

LNG Unlimited

LNG JOURNAL PUBLICATION

15 October 2019

ExxonMobil-led Mozambique plan moves forward with \$11Bln EPC

JGC Corp along with TechnipFMC and Fluor have won lucrative contract
LNG Journal editor

ExxonMobil said it planned to invest more than \$500 million in the initial construction phase of its liquefied natural gas project in Mozambique as part of the Area 4 resources development with its partners including Italian energy company Eni and China National Petroleum Corp.

"The Area 4 partners will advance midstream and upstream area project activities of more than \$500M as initial investments," said Exxon's head of power and gas marketing, Peter Clarke at a ceremony in Mozambique's capital Maputo to celebrate the southeast African nation's LNG advances.

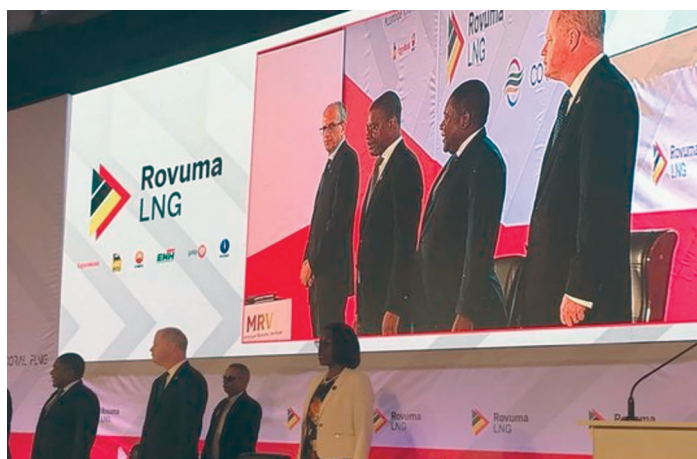
Consortium

At the same time, Japanese energy engineering firm JGC Corp. said it was awarded an engineering, procurement and construction contract along with EPC consortium partners, the Franco-US company TechnipFMC and Fluor Corp. of the US.

JGC said the EPC contract award in Mozambique was worth a total of around \$11.2 billion for all the companies involved.

"LNG production at the complex is expected to commence in 2025," said JGC.

"Mozambique Rovuma Venture selected the JGC, Fluor and TechnipFMC based on the consortium's demonstrated capabilities in health and safety management, competitive financial strength, technical design, execution plan-



Rovuma project event held in Mozambican capital Maputo

ning, the contract price and schedule," said JGC.

"The JFT consortium was established to execute the project, leveraging JGC and TechnipFMC's extensive experience of LNG projects worldwide, as well as Fluor's expertise accumulated from its outstanding track record of mega-sized projects performed globally," added the Japanese company.

ExxonMobil's Clarke said the EPC contract covers the construction of two natural gas production Trains with a total capacity of 15.2 million tonnes per annum as well as associated onshore facilities.

Nello Uccelletti, President of the Onshore-Offshore division at TechnipFMC, said he was delighted by the EPC contract.

"We are extremely honored to have been awarded by MRV this new prestigious LNG project along with our long-time partners, JGC and Fluor. This award confirms the market recognition of TechnipFMC's expertise and track record in gas monetization and, in particular, in the LNG industry," stated Uccelletti.

Clarke explained that his announcement in Maputo fell short of a final investment decision by ExxonMobil and partners, though

this was scheduled to be finalized in 2020.

The LNG project celebrations were ahead of Mozambique's presidential elections set to take place on October 15 and the progress of LNG investments is expected to boost support for President Filipe Nyusi.

Exxon's Rovuma Basin stake, jointly held with Italian firm Eni, will produce LNG from three feed-gas reservoirs located in the Area 4 block offshore Mozambique's northern coast.

ExxonMobil is the lead company for the Mamba gas fields and LNG project development and costs are estimated at around \$30 billion. Production is scheduled for start-up in 2024.

Area 4's consortium is formed by Mozambique Rovuma Ventures, comprising ExxonMobil with 25 percent, Eni with 25 percent and China's CNPC, also known as PetroChina, with 20 percent.

The remaining 30 percent of shares in that licence are held in parcels of 10 percent by South Korean utility and energy company Korea Gas Corp., Galp Energia of Portugal and Mozambique's ENH.

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International Seaways of US sells joint venture stake in four Qatar Q-Flex carriers to Nakilat

LNG Journal editor

International Seaways, a leading US tanker company providing vessels mostly for the crude oil and petroleum products markets, has ended its LNG presence by selling its stake in four Q-Flex LNG carriers held in a joint venture with Qatar Gas Transport Co.

