

LNG Unlimited

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Chiyoda leads Qatar efforts to raise LNG output from Gulf North Field

Qatar Petroleum may produce an additional 15 million tonnes of LNG a year by the early 2020s
Our Asia-Pacific editor

Chiyoda Corp. of Japan, one of the leading LNG engineering companies, has been chosen by Qatar Petroleum to conduct a detailed study to identify modifications required to boost the capacity of the world's largest production complex at Ras Laffan.

The additional feed-gas will come from more Qatari output from its North Field gas fields in the Arab Gulf.

Moratorium

Qatar has lifted a self-imposed 12-year moratorium and resumed development of the world's largest single natural gas field.

The moratorium had been in place since 2005. Qatar Petroleum may produce as much as an additional 15 million tonnes of LNG per annum by the early 2020s.

Qatar has become the world's largest LNG supplier in just the 20 years since it first began exporting LNG in 1997. Chiyoda was one of the main contractors on the various projects that constructed Qatar's existing LNG Trains.

However, the government had halted development of the massive North Field, citing the need to study the impact of rapid gas field development on reserves.

The Ras Laffan plant has the world's largest processing Trains, including six of them with 7.5 MTPA of capacity, giving annual output of over 77 MTPA.

"As part of its efforts to reinforce Qatar's leading position in the global gas industry, this agreement



First Ras Laffan Train has been operating since 1997

provides Qatar Petroleum with the option of increasing its LNG production with minimum investment, by leveraging the existing massive, world-class infrastructure and valuable synergies available in Ras Laffan," said Saad Sherida Al-Kaabi, Qatar Petroleum's President and Chief Executive.

The agreement with Chiyoda was signed at Qatar Petroleum's headquarters in Doha by Al-Kaabi and Masaji Santo, a Senior Executive Vice President of Chiyoda, in the presence of a number of other senior executives from both companies.

Qatar had announced in April its intention to develop a new gas project in the southern sector of the North Field with a capacity of about 2 billion cubic feet per day for export.

While Doha calls the giant gas reserves North Field the resource basin is shared with Iran, which calls its demarcated zone the South Pars gas field.

Iran, which suffers severe domestic gas shortages, has recently made a rapid increase in production from South Pars a top priority since Western sanctions were ended over the nuclear issue.

The Chiyoda study for Qatar is

expected to be completed before the end of this year, which will allow the Qataris to start front-end engineering and design work early in 2018, if it concludes that this option will achieve the optimum value for the State of Qatar.

Chiyoda is currently working on LNG production projects in the expansion at Tangguh in Indonesia, the Yamal plant in Russia and two export ventures in the US and Ichthys LNG in Australia.

It is also carrying out pre-construction work for LNG production in the southeast African nation of Mozambique.

The Yokohama-based company recently recorded an annual loss of more than \$360 million as it installed a new management team to recover from problems of a subsidiary in the subsea market and the low oil price environment.

Chiyoda had posted a loss of 41.1 billion yen (\$361.4 million) versus a profit of 3.4Bln yen (\$30.7 million) for the first fiscal year ended in March 2017.

Annual revenues held up amid the subsea losses and came in 1.3 percent lower than fiscal 2016 at 603.7Bln yen (\$5.30Bln)

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Chevron sells natural gas assets to Shell offshore Caribbean LNG producer Trinidad

Our Caribbean and Latin America editor

Royal Dutch Shell has agreed to acquire natural gas fields from Chevron Corp. offshore the Caribbean LNG-producing nation of Trinidad and Tobago, including in the cross-border Loran Manatee gas field shared with Venezuela and where resources are estimated at 10 trillion cubic feet.

