

LNG Unlimited

LNG JOURNAL PUBLICATION

9 October 2018

Alaska Governor sees LNG project as new US-China building block

State-run development company signs several agreements to underpin Chinese participation
LNG Journal editor

Alaska Gasline Development Corporation (AGDC), the state-owned company developing the Alaska LNG project, has signed additional agreements to underpin Chinese participation in the venture.

China Petrochemical Corp., also known as Sinopec, and the Chinese financial institutions, CIC Capital Corp. and Bank of China had previously signed a joint development agreement in November 2017 in the presence of US President Donald Trump and China President Xi Jinping.

Deadline

"The supplemental agreement reaffirms the parties' intent to negotiate and conclude definitive agreements by December 31, 2018," said AGDC.

AGDC said the latest deal reiterated the willingness of Sinopec to reserve 75 percent of the LNG production capacity of the Alaska LNG project.

"The reaffirmation of the joint development objectives positions Alaska as a foundational building block between the US and China," said Alaska Governor Bill Walker.

Under the current Chinese accord with the Alaskan company, Sinopec would be the offtake customer for the LNG, China's CIC Capital would be an equity investor and the Bank of China would continue to provide suggestions on refining the financing structure.

The additional Chinese accords came as AGDC has also arranged feed-gas deals with energy majors for feed-gas from the prolific



Alaska Governor Bill Walker and First Lady Donna Walker, left, with Chinese President Xi Jinping and his wife, Ping Liyuan, during an Alaska stop-over last year

North slope resources in Alaska.

ExxonMobil signed a preliminary accord in September 2018 for the sale of its 13.8 trillion cubic feet of natural gas resources in the Prudhoe Bay and Point Thomson fields.

The ExxonMobil agreement followed a similar commitment of gas to the LNG project made in May 2018 by BP of the UK, also a major North Slope natural gas resource owner.

AGDC said the two agreements committed 22.7 Tcf to the LNG project. This comprises most of the 32 Tcf of the confirmed and easily recoverable feed-gas resource on the North Slope.

ExxonMobil has a 62.75 percent share in the North Slope field and 36.4 percent share of the nearby Prudhoe Bay field, the largest oil and gas field in North America.

Alaska LNG is expected to cost up to \$45 billion to build an 800-mile gas pipeline from the North Slope in northern Alaska to a planned liquefaction plant in Nikiski on the Kenai Peninsula, south of Anchorage.

A gas processing plant, needed

mainly to remove carbon dioxide from the Prudhoe Bay gas, would also be built on the North Slope.

AGDC has estimated that the wellhead price the state itself would receive for its royalty share of gas would likely range between \$1.00 per million British thermal units and \$2 per MMBtu.

Apart from the China LNG sales prospects, talks are continuing with Tokyo Gas Corp., Korea Gas Corp. and PetroVietnam on the remaining 5 MTPA not booked by China and comprising 25 percent of the LNG expected to be produced.

The US Federal Energy Regulatory Commission is working on Alaska's environmental impact statement and expects to have it finalized by November 2019.

A federal record of decision, which would clear the way for the FERC approval, is expected in February 2020.

That would allow for a final investment decision in 2020 for construction to be underway in 2021 and completion and commercial operations could be expected by 2025.

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Shell confirms LNG Canada joint venture goes ahead with Kitimat liquefaction and export plant

LNG Journal editor

Royal Dutch Shell Chief Executive Ben van Beurden, has confirmed the final investment decision to take forward the LNG Canada export project in British Columbia to turn the huge surplus of Canadian natural gas into LNG and ship it to Asian nations.

Shell and its four partners, Mitsubishi Corp. of Japan, Malaysian energy company Petronas, Chinese major PetroChina and Korea Gas Corp., are now all agreed on starting the immediate construction at a cost of up to C\$40 billion (US\$31Bn) of the plant and its associated facilities, with completion scheduled before 2025.

Right time

"We believe LNG Canada is the

right project, in the right place, at the right time," said Shell CEO Van Beurden.

"Supplying natural gas over the coming decades will be critical as the world transitions to a lower carbon energy system," he added.

"Global LNG demand is expected to double by 2035 compared with today, with much of this growth coming from Asia where gas displaces coal," Van Beurden explained.