The US company, listed on the New York Stock Exchange and whose headquarters are in New York City, sold its 49.9 percent ownership interest in its joint venture with QGTC, also known as Nakilat, back to the Qataris for \$123 million in cash.

Partnership

"Nakilat and INSW worked in partnership to conclude this transaction, demonstrating the high level of teamwork the companies have shared for over 15 years," said Lois K. Zabrocky, President and Chief Executive of International Seaways.

Nakilat's fleet is the largest in the world, comprising 69 LNG vessels and several other ships,



Firms sold stake in 'Al Gattara' and three other ships

including liquified petroleum gas carriers.

"Nakilat continues to be a very valued INSW partner and remains an important part of our ongoing commitment to our business relationships in Qatar," added Zabrocky.

"By monetizing our interest in the joint venture, we unlocked significant value for shareholders and further strengthened our balance sheet," he stated.

Jeff Pribor, the INSW Chief Financial Officer, said the "important transaction" positions INSW to further its capital allocation strategy.

"Following our success growing

and renewing our fleet, deleveraging and returning cash to shareholders remain our top priorities," added Pribor.

INSW owns and operates a fleet of more than 40 vessels, including 13 very large crude carriers, two Suezmax vessels, six Aframax ships, 12 Panamax vessels and seven medium-range tankers.

Through other joint ventures, the US shipowner also has interests in two floating storage and offloading service vessels.

"This brings the total number of vessels wholly-owned by Nakilat from 25 to 29 LNG vessels, out of its overall fleet of 74 LNG and liq-

uefied petroleum gas (LPG) vessels," said the Qatari company.

With a cargo carrying capacity of 217,000 cubic metres each, the four LNG carriers, "Tembek", "Al Hamla", "Al Gattara" and "Al Gharrafa". have been operated and managed in-house by Nakilat's ship management arm since 2014.

Nakilat Chief Executive Abdullah Al Sulaiti said the 100 percent ownership acquisition of these four vessels comes as part of Nakilat's long-term strategy to capitalize on such strategic investment opportunities.

"These vessels are chartered to our long-standing partner Qatar-gas, the world's largest exporter of clean energy," added Al Sulaiti.

In addition to LNG carriers and tankers, Nakilat interests include the ship repair and construction facilities at Erhama Bin Jaber Al Jalahma Shipyard in Ras Laffan as part of joint ventures with Nakilat-Keppel Offshore and Marine (N-KOM) and Nakilat Damen Shipyards Qatar (NDSQ).

Novatek mulls Norway or Russian trans-shipment to ease impact of Iran sanctions on Yamal shipping

Novatek, the Russian operator of the Yamal liquefied natural gas plant at Sabetta in northern Siberia, said it was in talks to trans-ship its cargoes from Norway or the Russian port of Murmansk because it is unsure of the impact of US sanctions on the Chinese COSCO tankers it uses or US-listed shipping line Teekay LNG.

Under the US sanctions on Iran over its nuclear policies, the US Department of the Treasury's Office of Foreign Assets Control (OFAC) has included COSCO Shipping Tanker (Dalian) Co. and COSCO Shipping Tanker (Dalian) in the Iran-related Specially Designated Nationals (SDN) list, as well as Teekay LNG Partners.

Teekay LNG, through its affili-

ates and joint ventures, owns four Arc7 LNG tankers conducting shipping services for the Yamal export plant and said its shipping joint venture in Russia, Yamal LNG, had been "blocked" by the US Treasury because its partner China LNG Shipping (Holding) is 50 percent owned by COSCO Dalian.

The Yamal venture owns four operational and two newly built Arc7-class LNG tankers capable of navigating through Arctic ice, making them key to transporting LNG from Novatek's Yamal plant.

"We have nothing to do with the sanctions, but we don't know if the sanctions may affect the ships owned by the (Yamal LNG shipping) joint venture," said Novatek Chief Financial Officer Mark Gyetvay.

"We have responsibilities before our customers to deliver LNG so we need to protect ourselves," added Gyetvay at an energy conference in London.

The Norwegian privately-held logistical and ship management company, Tschudi Shipping, had previously handled the reloading operations for Russian LNG off Norway after it signed an agreement with Novatek in September 2018.

During 2018 and early 2019 Novatek and its partners used an area offshore the Norwegian port of Honningsvåg as a trans-shipment point for several million tonnes of LNG transferred from ice-class carriers to conventional vessels and shipped to European terminals and beyond.

The last LNG tanker left Honningsvåg at the start of July 2019 and when the Northern Sea Route is closed at the start of this winter season, a temporary Russian reloading site was already expected to open near Murmansk before a permanent station is built there.

