has completed the transaction to acquire portfolio of LNG and gas assets of Spanish utility Iberdrola as it also launches European operations.

From its new European headquarters in Madrid, Pavilion said it had formally commenced 2020 LNG trading operations with supplies pointing at the UK and Spain.

The previous Pavilion-Iberdrola accord is now implemented

Unit

Pavilion, a unit a Singapore wealth fund Temasek, has been developing its LNG portfolio for several years, including LNG ships in cooperation with BW Gas.

The city-state company noted that as of January 1, José Simón, formerly the Head of Global Gas at Iberdrola, is Managing Director of Pavilion Energy for Europe.

"Simón will oversee the organisation's European gas trading and global LNG portfolio management and origination business divisions," added Pavilion.

At the same time Pavilion has named Alan Heng as Managing Director for Asia, in addition to his current role as Head of the Energy Sales and Market Development division.

Pavilion said both Managing Directors are charged with establishing operations in their corresponding regions and strengthen the organisation's global processes.

"We are delighted to celebrate this milestone that positions Pavilion Energy as a global energy business," said Frédéric H. Barnaud, Group Chief Executive of Pavilion.

"We warmly welcome José and our new joiners in Madrid," added Barnaud.

"We are pleased to have achieved such a seamless transition in close partnership with Iberdrola and with the great support of our many stakeholders," stated the CEO.

The Pavilion move into Europe comes as Singapore's Energy Market Authority is advancing with plans for a second regasification and storage terminal as it aims to confirm its position as an Asian LNG hub. ■

Belgian LNG vessel operator Exmar makes executive changes

Exmar, the Belgian shipping company with more than 40 vessels in its fleet now mostly focused on the liquefied petroleum gas business, has made executive changes as it tries to improve finances amid the success of the floating LNG production vessel, "Tango FLNG".

The company continues to manage 10 LNG floating storage and regasification units FSRUs, though is not directly involved in regasification projects with former partner Excelerate Energy of the US.

Exmar named Francis Mottrie in the new position of Deputy Chief Executive. He will take up responsibility for the internal management.

Mottrie was CEO of Bexco, producer of synthetic ropes for various industrial applications and a subsidiary of the Exmar Group.

Prior to that, he spent over 20 years in the maritime industry with companies such as Safmarine and later AP Moller Maersk in various leadership roles.

"We are convinced that with Francis Mottrie we have the right person to further develop the company and capitalize on its strong market position,", said Exmar CEO Nicolas Saverys.

Mottrie said he was very much looking forward to joining the Exmar team.

"Exmar is a company with a great reputation, a global pioneer in floating solutions for the operation, transportation and transformation of gas. The future opportunities are numerous and promising," stated Mottrie.

Exmar added that on the financial side Miguel de Potter, Group Chief Financial Officer since 2011, has decided to seek other challenges.

He will be replaced by Patrick De Brabandere who has accepted the position of Group CFO as from the 1st of February 2020, thereby confirming his long-term dedication within the Group.

Exmar added that Miguel de Potter remains available to the company until the end of February 2020. ■

NEWS NUDGES

Spain LNG purchase

HAM Group of Spain, an LNG and compressed natural gas fuel and bunkering services firm, said it acquired FNX Liquid Natural Gas, a small-scale natural gas liquefaction company based in the Basque company of northwest Spain. FNX focuses on the design, manufacturing and installation of mini liquefaction plants, also including equipment for processing natural gas from wells and other sources. FNX has its own manufacturing facilities in the North of Spain for the design, construction and design of equipment.

Turkey LNG station

Royal Dutch Shell and Turcas Petrol have opened the first liquefied natural gas filling station in Turkey. The facility was started up under a long-term fuel stations agreement between the two companies. The new filling station is in the town of Sapanca on the Istanbul-Ankara highway, one of the busiest roads for freight trucking to and from southeast and central Europe. Turcas Petrol and Shell have had a joint venture accord since 2005 for the development and distribution of fuel products and lubricants in Turkey.

Qatar honors veteran

Qatar Petroleum hosted a farewell in honour of Issa Shahin Al-Ghanim who joined Qatar Petroleum's Corporate Planning Department in 1990 before the first LNG Train came on stream at Ras Laffan seven years later in 1997. Al-Ghanim became the director of the department in 1993, after which he was appointed as director of Strategic Planning and Policy in 2009.