"LNG Canada is well positioned to help Shell meet the growing needs of customers at a time when we see an LNG supply shortage in our outlook," stated the CEO.

LNG equivalent prices for LNG Canada have been calculated by Shell at US\$8.50 per million British thermal units based on a cargo shipped to Tokyo.

The liquefaction plant is to be constructed at a brownfield site near the town of Kitimat that had been an energy products terminal before being acquired by Shell in October 2011.

The plant itself is expected to cost around US\$11Bn using modular construction methods and will have two large liquefaction Trains initially, with each producing 7 million tonnes per annum of LNG. The plant would then be expanded.

Additional costs of up to US\$20Bn will include feed-gas supplies for TransCanada's multi-billion-dollar Coastal GasLink, pipelines and other facilities.

LNG Canada already holds a 40-year export licence from the Canadian National Energy Board for exports of domestic gas overseas, though further final permits

are required, including a go-ahead notice from the federal government.

The Shell-led project is working closely with the Haisla First Nation whose traditional lands are in the Kitimat coastal region.

Each shareholder in LNG Canada will individually offtake and market its own LNG.

Shell's Groundbirch asset in Northeast BC will provide the majority of Shell's equity share of natural gas. Shell said it could also buy feed-gas from the market, depending on which option provides the most value.

Pipeline company TransCanada Corp. will build, own and operate the Coastal GasLink pipeline that will be built to connect the upstream gas supply.

First Nations made possible largest LNG investment by keeping faith with clean energy development

LNG Canada is moving forward thanks to the support of members of the native North American Haisla First Nation in the Kitimat region of British Columbia who overcame the posturing of the Canadian political elite who tried to lecture the native peoples about caring for the environment while denying them well-paid jobs and careers in the energy industry.

Federal Prime Minister Justin Trudeau was one many of Canada's politicians who had opposed LNG and other energy projects and was a last-minute convert to the project to avoid being shamed politically.

He only changed his policies on August 28, 2018, when he removed the words "climate change" from the name of a powerful committee of ministers but said the government was no less committed to the issue.

Trudeau also launched a new cabinet committee devoted entirely to Indigenous reconciliation, as part of a cabinet restructuring.

The renaming of the Environ-



Rare sight in Canada: A pro-LNG rally in British Columbia (Photo courtesy of Haisla First Nation Web site)

ment, Climate Change and Energy cabinet committee to Environment and Clean Growth reflected the government's realization that its policies were flawed and could be viewed as extreme and anti-jobs by ordinary people and the hard-hit energy industry.

Analysts said only the previous BC provincial Premier Christy Clark, who has retired from politics and now works for a law firm, deserved credit among leading Canadian politicians for working with some of

her ministers to make LNG Canada and other energy projects workable.

"This is the single best day of my professional life," said Clark after the final investment decision in favour of LNG Canada was announced on October 2.

"In 2011, we set out to bring LNG to BC. That was six-and-a-half years of intensive work, including eight trade missions and new laws and regulations. Most important - there are agreements with First Nations to ensure they're central participants

in our economy," stated Clark.

Karen Ogen-Toews, the Chief Executive of the First Nations LNG Alliance, said the decision by Shell and its four Asian partners, Mitsubishi Corp. of Japan, Petronas of Malaysia, Chinese energy major PetroChina and Korea Gas Corp., to proceed was great news for Canada and for First Nations.

"Responsible LNG development means real benefits to Indigenous peoples and communities, long-term careers and reliable revenue to help First Nations close the economic gap between their members and other Canadians," said Ogen-Toews.

"LNG Canada has been a leader in dealing with First Nations. Our congratulations and thanks to their partners," she said.

Chief Haisla First Nation Councillor Crystal Smith was another of the senior First Nation figures who spoke at pro-LNG meetings in favour of jobs and sensible care of the environment.

Woodfibre LNG in supply deal with Chinese energy major

Woodfibre LNG, the Canadian export venture planned for the district of Squamish in British Columbia and owned by a Singapore-based company, has signed a preliminary supply deal with a subsidiary of the largest Chinese LNG importer, China National Offshore Oil Corp.