Gyetvay said the talks with the Norwegians and the port of Murmansk were ongoing and said that the decision on using a trans-shipment hub this winter would be made soon.

Having a trans-shipment point in Norway helped Novatek reduce the time ice-class vessels took to make the journey from Yamal LNG to a place where the cargo could be transferred to a conventional vessel.

Shale gas in Marcellus and Utica still substantial

The American shale basins of Marcellus and Utica that underpin rising US LNG exports and domestic gas use contain huge volumes of undiscovered technically recoverable continuous resources of natural gas.

The US Geological Survey, a scientific agency of the government and the only provider of publicly available estimates of undiscovered technically recoverable oil and gas resources in onshore lands and offshore state waters, said in a new report that shale formations in the Appalachian Basin contain an estimated 214 trillion cubic feet of undiscovered gas.

Analysts note that the amount of shale gas mentioned would be enough to support over a dozen additional large LNG projects if the resources were ever produced. About 1 Tcf of proven gas reserves is required to produce 1 million tonnes per annum of LNG for a 20-year period.

That's as "significant amounts of natural gas" are already known or have been produced and used from the Marcellus and Utica Shales since the previous USGS assessments.

"The USGS assessments are for remaining resources and exclude known and produced oil and gas," explained the report.

The natural gas in these formations is classified as continuous, or contiguous, because it is spread throughout the assessed rock layers instead of being concentrated in discrete accumulations.

Production techniques like directional drilling and hydraulic fracturing are required to produce these shale-gas and oil resources.

Shell changes Australian executive team with QCLNG chief taking over

LNG Journal editor

Royal Dutch Shell has decided to make changes to its executive team in Australia as it faces investment decisions in the months ahead on multibillion-dollar natural gas projects.

Among the moves, Shell Australia chairman Zoe Yujnovich is set to be transferred to the Anglo-Dutch company's headquarters in Netherlands capital, The Hague.

Central role

Yujnovich has said that Australia was central to Shell's LNG business and for its plans to move into cleaner and transitional energy.

Her role in Australia will be filled by Tony Nunan, who currently heads up the oil and gas giant's operations in eastern Australia, including the Queensland Curtis LNG export plant.

Shell said Yujnovich will take up a key role from January 2020 in shaping future policy in conventional oil and gas across 18 countries, excluding Australia.

She has led Shell Australia for



CEO Ben van Beurden with Shell Australia's Yujnovich

the past three years and in that time the company commissioned the US\$10billion Prelude floating LNG project offshore northwest Australia.

The executive changes come ahead of Shell deciding the future of the Arrow Energy's Surat Basin coal-seam gas project and its commitment to backing Woodside Petroleum in ventures boosting LNG and natural gas production offshore and onshore Western Australia.

Shell also recently acquired an Australian power company, the business electricity retailer ERM Power, in a transaction worth US\$415 mil-

lion that provided evidence it was serious about launching into the broader energy retailing market in Eastern Australia.

Yujnovich said Shell's business continued to evolve with a focus on cleaner energy.

"Around one-quarter of Shell's global capital is invested in Australia, and it is integral to our global strategy to lead in LNG and move into power to provide more and cleaner energy as the system transitions from molecules to electrons in the decades ahead," she said.

Equinor hails Johan Sverdrup start-up as boost for Europe

Equinor, one of the main pipeline natural gas suppliers to Europe and operator of the Norwegian oil and gas fields and the Hammerfest LNG export plant, said it was proud to bring on stream the Johan Sverdrup oil and gas project with its long-term energy and financial benefits.

The start-up of the Johan Sverdrup was described by Equinor as a momentous occasion.

The Johan Sverdrup field is named after the first Prime Minister of Norway after the introduction of a parliamentary and democratic political system and who served from 1884 to 1889.

The Johan Sverdrup venture pipelines will transport around 6 million cubic metres of natural gas

per day to the Norwegian Karsto gas terminal, while the oil export pipeline will transport 660,000 barrels of oil per day to the Mongstad terminal and refinery.

Pipeline natural gas exports from Norway and from Gazprom in Russia to Europe provide the largest competition to LNG shipments.

Equinor said that at peak production, the Johan Sverdrup field would account for around one third of all oil production in Norway and deliver very valuable barrels with record low carbon-dioxide (CO₂) emissions.

Johan Sverdrup is expected to generate income from production of more than 1,430 billion crowns (\$157 billion), of which about 900 billion crowns (\$100Bln) will go to

the Norwegian state to support society's needs and aspirations.