Norway's gas operator Gassco has transported less to EU

LNG Journal editor

Gassco, the Norwegian natural gas pipeline operator and one of the main competitors to LNG, transported 106.99 billion cubic metres of gas through the pipeline systems from Norway to Europe and the UK in 2019, less than in the previous year.

The Norwegian natural gas supplies were the equivalent to 79 million tonnes of LNG, just above the volume of LNG shipped in 2019 by Australia, the world's No.1 exporter after overtaking Qatar.

Norwegian pipeline operator is exporter along with the Equinor-operated Hammerfest LNG plant

Decline

"Despite a small decline from 114.2 Bcm in 2018, the year ranked as one of the best ever for gas deliveries from the Norwegian Continental Shelf (NCS)," said Gassco.

The Norwegian deliveries compare favourably in terms of energy security with pipeline volumes shipped to the European Union by Russia's Gazprom.

The Russian company's pipeline gas exports to European countries and Turkey reached almost 202 Bcm in 2018, according to the last available official figures.

"Even in a year with a big rise in European imports of LNG, Norway's gas deliveries were well above the average for the past decade," said Frode Leversund, Chief Executive of Gassco.

The operator noted that stable Norwegian pipeline volumes were transported to Europe even as extensive maintenance work on the NCS took place.

"The availability for delivery of gas to the transport system in 2019 was more than 99 percent," added Leversund.

"That's a solid result, and demonstrates good interaction from field to delivery points in Europe," stated the CEO.

Gassco said that in addition to gas, deliveries of natural gas iquids (NGL) and condensate from the process plants at Karsto, Kollsnes (via Vestprosess) and Nyhamna totalled 10.1 million tonnes in 2019.

Gazoduq completes open season for LNG-linked pipe

Gazoduq Inc., the Québec natural gas pipeline developer, has completed the solicitation process for non-binding expressions of interest for transportation services on its proposed 780-kilometre underground natural gas line leading to the GNL Québec liquefaction and export plant.

The line will run from the northeast of the Canadian province of Ontario to Saguenay in Québec where the GNL Québec export project is planned.

Non-binding requests for service were accepted from December 4, 2019, until 5pm Eastern time on January 6.

"Gazoduq is pleased to announce the successful conclusion of its non-binding open season on January 6," said the company.

Gazoduq will now move to the next phase of its project development, which will include submitting comprehensive applications for the necessary regulatory approvals, completion of binding commercial agreements with shippers, and ongoing consultations with Indigenous groups and stakeholders.

"The completion of the non-binding open season represents another important milestone in the advancement of our project," stated Louis Bergeron, President of Gazoduq.

"We look forward to continuing our consultations with Indigenous and local communities to help us develop this exciting project that will benefit the environment and the economy," added Bergeron.

"The Gazoduq project represents an investment of approximately $5 billion, and will generate significant economic spinoffs for Quebec, Ontario and Canada as well as contribute to the reduction of GHG emissions on a global scale," stated the Bergeron.

Gazoduq and GNL Québec projects will transport feed-gas from Western Canada and export it as LNG from Saguenay, a town located about 200 miles north of Quebec City on a tributary leading to the St Lawrence River.

LNG equipment and gas supply firm Air Products makes its largest US investment on Gulf Coast

LNG Journal editor

US LNG and industrial gases company Air Products said it had made its largest investment in the United States amounting to $500 million following other recent contract wins for projects in China and Saudi Arabia.

The Allentown, Pennsylvania-based company said the investment comes from winning a long-term onsite business model supply agreement for a project with Gulf Coast Ammonia (GCA) in Texas City, Texas.

Pennsylvania-based company is led by Seifi Ghasemi, Chairman and CEO with US and global expansion plan

Build and own

Air Products will build, own and operate (BOO) its largest-ever steam methane reformer (SMR) to produce hydrogen which will be connected to and extend, to around 700 miles, its existing and the world's-largest hydrogen pipeline system on the Gulf Coast.

It will own and operate an air separation unit (ASU) to supply nitrogen and will own and operate a steam turbine generator to supply power and other utilities to GCA's new world-scale ammonia production plant.

"This is an exciting project that we are very proud to have won," said Seifi Ghasemi, Chairman, President and Chief Executive.