The project is backed by Indonesian businessman Sukanto Tanoto and his Singapore-based Pacific Oil & Gas Ltd, part of the Royal Golden Eagle (RGE) Group, and is the only liquefaction plant venture with full permit approvals in the Canadian Pacific Coast province of BC.

The liquefaction plan will be built on the site of a former pulp mill at Squamish, north of Vancouver, and is licensed to export more than 2 million tonnes per annum of LNG for 40 years.

The relatively small-scale project is expected to export cargoes when commercial operations start in about four years' time.

Woodfibre has already chosen US energy project construction company KBR Inc. for preliminary engineering activities.

The Woodfibre project developers said they had signed a Heads of Agreement with CNOOC Gas and Power Trading & Marketing for 750,000 tonnes per annum of LNG.

The supply accord with CNOOC, an importer of LNG to China since 2006 and with a network of nine terminals, would take effect in 2023 and last for 13 years.

"Natural gas is recognized around the world for its role in a low carbon energy future and we are proud to have an opportunity, even in a small way, to be part of this energy transition," said Ratnesh Bedi, President of Woodfibre LNG's parent company, Pacific Oil & Gas. ■

Shell and Sovcomflot start LNG bunkering for new Aframax fleet

LNG Journal editor

Russian shipping line Sovcomflot said Royal Dutch Shell conducted a ship-to-ship LNG bunkering operation in the Dutch port of Rotterdam for the "Gagarin Prospect", the world's first LNG-powered Aframax tanker.

Shell carried out the fuelling using its specialized bunkering vessel, the 6,500 cubic metres capacity "Cardissa", based at the Dutch port.

Supply accord

Sovcomflot and Shell said the operation for the "Gagarin Prospect" was the first under the LNG fuel supply agreement between the Anglo-Dutch company and Sovcomflot signed in 2017.

The choice of name for the 114,000-deadweight tons "Gagarin Prospect", which uses LNG as its primary fuel, was inspired by the first Russian cosmonaut, Yuri Gagarin. The vessel entered into a Shell multi-year time charter in July 2018.

A sister ship, the "Samuel



Aframax oil tanker 'Gagarin Prospect' during fuel operations

Prospect", has been named after Sir Marcus Samuel, the founder of Shell's tanker shipping line, Shell Transport & Trading Co. That vessel is scheduled for delivery to Shell under time charter in 2019.

The Aframax class of ship is an oil tanker smaller than 120,000 metric tonnes and offers trading options in the crude market.

"Together with Shell, SCF Group shares a determination to reduce the environmental impact of energy shipping," said Sergey Frank, President and Chief Executive of Sovcomflot.

"The arrival of the 'Gagarin Prospect' and inaugural LNG bunkering heralds a new age of more sustainable and environmen-

tally responsible shipping - especially in the high traffic areas of the Baltic and North Seas, where this new class of 'Green Aframax' will operate," stated the Sovcomflot CEO.

"We are proud to partner with Shell and look forward to a bright and cleaner future, as more and more vessels opt for LNG as their primary fuel, and the associated LNG bunkering infrastructure is established in key ports worldwide," added Frank.

Grahaeme Henderson, Vice President, Shell Shipping and Maritime, said the Rotterdam event was an exciting first for the bunkering vessel "Cardissa". ■

Stolt-Nielsen joins with Hoegh and Golar for small-scale fuel ventures

Stolt-Nielsen Ltd, the Norwegian-listed shipping and storage group, said it had joined with Norwegian peer companies Golar and Hoegh in a combined investment commitment of \$182 million in a project in the small-scale market called Avenir LNG.

The Avenir joint venture would pursue opportunities to deliver LNG to areas of stranded demand as well as the development of LNG bunkering capabilities.

"The investment will be contributed as cash and equity-in-kind and will fund the construction of six small-scale LNG carriers, a small-scale storage terminal and regasification facilities," said Stolt-Nielsen on behalf

of the three companies. Avenir was first formed by Stolt-Nielsen in 2017 to provide LNG to markets lacking access to natural gas pipelines.