"Johan Sverdrup coming on stream is a momentous occasion for Equinor, our partners and suppliers," said Eldar Saetre, President and Chief Executive of Equinor.

"At peak, this field will account for around one third of all oil production in Norway and deliver very valuable barrels with record low emissions," stated the CEO.

Johan Sverdrup has expected recoverable reserves of 2.7 billion barrels of oil equivalent and is one of the cleanest oil and gas fields as it is powered with electricity from shore and the field has record-low CO₂ emissions of well-below 1 kilo per barrel.

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NEWS NUDGES

PNG expansion discussions

Oil Search, the Papua New Guinea-based energy and LNG company, said efforts were now focused on the P'nyang Gas Agreement, with discussions between the PNG government and ExxonMobil, the operator of P'nyang, now taking place to clear the way for a doubling of LNG production to almost 20 million tonnes per annum.

Petronas in Korea deal

Petronas, the Malaysian state-backed energy company and LNG supplier, said it signed a Sale and Purchase Agreement (SPA) with Korea Midland Power, the South Korean electricity generating company. The accord is for 240,000 tonnes per annum of LNG for an initial term of five years. Korea Midland is based in Boryeong, the port on the Yellow Sea coast where the nation's newest of its six LNG import terminals is located.

NYC shipping forum today

Senior executives from leading LNG, oil and product tanker shipping companies will today discuss the trends, developments and outlook of the global commodities and shipping markets at the Annual New York Maritime Forum at The Metropolitan Club in New York City. Executives from 34 shipping and maritime companies will attend the event held in cooperation with the New York Stock Exchange, the Nasdaq global exchange, New York City Economic Development Corp. and the Port Authority of New York and New Jersey.

US regulator told by stakeholders that Alaska LNG will be very beneficial for the state and US

LNG Journal editor

The Alaska Gasline Development Corporation (AGDC), owner of the proposed Alaska LNG project, has started replying to regulatory questions on environmental mitigation measures as its main partner in the venture, ExxonMobil Corp., has sent a supporting letter.

The Federal Energy Regulatory Commission issued the draft environmental impact statement on the Alaska LNG project in July 2019 and concluded that it would have significant impacts on the state offset by many economic benefits.

Timeline

The project was launched nine years ago and LNG would be produced and exported by 2025 after engineering, construction and production costs estimated at around \$43 billion.

The FERC conclusions were that the venture's significant environmental impacts would also bring an economic boost from export revenues in commercializing the natural gas resources of Alaska's North Slope. The feed-gas will be provided by ExxonMobil and UK major BP.

The AGDC filed responses on October 3 to some questions raised by the mitigation measures, numbering about 80 issues.

Alaska's project would comprise several pipelines, including a 807-mile main line of 42-inches in diameter and with associated above-ground facilities.

These include eight compressor stations and a liquefaction facility with output of 20 million tonnes per annum at Nikiski on the eastern shore of Cook Inlet on



The Point Thomson energy facilities in Alaska's North Slope

the Kenai Peninsula. The main pipeline would deliver peak capacity of 3.9 billion standard cubic feet per day of natural gas from ExxonMobil and BP resources.

In its letter to the FERC supporting the Alaska LNG project, ExxonMobil said it was backed up the Alaska LNG project in respect of the Draft Environmental Impact Statement (DEIS).

"The DEIS represents a significant milestone for the AKLNG Project review and permitting," said ExxonMobil.

"Completion of a Final EIS and agency approval of the AKLNG Project will in turn comprise an important step toward realizing access to Alaska's vast but as yet untapped North Slope natural gas resources," added the US major.

ExxonMobil noted that its history in Alaska went back nearly 100 years and its leasing of oil and gas resources at Prudhoe Bay and Point Thomson began soon after Statehood more than 50 years ago.

"ExxonMobil was instrumental in the discovery and development of Prudhoe Bay, which remains a significant oil producing field and an as yet unrealized major source

of natural gas," said ExxonMobil in its FERC filing.

Resources

"ExxonMobil discovered the Point Thomson field and is the operator of the Point Thomson Unit which alone contains an estimated 8 trillion cubic feet of natural gas, nearly 25 percent of the currently available supply on the North Slope," it added.

ExxonMobil said it "fully appreciates and supports" the role of the AKLNG project in potentially bringing stranded North Slope natural gas to market as LNG.

"Just as Alaska oil development brought economic prosperity to Alaskans, modernized infrastructure and improved healthcare, education, sanitary living conditions, transportation, waste management and access to power and emergency services, the commercialization of this gas could bring multiple levels of benefits to Alaska and the United States," concluded the ExxonMobil letter.