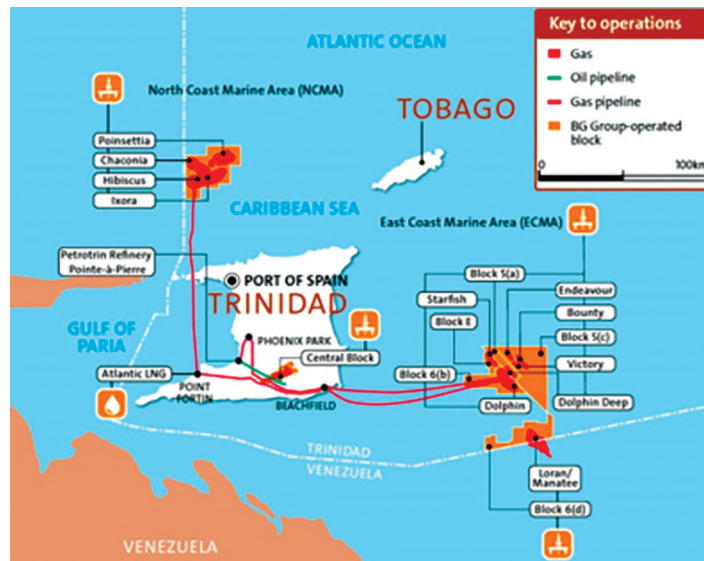
The Anglo-Dutch company will pay Chevron \$250 million for the assets as it builds up its Trinidad portfolio acquired from its own takeover of BG Group of the UK.

Resources

The transaction includes Chevron's three main holdings in the East Coast Marine Area Blocks 6, 5a, and E.

Shell is also buying the Loran Manatee gas field assets in Trinidadian waters, though Chevron will retain its stake in the field on the Venezuelan side of the border.

Shell has been expanding its holdings in Trinidad since taking



Loran Manatee gas field (bottom right) is shared with Venezuela and where resources are estimated at 10 trillion cubic feet of natural gas

over BG, including the UK company's holdings in Atlantic LNG, the Trinidad liquefaction and export plant at Point Fortin where BP of the UK is also a shareholder.

Shell also gained capacity at Train 2 and Train 3 at Trinidad's Atlantic liquefaction plant from

its purchase of the LNG assets of Spain's Repsol.

BP is currently completing the construction of the Juniper project to supply more feed-gas to the LNG plant from 50 miles off the southeast coast of Trinidad.

The BP development includes

five subsea wells with a production capacity of around 590 million standard cubic feet per day.

The four Trains at the Atlantic plant are running below capacity. Last year they produced 10.46 million tonnes of LNG compared with 11.81MT the previous year.

Shell also has an interest in the deepwater blocks being explored off Trinidad by Australia's BHP Billiton and has a stake in the Le Clerc licence where gas has been discovered.

"Trinidad and Tobago represents a rich opportunity for us to continue building our integrated gas position in country and securing new competitive production," said Derek Hudson, Vice President of Shell Trinidad & Tobago.

"Shell continues to actively evaluate other options to increase supply from our existing assets, as well as pursue additional opportunities such as the previously announced purchase of Centrica's interests in the North Coast Marine Area," added Hudson.

Papua New Guinea LNG stakeholder Oil Search buys shares in five licences from ExxonMobil

Oil Search, a stakeholder in the Papua New Guinea LNG export plant and its expansion project, has agreed to acquire 30 percent of five licences held by ExxonMobil, operator of the PNG plant near the capital Port Moresby.

"The onshore Gulf licences are in close proximity to the world class Elk-Antelope fields in Petroleum Retention Licence (PRL) 15, which are expected to underpin the Papua LNG development, providing a potential route for future commercialisation," said Oil Search Managing Director Peter Botten.

"In addition to the existing gas discoveries, we have identified a number of additional leads and prospects on the acreage," explained Botten.

Oil Search said it was taking

stakes in Petroleum Prospecting Licences (PPLs) 474, 475, 476, 477 and PRL 39 from ExxonMobil affiliates, acquired by the US major when it completed its purchase of InterOil Corp. in January 2017. The value of the transaction was not disclosed.

The licences, located in the onshore Papuan Gulf Basin, adjacent to the Elk-Antelope fields, contain the Triceratops, Bobcat and Raptor discoveries.

The existing two Trains at the PNG LNG plant produced at an average rate of 7.9 million tonnes per annum during 2016 compared with their combined nameplate capacity of 6.9 MTPA.

An independent gas certification of the Elk-Antelope fields, which would provide additional

LNG production for PNG, recently took place.

Together with existing resources and the upgrade in PNG LNG reserves, the certification supported the view that there are sufficient gas resources available to support expansion of production as well as two new PNG LNG-sized Trains.

"We are delighted to be partnering with ExxonMobil in this exciting play fairway, building on our existing relationship within the PNG LNG and Papua LNG projects, and look forward to commencing an active exploration programme," added Botten.

"Entering these licences is consistent with the company's strategy to focus on areas that have the potential to support the con-

tinued expansion of our LNG portfolio in PNG," he stated.