"When all facets of this project are combined, it sets a new high for Air Products' investment - $500M - for one project in the US," added Ghasemi.

"This project will showcase Air Products' core strengths and capabilities supplying hydrogen from an SMR and nitrogen from an ASU, and leverages our core industrial gas strengths in many ways," stated the CEO.

Air Products conducts its industrial gases business alongside its provision of LNG equipment products such as the main cryogenic heat exchangers for plants and its proprietary propane pre-cooled mixed refrigerant liquefaction process.

Most of the worldwide LNG production comes from Air Products technology and the company provides key equipment for the natural gas liquefaction process for large export plants, small and mid-sized plants and floating LNG facilities.

Air Products has also signed preliminary accords to take part in industrial gases project development with the Saudi Arabian organization established in the Kingdom for the advancement of the Jubail and Yanbu economic areas.

The company is also involves in Chinese projects such as the Lu'An gasification project.

Ghasemi said that the US project will feature the largest SMR the company has ever built and will operate, the largest per-day amount of hydrogen supplied to a single customer under one contract, and it increases the size and supply capacity of Air Products' extensive hydrogen pipeline system on the Gulf Coast.

"The project will meet or exceed all industry standards for the safe production of ammonia, applies world-class technology in production and storage, and will be the largest single train ammonia synthesis loop in the world when completed," said Ken Koye, President and CEO of GCA.

"We look forward to working with Air Products as a reliable, long-term supplier of high-quality feedstock to our facility," added Koye.

"GCA is investing $600M in Texas City and creating new employment opportunities for Galveston County residents in the Texas City Reinvestment Zone," stated Koye.

The pipeline segment of the project, which will transport hydrogen to Texas City, is targeted for onstream in the second half of 2021, with the remainder of the facilities expected to be in commercial operation in early 2023.

The approximately 175 million standard cubic feet per day SMR will include the addition of over 30 miles of hydrogen pipeline from Texas City to Baytown, to be connected to Air Products' Gulf Coast Pipeline system.

The GCA project will use approximately 270 million standard cubic feet (scf) per day of hydrogen from the SMR and Gulf Coast Pipeline.

GCA's ammonia facility, which will produce approximately 3,600 metric tons per day of ammonia, will also benefit from Air Products' supply of around 90 million scf per day of nitrogen from a new ASU to be built and operated at the Texas City site on property leased from Eastman.

The company said that In connecting Air Products' new SMR facility to its existing Gulf Coast Pipeline, hydrogen customers will see a value-add in product supply reliability.

"With the investment to supply the GCA project, the approximately 700-mile hydrogen pipeline system will span from Texas City through the Houston Ship Channel in Texas to New Orleans, Louisiana, and supply customers with over 1.7 billion feet of hydrogen per day from 24 hydrogen production facilities," said Air Products.

Japan spot prices were almost $4 less year on year

Japanese spot liquefied natural gas cargoes delivered in December cost almost $4 per million British thermal units less than the price in the same month of the previous year as Northern Hemisphere winter season supplies remained abundant.

Spot cargoes delivered to Japan in December 2019 cost $6.70 per MMBtu compared with $10.60 per MMBtu in December 2018, which was $3.90 per MMBtu less, while the delivered price in the previous month of November 2019 was $5.50 per MMBtu, giving a rise of $1.20 per MMBtu month-to-month.

Prices for cargoes contracted in December 2019 averaged $6.40 per MMBtu versus $9.20 per MMBtu in the same month the previous year.

The monthly 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 LNG imports by Japan declined in November 2019 (the last official numbers available) and cost around 18 percent less than a year ago.

The volume of LNG cargoes delivered to Japan in November fell by 1.2 percent to 6.27 million tonnes compared with 6.34MT in November 2018, according to preliminary figures from the Ministry of Finance. This volume of deliveries amounts to around 90 cargoes.

Imports in October had fallen by 3.6 percent to 6.30MT compared with 6.53MT in October 2018.

According to LNG Journal estimates, Japan is on track to import around 77.80MT for all of 2019, if the official figure for volumes received in December 2019 are in line with last year. ■

LNG importer CNOOC expects 10 new projects to come on stream

LNG Journal editor

China National Offshore Oil Corp., the owner of nine Chinese LNG import terminals and multiple oil and gas stakes, has outlined its business strategy and development plan for 2020 with 10 new projects scheduled to come on stream.