The letter was part of the FERC comment period which started in July 2019 and which formally ended on October 3.

“Completion of a Final EIS and agency approval of the AKLNG Project will in turn comprise an important step toward realizing access to Alaska's vast but as yet untapped North Slope natural gas resources”

- ExxonMobil



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Optimizing the Fire & Gas System Lifecycle

Integrated approach helps LNG companies improve safety and protect investments

Throughout industrial operations, there is a focus on the performance of Fire & Gas (F&G) systems. These systems continuously monitor for abnormal situations such as a fire or toxic gas release, and provide early warning and mitigation actions to prevent escalation of the incident and protect the plant, personnel, assets, and the environment.

Today, it is more important than ever for LNG companies to leverage their investments in F&G technology to achieve their most critical objectives: improve overall safety, eliminate unplanned downtime, mitigate the consequences of incidents, ensure regulatory compliance, and increase profits.

Background

The LNG industry is challenging—and is becoming more so every day. Global gas demand is surging, meaning operating companies must develop new resources with utmost efficiency and safety.

The specific challenges faced by LNG companies include:

- Startup operations on schedule and within the budget
- Increase uptime by maximizing asset availability
- Reduce operating and maintenance costs while improving productivity
- Minimize risks and avoid financial losses due to incidents
- Sustain high levels of operational performance
- Maintain benefits throughout the asset lifecycle
- Quick Return Of Investment (ROI)

LNG operations are under pressure to minimize the impact of potential hazards and deal with complex fire & gas codes and local regulations. They may also heed the IEC 61511 standard (ANSI/ISA S84.00.07 in the U.S.), which is intended to protect industrial plant operations.

Role of F&G systems

An Integrated Control and Safety System (ICSS), used to control LNG facilities, is a combination of the Basic Process Control System (BPCS) and Safety Instrumented System (SIS) under a single architecture.

The SIS is primarily applied to prevent hazardous events from occurring (Prevention layer) and, if necessary, mitigate the consequences of such an event (Mitigation layer). The motive for this distinction is due to the fact that a BPCS does not necessarily contribute the risk reduction and sometimes

might even pose a potential risk itself.

Experience has shown that LNG operators can improve plant safety and mitigate risk by employing the latest fire & gas technology as part of their ICSS. Industrial F&G systems continuously monitor conditions within process plants and provide warnings of an abnormal situation before it becomes a significant threat.

Need for a holistic strategy

The safety of facilities, personnel, production processes, and the environment is a crucial concern for the LNG industry. Faced with this reality, operating companies are seeking to ensure the lowest risk and highest value protection from their F&G systems by integrating these assets into the overall control system.

With a non-integrated approach to fire & gas, each technology supplier has a different view of operating processes. There are multiple solution providers focused on their own sub-systems. This forces plant staff to assume the role of a system integrator—an approach that can be expensive and difficult to implement and manage.

Conversely, a holistic strategy for F&G is based on a unified technology solution providing a single view of operations. Systems are based on a common design philosophy and are integrated “out of the box” to enhance the safety of the plant. This strategy is cost-effective and easy to deploy and maintain.

Taking an integrated approach

A growing number of LNG companies are partnering with automation suppliers like Honeywell who take an integrated approach to fire & gas. Honeywell's F&G solution allows plants to run with the greatest possible operating efficiency, safety and security. Other benefits include, but are not limited to:

- Proven and advanced technology that improves employee productivity and reduces exposure to potential industrial hazards
- Maximum security at the plant level and protection at the personnel level
- Robust single point of contact to optimize plant operations and process management
- Proven reliability for continuous operations
- Increased safety and security

Honeywell's approach to F&G projects employs expert services starting with consultancy during Front End Engineering Design (FEED) and continuing through execution to long-term lifecycle support. During the FEED stage, for example, Honeywell provides services



assisting with Hazard and Operability Studies (HAZOP), risk assessments, Safety Integrity Level (SIL) verification and validation, and F&G detector coverage mapping and system availability. Other services address design engineering and implementation and commissioning based on a proven understanding of industrial safety, fire & gas, and global and local regulatory requirements.

As an automation industry leader, Honeywell delivers F&G solutions through its local organizations using global project management practices and recognized international engineering standards.

Honeywell helps to sustain the optimal performance of F&G systems through a comprehensive managed services program. With its outcome-based Assurance 360 services, the company takes responsibility for the total lifecycle of installed assets and utilizes a secure remote connection to add value through proactive/predictive maintenance of the customer's ICSS platform.