"With this joint investment, Stolt-Nielsen will consolidate all its LNG activities into Avenir, including four LNG new buildings on order at Keppel Singmarine in Nantong, China, and the joint venture LNG terminal and distribution facility to be constructed in the port of Oristano in Sardinia," said Stolt-Nielsen.

Avenir plans to source and ship LNG to the terminal using small carriers and to distribute the LNG in trucks and through regasification into local network grids.

"In addition, Avenir plans to order two further small-scale LNG carriers," it added.

"The combination of Stolt-Nielsen's logistics capabilities and our partners' experience in LNG carriers, FSRUs and FLNGs positions Avenir as an emerging leader in small-scale LNG logistics for the power, bunkering, trucking and industrials markets," said Niels G. Stolt-Nielsen, Chief Executive of the company.

"With the implementation of the International Maritime Organization's 2020 emissions regulations approaching, demand for LNG as a cleaner, low-sulphur marine fuel is increasing," he added. ■

Safety and Security in LNG:

Integrated Systems Improve Performance and Reduce Costs

The LNG industry has an excellent safety record. Despite this, the LNG industry is constantly challenged to implement higher levels of safety and security requirements to accommodate increased public sensitivities and government regulations.

Successful LNG projects are defined by their ability to achieve capital efficiency. Experience has shown that CAPEX reductions can be realized through modular construction methods of the LNG plant, which involve the construction of the plant in transportable modules at factories around the globe.

Need for a Holistic Solution

Operators of LNG facilities increasingly want to simplify and standardize, allowing them to reduce the complexity of their systems.

As a leading global automation supplier, Honeywell offers an all-in-one solution that helps make new LNG facilities efficient and productive from day one. The company's integrated control and safety system (ICSS) helps LNG firms maximize their operations with accurate and on-time information, precise measuring technologies, safety and security.

With Honeywell's comprehensive offering, multiple gas detectors, infrared fire detectors, closed circuit cameras, command and control systems, stringent physical and cyber security measures, and personnel safety training are all part of a holistic solution for safe operations.

Honeywell's Connected Approach

Honeywell's connected approach to plant safety helps the LNG industry improve its business performance and peace of mind. It includes independent yet interrelated layers of protection to deter, prevent, detect and mitigate potential physical and cyber threats to both land- and sea-based operations.

At the heart of Honeywell's approach to safety and security is its latest safety instrumented system (SIS) offering, Safety Manager SC, which integrates process safety data, applications, diagnostics and critical control strategies, and executes safety integrity level (SIL)-defined safety applications in a fully redundant system.

Safety Manager SC is a cost-effective solution for a distributed safety architecture throughout LNG facilities. The system employs a modular construction strategy allowing users to locate remote I/O cabinets in Zone 2/Div. 2 process areas, and in operating environments with temperatures from -40 to 70 degrees C. This results in lower capital costs by enabling cabinets and other equipment to be built and assembled in the closest geographical location.

As a SIL3-certified system, Safety Manager SC provides high availability to keep LNG processes running and avoid unplanned downtime. The system also enables users to comply with the latest global safety and cyber security standards while ensuring maximum reliability for their operations. Safety Manager SC is



Safety Manager SC

ISASecure certified for cyber security

By utilizing Honeywell's current Series C controller design, Safety Manager SC supports a more compact design and flexible, simplified architecture. The system has a reduced number of core components, which are easy to troubleshoot and maintain.

At the same time, Honeywell's Universal I/O technology and LEAP™ project methodology represent a new paradigm for automation and safety projects, allowing for easy late changes, minimizing risk, reducing the number of required spare modules, and streamlining future additions to the ICSS.

Finally, LNG operators can seamlessly pair Safety Manager SC with the best-in-class Experion® PKS control system to optimize the safety and performance of any size facility. This approach reduces the number of databases and engineering tools, integrates alarms and events, automates tracking and validation of safety systems and final elements, and provides secure integration with subsystems such as fire & gas, security, etc.

Conclusion

By implementing the advanced Safety Manager SC solution, LNG operators can reduce their CAPEX requirements, and at the same time, deploy a distributed SIL3 safety architecture that is reliable, flexible and easy to maintain.