The company's Hong Kong-listed unit CNOOC Ltd said its targeted net production for 2020 was 520 million to 530 million barrels of oil equivalent (BOE), of which, production from China and overseas accounts for approximately 64 percent and 36 percent respectively.

CNOOC group combines E&P operations as well as the growing LNG imports around the Chinese coastline

Output

CNOOC said its final net production for 2019 is expected to be approximately 503 million Boe.

For 2021 and 2022 the output forecasts are for around 555 million Boe and 590 million Boe.

CNOOC's future project stakes include in the Arctic II LNG project led by Novatek of Russia.

The Chinese major also has LNG volumes from facilities such as BP's the Tangguh plant in Indonesia and the Woodside-operated North West Shelf plant in Western Australia as well as the Shell-operated Queensland Curtis plant near Gladstone.

"In 2020, the company will steadily increase its oil and gas reserves and production, pursue profitable reserves and production, lay a solid foundation for high-quality development through technology innovations and management enhancement, and create excellent returns for our shareholders," stated Xu Keqiang, CNOOC Chief Executive President.

In 2020, CNOOC said 10 new projects were expected to come on stream in China, namely the Penglai 19-3 oil field block 4 adjustment-Penglai19-9 oil field phase II, Qinhuangdao 33-1 South oil field phase I and the Bozhong 19-6 natural gas field pilot area development project.

In addition progress is being made on the Luda 16-3/21-2 joint development project, the Nanbao 35-2 oil filed S1 area, the Jinzhou 25-1 oil field 6/11 area, the Liuhua 29-1 gas field development project and the Liuhua 16-2 oil field/20-2 oil field joint venture offshore China.

Ventures also include the Liza oil field phase 1 in Guyana, in Central America, and the Buzzard oil field phase II in the UK.

The company noted that the Liza oil field phase 1 in Guyana had already come on stream ahead of schedule. ■

China imported record 61MT of LNG, led by Australian cargoes

China likely imported a record 61 million tonnes of LNG during 2019, a 13.5 percent increase on the previous year and consolidating its position as the No. 2 importer after Japan and ahead of South Korea.

China received shipments amounting to 7.19MT of LNG in December, according to shipping data, a rise on the November total of 5.39MT.

During the first 11 months of 2019, China had imported a total of 53.85MT, which was 13.3 percent more than the 47.52MT received in the same period of 2018.

The 11-month total meant Chinese LNG deliveries had already marginally passed the 2018 figure.

Chinese LNG imports increased by 38 percent in 2018 to 53.81MT compared with just over 39MT in 2017.

The nation's General Administration of Customs has not yet confirmed the December cargo numbers.

November LNG deliveries came to 5.39MT, 10 percent lower than the 5.99MT delivered in November 2018.

Chinese LNG imports have come during December from Australia, Qatar and Asian nations such as Malaysia, Indonesia and Papua New Guinea in Oceania.

China receives cargoes at its more than 20 import facilities spread around the coast.

In addition to its 19 onshore terminals, a chartered floating storage and regasification unit at Tianjin port in northeast China and an adjacent onshore terminal both serve as suppliers of higher winter gas supplies to Beijing.

The cargoes delivered to China last month came from a wide range of countries, apart from the US because of the trade dispute.

China National Petroleum Corp. also started receiving pipeline natural gas imports from the Russian "Power of Siberia" project during December. ■

Australian LNG plant operator Woodside outlines quarterly successes and future project plans

LNG Journal editor

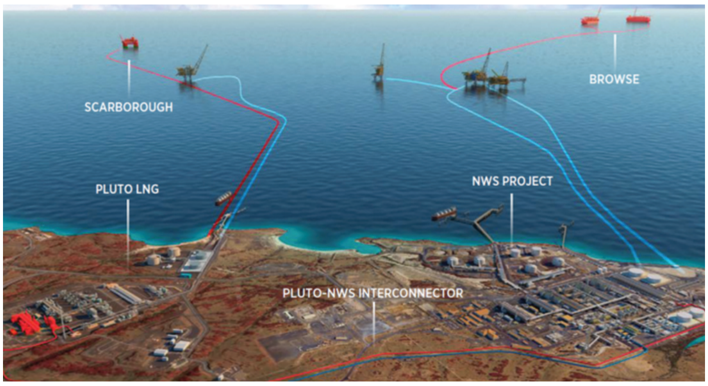
Australian LNG plant operator Woodside Petroleum said the Greater Enfield offshore venture underpinned a solid result in a quarter in which significant progress was achieved on the Perth-based company's growth projects.