Benefits to LNG operators

Experience has shown that a holistic strategy for fire & gas enables LNG companies to avert safety incidents, minimize intervention and shutdowns, and recover more easily from incidents.

The specific benefits of integrated F&G solutions include:

- Standardized network design and selection of components; consistency in hardware and software requirements; and seamless integration of control, safety, F&G, and security assets
- Lower engineering costs using out-of-the-box solutions with common interfaces, standard engineering applications and tools, and effective project execution methodologies
- Streamlined pre-testing and site work with an integrated Factory Acceptance Test (FAT) and training of EPC contractors and plant personnel on deployed solutions
- Expedited system calibration, testing, commissioning, and installation with a single qualified technology partner and collaborative project team.

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<https://hwi.co/FireandGasSolution>.

UK major BP chooses upstream and LNG expert Bernard Looney to succeed Dudley as CEO

LNG Journal editor

UK major BP, one of the leading LNG producers with two current world-class LNG production projects in Alaska and Mauritania-Senegal and volumes booked from the US Gulf Coast and nations such as Mozambique confirmed that Chief Executive Bob Dudley was stepping down after a 40-year career with the UK major and nine years as CEO.

Dudley, 64, has decided to retire after delivery of the company's 2019 full-year results on 4 February 2020 and will leave on 31 March 2020.

Praised

He will be replaced by Bernard Looney, aged 49, currently chief executive of BP's Upstream Division.

BP Chairman Helge Lund, the former CEO of Norway's Equinor when it was known as Statoil, praised Dudley for his global influence on the industry.

"Bob has dedicated his whole career to the service of this industry. He was appointed chief executive at probably the most challenging time in BP's history," said Lund, referring to the Deepwater Horizon platform explosion



New BP CEO Bernard Looney, aged 49, is head of Upstream

offshore Louisiana on 20th of April 2010 in which 11 workers died.

During his tenure he led the company's recovery from the Deepwater Horizon accident and rebuilt BP as a stronger and safer operator amid huge payouts estimated at \$60 billion for an environmental clean-up and compensation.

Analysts said Looney was an excellent choice as the new CEO, given his solid background in exploration and production with lists of successes in the Caribbean, Egypt and Oman.

Looney is also seen as being

capable of making solid progress on BP's plans to operate floating LNG exports plants offshore West Africa and complete the large-scale onshore liquefaction plant in Alaska.

BP is the owner of an LNG carrier fleet and its supply portfolio and equity stakes also includes projects in Australia, Indonesia, Trinidad and elsewhere.

Chairman Lund said Looney was the ideal person to take the company through the energy transition with natural gas being a large part of this strategy for a clean-energy future.

"Bernard has all the right qualities to lead us through this transformational era. He has deep experience in the energy sector, has risen through the ranks of BP, and has consistently delivered strong safety, operational and financial performance," added Lund.

"He is an authentic, progressive leader, with a passion for purpose and people and a clear sense of what BP must do to thrive through the energy transition," stated Lund.

Dudley said he felt privileged to have served the company and to have worked in the industry for the past four decades.

"I have worked with so many committed people from all over the world - both inside and outside BP - and I am enormously proud of all the things we have achieved together to provide energy for the world," said Dudley.

"Bernard is a terrific choice to lead the company next. He knows BP and our industry as well as anyone but is creative and not bound by traditional ways of working. I have no doubt that he will thoughtfully lead BP through the transition to a low-carbon future," stated Dudley.



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Japanese spot cargo prices on decline

Japanese spot liquefied natural gas cargoes delivered in September cost \$5.20 per million British thermal units less than in the same month a year ago, though just \$0.60 less than in August 2019 amid an over-supplied market and tentative demand.

Delivered cargoes in September 2019 cost \$4.90 per MMBtu compared \$10.10 per MMBtu in September 2018 and the contracted price of shipments for September 2019 was \$5.40 per MMBtu versus \$10.70 per MMBtu in the same month of 2018.

Delivered cargoes in August 2019 had cost \$5.50 per MMBtu and shipments for Japan contracted in August 2019 cost an average of \$5.30 per MMBtu.

The North Sea Brent crude oil price that influences Japanese long-term contract prices has less of an impact on spot LNG cargoes, a market mainly governed by delivery windows, the price of volumes and available shipping.

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.

The Ministry emphasizes that "spot LNG" refers to fuel traded on a cargo-to-cargo basis and does not mean shipments under contracts on a short-term, medium-term or long-term basis.

The statistical accounting of the spot prices started in March 2014.

Overall Japanese LNG imports in August, dropped by around 20 percent because of the summer holiday, with even Australian and spot shipments falling while US and Russian LNG shipments grew.