For more information, please visit www.hwll.co/SafetyManagerSC



Honeywell's Enraf Tank Gauge for Custody Transfer and Inventory Control

NEWS NUDGES

NYK charter to Total

Japanese shipping company Nippon Yusen Kabushiki Kaisha (NYK Line) signed a contract with a subsidiary of French energy major Total to charter a newbuild LNG carrier for seven years with an optional extension period of one year. NYK said the new vessel with capacity of 174,000 cubic metres capacity would be built in South Korea by Samsung Heavy Industries and delivered in 2021.

Russian LNG fuel plans

Russian natural gas company Gazprom has held a ceremony marking the start of construction of the first LNG filling station for trucks near the town of Okulovka on the new Moscow-St. Petersburg highway, known as the M11. Gazprom is building a network of LNG and natural gas filling stations in cooperation with the Russian state highways company to encourage trucking companies to switch to cleaner gas fuel from diesel.

Tellurian gets new loan

Tellurian Inc., developer of the Driftwood LNG export project in Louisiana, said its subsidiary, Tellurian Production Holdings, entered into an agreement providing for a loan organized by US investment bank Goldman Sachs. "The credit agreement provides for term loans in an aggregate principal amount of \$60 million to be used for expenditures and certain other expenses associated with the development of the oil and gas properties of the borrower and its subsidiaries and to pay fees and expenses," said Tellurian.

UK-listed commodities firm Glencore lined up for Philippines FLNG venture

LNG Journal editor

UK-listed commodities and mining multinational Glencore is considering increasing its presence in the liquefied natural gas market beyond its trading activities by joining a floating LNG import and power project in the Philippines.

Glencore has signed an initial financing accord with Filipino company Limay LNG Power Corp. and China Energy Equipment Company for a gas-to-power project in Bataan, the Philippines province on Luzon island.

Catching up

The project will include a floating storage and regasification unit (FSRU) to supply a 1,100-megawatt gas-fired power plant on land owned by Philippine National Oil Co.

Anglo-Swiss company Glencore is seeking to increase its LNG pro-



Anglo-Swiss company's HQ is in Baar, Switzerland

file to match commodities market rivals Gunvor, Vitol and Trafigura, particularly in Asia.

The firm has growing LNG trading operations in Singapore and won a tender in 2017 to supply LNG cargoes to Egypt through 2018.

The Philippines project company, Limay LNG Power Corp., said China Energy Equipment has been formally engaged as the turnkey engineering, procurement and

construction (EPC) contractor for the US\$700 million power plant.

Limay LNG said Glencore was joining the project as the FSRU provider as well as the supplier of LNG.

The project would also be seeking government backing from the Philippines Board of Investments for the venture as it is the nation's first FSRU joint venture and it involves clean fuel.

Chart buys Italian firm in cash-debt deal to boost Europe presence

Chart Industries, the US LNG equipment maker and industrial gases company, has signed an agreement to acquire Italian company VRV S.p.a., an engineer and designer of cryogenic equipment that will complement Chart's own offerings.

VRV, located near Monza, northeast of Milan, is a family-led business and was established in 1956 with two divisions, the Cryogenic division and the Energy & Petrochemical unit.

The Italian company is one of Europe's leading niche manufacturers of pressure equipment for the cryogenic, petrochemical, refining and energy industries.

Chart said it had agreed to pay 125 million euros (\$147M), which will be funded by a combination of Chart's available cash in hand and credit and will also assume VRV's outstanding debts of up to \$83M.

"The acquisition is expected to add annual net sales of \$115 million in 2019, achieve significant

cost synergies related to operational efficiencies and sourcing, and be earnings-per-share accretive in the first full year of ownership," said Chart.

The US company noted that VRV has a rich history of engineering and design dating back to its beginnings.

"During the 1970s, the company began to design and manufacture cryogenic equipment driven by Massimiliano Spada and then by his sons, Federico Spada and Alessandro Spada, both of whom will continue in executive roles in Chart," said Chart.

Chart views the acquisition as being complementary to Chart's Distribution & Storage and Energy & Chemicals offerings and technologies.

"Chart is the best partner for VRV's growth and global presence," said the Spada family in a statement.

"Together we will provide our

worldwide customers a complete portfolio of products and services for the cryogenic, energy and petrochemical industries," they added.