"Production and sales revenue increased compared with the third quarter of 2019 due to the strong performance from Greater Enfield," said Chief Executive Peter Coleman.

Operations

"Subsequent to the period, we took unconditional FID for the Sangomar Field Development Phase 1 offshore Senegal, delivering on our Horizon II growth strategy," explained the CEO.

"This is a significant milestone and the joint venture has commenced the execute phase of the development, expected to produce first oil in early 2023," he added.



Scarborough gas field resources off Western Australia are now more than initially estimated several years ago

Coleman said the company also moved forward with the Scarborough gas field development off Western Australia, with a 52 percent increase in the estimated gross contingent resource and a heads of agreement with Anglo-Australian commodities company BHP.

This included a tolling price for the processing of Scarborough gas through Pluto Train 2 and the existing Pluto facilities.

"For Browse, Woodside is ready to enter front-end engineering and design subject to finalising the gas processing agreement and we are progressing key approvals, including the release of the environmental impact statement and environmental review documents for public comment," stated Coleman.

The company additionally increased the estimated gross contingent resource dry gas volume for the Scarborough field to 11.1 trillion cubic feet.

During the quarter, Woodside agreed a tolling price with the Scarborough joint venture for processing Scarborough gas through Pluto LNG.

The company also achieved a final investment decision on the pipeline component of the Pluto-Karratha Gas Plant Interconnector.

Woodside said it had also achieved start-up from a Pluto LNG infill well and on the Julimar-Brunello phase two development.

Subsequent to the fourth-quarter period, Woodside said the Sangomar Field Development offshore Senegal in West Africa, was approved by the government of Senegal. ■

LNG operator Woodside given go-ahead for Senegal oil project alongside floating FLNG

Woodside said the Government of Senegal had approved the Sangomar offshore joint venture development plan, one of the several major projects going ahead in the West African Atlantic Margin, including floating LNG production.

Senegal also granted Woodside and its partners formal field exploitation authorisation for the Sangomar block and the fields of what is called the Rufisque Offshore, Sangomar Offshore and Sangomar Deep Offshore (RSSD) joint venture.

"Commencement of the execute phase of the Sangomar Field Development Phase 1 is subject to final execution of the Host Government Agreement with the Government of Senegal and the approval and award of key contracts," said Woodside.

Woodside, which acquired the Senegal blocks from ConocoPhillips in 2016, is a leading Asia-Pacific LNG player and operates the North West Shelf LNG export plant in Western Australia, along with the nearby Pluto LNG facility.

The Woodside RSSD project is in the same waters as the Grand Tortue-Ahmeyim fields being developed by BP of the UK and Kosmos Energy of US for floating LNG projects.

> **"Doris Engineering... was awarded a two-year contract a year ago to advise the Senegalese Ministry of Petroleum on offshore oil and gas projects."**

Woodside's RSSD blocks are within the Senegalese portion of the Mauritania-Senegal Basin.

The RSSD joint venture comprises Woodside, Capricorn Senegal Ltd (a subsidiary of Cairn Energy Plc), FAR Ltd of Australia and the Senegal National Oil Company (Petrosen).

The Sangomar Development concept is a stand-alone floating production storage and offloading (FPSO) facility with 23 subsea wells and supporting subsea infrastructure.

The FPSO, expected to have a production capacity of 100,000 barrels per day, will process the oil before it is exported to market via tankers. First oil is targeted in early 2023.

Woodside said the FPSO would allow for the integration of potential future development phases, including gas export to shore and future subsea tie-backs.

Doris Engineering, the French energy contracts company with global operations, was awarded a two-year contract a year ago to advise the Senegalese Ministry of Petroleum on offshore oil and gas projects.

The Doris contract consists of reviewing plans focusing on the optimization and the robustness of proposals to develop the Tortue-Ahmeyim fields for the BP-Kosmos FLNG projects, as well as Woodside's RSSD blocks.

Doris is also taking the opportunity to train Senegalese engineers on the methodology and operating standards required for deepwater energy projects. ■