MISC Berhad signs ExxonMobil for two 15-year newbuild ships

LNG Journal editor

MISC Berhad, the Malaysian shipping line with a liquefied natural gas carrier fleet of more than 30 vessels, said it had signed time charters for two newbuild LNG carriers with ExxonMobil Corp.

"Each of the LNG carriers will respectively serve the transportation needs of ExxonMobil's worldwide LNG portfolio on a 15-year charter contract," said MISC.

The two MISC carriers are being built at the South Korean Samsung Heavy Industries shipyard.

MISC said each vessel would have a capacity of 174,000 cubic metres and will feature the most modern XDF propulsion, a Mark III Flex Plus containment system and a full re-liquefaction facility for higher efficiency.

The LNG carriers are expected to be delivered in the first quarter of 2023.

"This is certainly a landmark moment for MISC, and we are proud to expand this strategic partnership with ExxonMobil, beginning with petroleum and now LNG," said MISC's President



The ExxonMobil and MISC signing ceremony in Houston

and Group Chief Executive Yee Yang Chien.

"With our broad spectrum of energy related maritime solutions and services, MISC is confident of our ability to serve the various needs of the global oil and gas industry," he added.

"We honour the trust and value the opportunity given for us to support ExxonMobil in ensuring safe, efficient and reliable transportation of LNG," stated Yee.

Alex Volkov, Vice President of Global LNG Marketing at ExxonMobil, said the US major was delighted with the new partnership.

"Our cooperation with MISC is

an integral part of ExxonMobil's commitment to provide flexible solutions in the open and dynamic LNG marketplace," explained Volkov.

ExxonMobil's LNG expansion projects include the Golden Pass export plant in Texas and the Mozambique LNG joint venture in southeast Africa.

During the signing of the agreements in Houston, Texas, MISC was represented by its Vice President of LNG Business, Zahid Osman, and ExxonMobil by its Vice President for Global Marine Commercial and Planning, Doug Grote.

Chinese Rudong terminal set to ramp-up deliveries soon

The Rudong liquefied natural gas import terminal in the eastern Jiangsu Province of China and with LNG links to Canada is undergoing repairs after an accident and is not expected to be fully operational again until mid-November.

Rudong is 55 percent-owned by Kunlun Energy, a Hong Kong-listed subsidiary of PetroChina.

The owner of the Woodfibre LNG export project being built at Squamish, north of Vancouver, Pacific Oil & Gas, holds the other 35 percent stake in the Chinese terminal. PO&G is a unit of the Royal Golden Eagle group, whose headquarters are in Singapore.

Kunlun, which operates the receiving terminal, has cut regasification send-out at Rudong since September 21 when, during a typhoon, a tanker reportedly collided with a bridge that connects the island where the terminal is located to the mainland.

Executives said that repairs to infrastructure near the terminal were now being carried out.

The facility received about 650,000 tonnes of LNG in August, which was more than 12 percent of China's overall LNG monthly imports.

LNG volumes delivered to Rudong fell by almost half to 360,000 tonnes in September after

the accident, according to maritime tracking data.

The terminal was completed in 2011 and has three storage tanks, each of around 170,000 cubic metres capacity.

The Rudong terminal near Nantong was visited in November 2016 by a Canadian trade delegation from British Columbia led by the then BC Premier Christy Clark who was seeking to broaden LNG ties with China.

PetroChina itself is an investor in the largest LNG export project moving forward in BC, the LNG Canada joint venture in Kitimat with 20 MTPA of initial output.

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FERC again delays environmental report on Jordan Cove LNG in state of Oregon

LNG Journal editor

The US Federal Energy Regulatory Commission has delayed completion of an environmental impact statement (EIS) for the Jordan Cove liquefied natural gas export facility and its affiliated Pacific Connector Pipeline planned for the northwest state of Oregon.

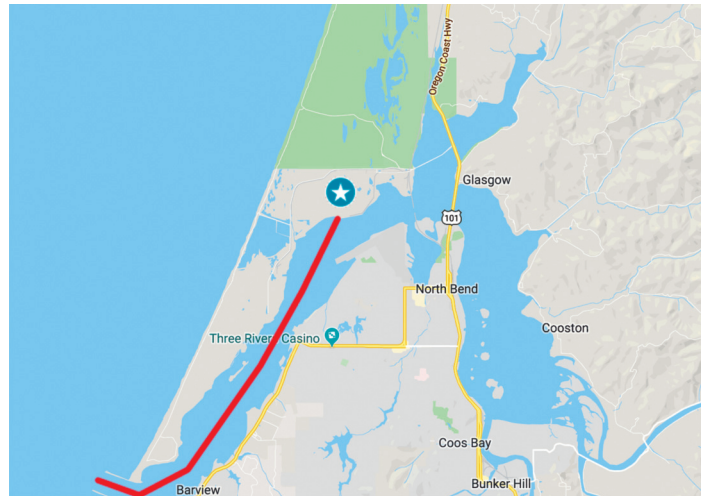
The Jordan Cove project is proposed by Pembina Pipeline Corp. of Canada for Coos Bay in Oregon.