Jill Evanko, Chart's Chief Executive, said she was pleased to bring VRV into the Chart family of companies with Alessandro and Federico Spada joining the Chart team.

"VRV has technical strengths and manufacturing capabilities which are an excellent complement to ours and brings a strong leadership team for continued growth," stated Evanko.

"Together we will now be able to provide a broader set of solutions to our customers and deliver faster results through an expanded global footprint," added the Chart CEO.

"This acquisition is another step in our efforts to be a full-service, global provider to our customers," she said.

Qatar Petroleum CEO holds talks with Pakistani PM Khan amid plan for third floating import facility

LNG Journal editor

Qatar Petroleum President and Chief Executive Saad Sherida Al-Kaabi has held talks in Islamabad with Pakistani Prime Minister Imran Khan centering on more liquefied natural gas supplies for the Asian nation as it plans a third import facility.

“Qatar Petroleum reviewed its global portfolio and activities, particularly its efforts to help meet growing global demand for natural gas,” said a Qatari statement.

Interest

The Qatari parent company of Qatargas, operator of the Ras Laffan export plant, also expressed its “keen interest to enhance its investment in Pakistan” and to build on the existing solid relations between both countries.

“CEO Al-Kaabi stressed the importance Qatar Petroleum places on Pakistan as a promising energy market after the signing of the recent LNG agreement, and the commitment to secure its future energy needs, particularly LNG,” added the Qataris.



Qatar Petroleum CEO Al-Kaabi with PM Khan in Islamabad

For his part, Prime Minister Khan welcomed Qatar Petroleum's investment in Pakistan's energy and petroleum sectors. He assured Al-Kaabi of the Pakistani government's full support and cooperation in this regard.

The Pakistani supply deal with Qatar is for 3.75 million tonnes per annum of LNG over a 15-year period.

Pakistan began importing LNG in 2015 after its own declining gas production forced some factories to close and caused electricity blackouts.

Imports have grown rapidly

since early 2016, with Pakistan now the sixth-largest Asia LNG import after nations such as India and Taiwan.

Pakistan's two floating import facilities at Port Qasim, east of Karachi, handled 4.62 million tonnes of LNG last year and volumes are now increasing from exporters also including Nigeria.

The first Pakistani facility, which started operations in 2015, consist of an LNG jetty and a pipeline connected to the FSRU “Exquisite” from Excelsior Energy of the US and chartered for 15 years.

The pipeline supplies gas directly to the grid for the state-owned Sui Southern Gas Company.

Pakistan's second LNG facility came on line at Port Qasim in November 2017.

The terminal was developed by a consortium including Pakistan GasPort and the BW Group of Singapore and using its FSRU, the “BW Integrity” with a storage capacity in excess of 170,000 cubic metres and a peak regasification capacity of 750 million standard cubic feet per day

The BW vessel connects to the Pakistani gas grid via a 12.3-kilometre subsea and onshore pipeline.

A third terminal has been proposed, though not yet finalized, by various consortiums.

The companies mentioned include Qatar Petroleum, Royal Dutch Shell, the Gunvor commodities group, Excelsior, France's Total, Japan's Mitsubishi Corp. and Engro Corp. of Pakistan and various other Pakistani companies.

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OLT Offshore LNG Toscana in tender for single cargo

OLT Offshore LNG Toscana, the Italian owner of the import facility deployed off the Mediterranean coast, will again provide peak-shaving services for the natural gas network and has launched an LNG cargo tender that closes on October 16.

The winner of the tender will be required to supply an LNG cargo to be discharged at the OLT terminal in the period from November 1 to December 31, 2018.

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

"The winner of the tender will need to supply an LNG carrier with a volume between 80,000 cubic metres and 125,000 cubic metres for unloading at the OLT terminal," said OLT Offshore.

The peak-shaving service is one of the emergency measures expected of OLT Offshore through a decree from the Ministry of the Economic Development if unfavourable events compromise the national gas system during the coming winter.

OLT Offshore is providing the peak-shaving service for the sixth consecutive year.

The Italian import facility is jointly owned by Italy's Iren group, Germany's Uniper and a small stake is held by Golar LNG of Norway.

All the documents necessary to participate in the OLT Offshore LNG tender procedure are on the company website at www.oltoffshore.it.

Indian Prime Minister inaugurates Mundra LNG as fifth on West Coast

LNG Journal editor

Indian Prime Minister Narendra Modi inaugurated the Mundra liquefied natural gas import terminal, the third sited in Gujarat state and the fifth on the West Coast of India, while no facilities currently operate on the East Coast.

The terminal is located at Mundra Port, north of Mumbai, operated by the Adani Group. It has two storage tanks and expected capacity of 5 million tonnes per annum, while being able to accommodate the largest LNG carriers.

Proud

"Gujarat is emerging as an LNG hub of India" said the Prime Minister.

"This should make every Gujarati proud. A strong energy sector is needed for the growth of any country and we cannot alleviate poverty if we are energy poor," Modi added.

Gujarat State Petroleum Corp. (GSPC) constructed the facility even as a proposed deal with a third



PM Narendra Modi said 'Gujarat is LNG hub of India'

partner was still to be finalized.

GSPC built the terminal through a partnership with Adani and is still hopeful that Indian Oil Corp. will come on board as a third shareholder to add its expertise.

Indian Oil is currently occupied with its own East Coast project at Kamarajar Port near Chennai that is expected to be completed before the end of 2018.

India's four currently operating import terminals are at Hazira, Dahej and Dabhol near Mumbai and at Kochi in the southwest state of Kerala.

Dahej is the largest terminal

with more than 15 MTPA of capacity and is owned and operated by Petronet LNG, while Hazira is the second largest and is operated by Shell India.

As regards East Coast terminals, there are about half-a-dozen terminal projects underway.

The terminal at Kamarajar Port, formerly one of India's main coal ports and previously called Ennore, would handle around 5 MTPA for Indian Oil, a state-backed refiner and fuel distribution company that is also a shareholder in Petronet LNG.

Oil and Natural Gas Corp. of India awards Bay of Bengal subsea work

Oil and Natural Gas Corp. (ONGC) of India has awarded a contract to two US energy engineering companies, McDermott and the General Electric oil and gas services affiliate, for the development of a key block in the Krishna Godavari basin of the Bay of Bengal that will slightly ease the gas crisis on the East Coast where no LNG import facilities operate.

The contract is for the development of the area known as block DWN-98-2 and comprises 34 wells, including 15 oil-producing wells, 11 water injection wells and eight natural gas-producing wells.

The subsea award represents the largest single subsea contract awarded by ONGC, though the value of the award was not disclosed.

Delivery is scheduled for 2020 for the natural gas wells and resources and 2021 for the oil system.

The associated gas from the oil wells will be provided to Gas Authority of India while the East Coast awaits its first LNG import terminal from the half-dozen that are planned.

The US companies will be joined in the subsea oil and gas contract by L&T Hydrocarbon Engineering (LTHE), a local subsidiary of Larsen & Toubro, for local input.

"The project is one of the first major deepwater developments in India and a milestone for realizing India's domestic energy potential," said the three companies.

"The group will offer a comprehensive solution that will also

boost local manufacturing, in support of Make in India. Built on an agreement signed in 2016, LTHE and BHGE will fabricate manifolds for the first time in India as part of this project," they added.

The integrated subsea package includes the supply of all subsea production systems, including 34 deepwater trees, and the installation of subsea umbilicals, risers and flowlines at a water depth of between 984 feet and 10,500 feet.

BH-GE will provide all of the subsea hardware as well as pre-commissioning services and McDermott will bring its specialized fleet of pipelay and construction vessels and engineering, procurement, construction and installation capabilities.



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Texas export plant at Port Arthur plans to have largest liquefaction Trains so far on Gulf Coast

LNG Journal editor

Sempra Energy, the California-based utility and energy company developing the Cameron LNG export plant in Louisiana, has received its draft environmental impact statement from regulators for the proposed Port Arthur LNG project in Texas, comprising the largest liquefaction Trains planned so far for a Gulf Coast venture.

A draft environmental impact statement issued by the Federal Energy Regulatory Commission found that the liquefaction plant and two associated pipelines would do some harm to the environment, "but these impacts would be reduced to less-than-significant levels" by mitigation measures.