Five mini-Trains

The plant would comprise five small-scale liquefaction Trains each with 1.5 million tonnes per annum of output for a total of 7.8 MTPA.

According to a notice issued in the Federal Register, the US Forest Service said it “only recently received critical information from the project proponent that is necessary for it to complete its land and resource management plan amendments” and requested additional time.

A notice of availability of the final EIS for Jordan Cove LNG would



Star marks Jordan Cove LNG site with shipping route

now be due on 15th November 2019 and a final order has been scheduled for 13th of February 2020.

The previous 2019 delay imposed on the Jordan Cove venture was in March and was blamed on the 35-day partial shutdown of the federal government at the start of the year.

The Jordan Cove venture's facilities would also include two full-containment LNG storage tanks with total capacity of 320,000

cubic metres, gas treating facilities, an export jetty and access to more than 25 billion cubic feet per day of gas supply from Western Canada and the US Rockies.

The FERC has already concluded in its draft EIS that constructing and operating the Jordan Cove would result in temporary, long-term and permanent impacts on the environment.

However, the regulator noted that many of these impacts would

not be significant or would be reduced to less than significant levels with the implementation of proposed and suggested mitigation measures.

The FERC did note that the project owner, Pembina Pipeline, would implement an “Erosion Control and Revegetation Plan”, “Wetland and Waterbody Construction and Mitigation Procedures” and “Upland Erosion Control, Revegetation, and Maintenance Plans” as well as other impact avoidance, minimization and mitigation measures.

As proposed, the LNG plant would be visited by about 120 LNG carriers per year and Pembina has confirmed that it had signed preliminary accords with Jera Co Inc. and Itochu Corp. of Japan for the supply of LNG.

The US Coast Guard has already issued a Letter of Recommendation indicating that the Coos Bay Federal Navigation Channel would be considered suitable for the LNG marine traffic associated with the project.

US natural gas production rises while nation's energy-related carbon emissions decline

Natural gas producing states like Texas are in advance of states like California on use of renewables while US natural gas production is rising again in 2019 and the nation's energy-related emissions of carbon-dioxide are on the decline in 2019 and 2020.

The US government's latest forecasts were positive for natural gas and other issues. They noted that average household expenditures for all major home heating fuels will fall this winter compared with last because of warmer weather while average annual dry natural gas production will jump 10 percent year-on-year to 91.6 billion cubic feet per day in 2019.

The US Energy Information

Administration made the forecasts in its winter fuels and short-term energy outlooks.

The energy outlook stated that the Henry Hub natural gas spot price averaged \$2.56 per million British thermal units (MMBtu) in September, up 34 cents per MMBtu from August, which was the first monthly price increase since March.

“EIA forecasts Henry Hub prices to average \$2.43 per MMBtu in the fourth quarter of 2019, a decrease of more than \$1 per MMBtu from the fourth quarter of 2018, subsequently increasing to an average of \$2.52 per MMBtu in 2020,” stated the report.

“US natural gas prices have fallen in 2019 because of strong

supply growth that has enabled natural gas inventories to build more than average during the April through October injection season,” it added.

The EIA report forecasts that natural gas storage levels will total 3,792 Bcf by the end of October, which is 2 percent above the five-year average and 17 percent above October 2018 levels.

The report also included details on coal production, gas-fired power, the use of renewables and US carbon emissions.

According to the outlook, US electric power sector generation from renewables other than hydropower - principally wind and solar - will grow from 414 billion kilowatthours (kWh) in 2019 to

471 billion kWh in 2020. “In EIA's forecast, Texas accounts for 19 percent of the US non-hydropower renewables generation in 2019 and 22 percent in 2020. California's forecast share is 15 percent in 2019 and 14 percent in 2020,” stated the report.

“The Midwest and Central power regions each see shares in the 16 percent to 17 percent range of the US generation total from non-hydropower renewables in 2019 and 2020,” it added.

US coal production is expected to fall to 159 million short tons (MMst) in the fourth quarter of 2019, a decline of 34 MMst (17 percent) from the same period in 2018.