The Port Arthur LNG project is moving forward without Australian LNG producer Woodside Petroleum, operator of the North West Shelf and Pluto LNG plants in Western Australia.

Sempra said in July 2018 it had been informed by Woodside that the Perth-based company was not



Plant will have two Trains, each of 6.73 MTPA capacity

proceeding with its Port Arthur investment and would be pursuing other capital expenditure plans instead.

A comment period on the FERC document issued for Port Arthur LNG closes on November 19 and three public information sessions are scheduled for October.

"We considered the cumulative contributions of the proposed projects in specific impact areas," said the FERC.

"As a part of that assessment, we identified existing projects, projects under construction, and reasonably foreseeable projects. These included existing LNG ter-

minals and future LNG liquefaction projects and dredging projects," added the report.

"This also included areas where the Louisiana Connect Project could be connected with another proposed pipeline project (the Driftwood Pipeline Project)," it said.

"We conclude that the contribution to impacts on resources affected by the Projects would not result in significant cumulative impacts," stated the FERC.

The FERC review covered the Port Arthur liquefaction plant proposed for Jefferson County, Texas, with 13.5 million tonnes per annum of output as well as the

Texas Connector and Louisiana Connector pipelines.

"Each liquefaction Train would consist of a feed gas pre-treatment unit, heavy hydrocarbon removal unit and liquefaction unit," said the report.

"Natural gas would be transported via the Texas Connector and Louisiana Connector Projects to the feed gas pre-treatment facilities, which would remove any impurities from the natural gas, including particulates, mercury, hydrogen sulfide, carbon dioxide and water," it added.

The draft EIS addressed the potential environmental effects of the construction and operation of the various proposed facilities.

These include two liquefaction Trains, each with a capacity of 6.73 MTPA, three LNG storage tanks, each with a capacity of 160,000 cubic metres, a new marine terminal with two LNG vessel berths, an area for support vessels, an LNG transfer system and truck-loading areas.

FERC names Virginia lawyer to fill a vacancy amid speeding up of LNG and energy project applications

The Administration of US President Donald Trump has named a lawyer from the state of Virginia employed by the Department of Energy to fill the vacant fifth seat at the Federal Energy Regulatory Commission, the regulator of US energy and liquefied natural gas projects.

"The White House nominates Bernard L. McNamee of Virginia, to be a Member of the Federal Energy Regulatory Commission, for the term expiring June 30, 2020," said a statement.

McNamee currently serves as the Executive Director of the Office of Policy for the US Department of Energy.

Previously, he served as Deputy General Counsel for Energy Policy

at the DOE and practiced energy law with US firm McGuireWoods LLP.

"Additionally, McNamee served four Attorney Generals in two states (Virginia and Texas), was a policy advisor to a Virginia governor, and served as a senior domestic policy advisor to a United States Senator," added the statement.

The current four Commissioners are Chairman Kevin J. McIntyre as well as Cheryl A. LaFleur, Neil Chatterjee and Richard Glick.

The FERC has been altering its work practices to shorten environmental assessment time-frames for up to a year for 12 LNG export projects on the US Gulf Coast and in Oregon.

FERC said the new schedules reflected the regulator's efforts in recent months to streamline its review process for LNG.

The projects involved include many on the Gulf coast including Driftwood LNG in Louisiana and Plaquemines on the banks of the Mississippi, Freeport LNG Train 4 and Port Arthur LNG in Texas, Jordan Cove LNG in the northwest state of Oregon and Alaska LNG.

The regulator said these efforts have helped to ensure it will be equipped to process applications in a timely and expedient manner without compromising its statutory obligation to ensure safety and environmental protection.

"There is widespread acknowledgement that the United States

is poised to play an important role in serving worldwide LNG demand, and its ability to serve that demand quickly will serve the nation's national security and economic interests," stated FERC Chairman McIntyre.

He explained that because sufficient LNG export capacity was a necessary gateway to the global gas markets, the FERC's efficient processing of LNG facility applications would put the US in a more competitive position.

The FERC also recently signed an agreement with the Pipeline and Hazardous Materials Safety Administration to give that body a more defined role in helping to process LNG project applications.

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