"In addition to the existing gas discoveries, we have identified a number of additional leads and prospects on the acreage," he added.

As part of the proposed farm-in arrangements, Oil Search will undertake a seismic acquisition programme over the licences for the remainder of 2017 and into early 2018, on behalf of the operator, ExxonMobil.

"Prior to our proposed bid for InterOil in 2016, Oil Search identified the onshore Papuan Gulf Basin as an area with not only discovered gas resources, but also significant further gas potential," said Botten.

Australian firm drops plan for fourth LNG plant in Queensland

Australian company LNG Ltd said it was no longer proceeding with its plans for a coal-seam-gas-to-LNG project at the Fisherman's Landing site it acquired at the Port of Gladstone in the eastern Australian state of Queensland where three other plants are in operation.

The company said it was completing efforts to relinquish the site to the Gladstone Ports Corporation and notify other relevant regulators.

"The closure of the Fisherman's Landing LNG Project was not an easy decision by the company," said Greg Vesey, Chief Executive of LNG Ltd.

"However, after many years without success in securing the long-term economic gas supply that would be needed to proceed with project construction, we made a strategic decision to close the project," explained Vesey.

"We are grateful to the GPC and the Queensland Government for their support of the FLLNG Project over the last several years," stated Vesey.

LNG Ltd last extended its lease on the Fisherman's Landing site in March 2016.

The Fisherman's Landing site is close to the three existing CSG-to-LNG plants operated by ConocoPhillips, Australia's Santos and Queensland Gas Co., a subsidiary of Royal Dutch Shell.

The LNG Ltd lease was originally signed in May 2010 - before building had even started on any of the other three plants.

The company also holds Queensland state licences for project construction as well as a pipeline licence.

Sumitomo to build import terminal to receive US Cove Point cargoes

Our Asia-Pacific editor

Japanese trading house Sumitomo Corp. plans to construct its own liquefied natural gas import terminal, giving the world's largest LNG importing nation its 35th large-scale regasification facility.

The onshore terminal will be constructed in Ehime Prefecture to support an adjacent gas-fired power plant and the needs of a nearby Sumitomo chemical works.

Costs

The project will cost up to 70 billion yen (\$565 million) and work is expected to begin before the end of the year.

Sumitomo and Tokyo Gas have a joint venture in the US and a 20-year tolling agreement at the US Cove Point LNG export project in Maryland.

The Cove Point plant comes on stream at the end of 2017 and the Japanese companies will have US cargo volumes made from their own upstream shale-gas assets.

Tokyo Gas was the last company to open a new LNG import terminal



Terminal in Ehime Prefecture will be adjacent to plants

in Japan when a facility was started up at Hitachi port in 2015.

The Tokyo Gas terminal is at the main port area of Ibaraki prefecture northwest of Tokyo on the Pacific coast.

That terminal was the first constructed by Tokyo Gas located outside of Tokyo Bay and has storage capacity of 230,000 cubic metres of LNG in a single tank.

The last import terminal completed in Japan before Hitachi LNG was the Hachinohe facility, also completed in 2015 for JX Nippon Oil, a shareholder in the Papua

New Guinea LNG production plant.

Another facility, the Kushiro LNG terminal in Hokkaido, was also opened as a satellite receiving terminal for LNG coastal tankers from Hachinohe.

In addition to its large regasification terminals, Japan has about half a dozen smaller satellite facilities.

The Sumitomo LNG plans are part of its move away from the use of coal for power generation by its own Sumitomo Electric Power group.

Chevron event hears CEO overview amid Wheatstone LNG countdown

Chevron Corp. has provided an overview of the company's operational performance and future growth plans at its 2017 annual meeting in Midland, Texas, where executives said the Wheatstone LNG project in Western Australia was on track for its start up in the next few weeks.

Chevron Chairman and Chief Executive John Watson said the US major had undergone a year of transition and was looking forward to major projects coming on stream in 2017.

"We took significant actions to reduce costs, limit cash consumption and protect the balance sheet.

"As oil prices improved, recovery in earnings was evident in the second half of the year. This

progress has continued into 2017," said the Chevron CEO.

"We are well positioned with a strong portfolio and the right business model, including a profitable downstream and chemical business and an upstream portfolio of shorter cycle opportunities, highlighted by our enviable position in the Permian Basin," said Watson.

"Our long-term strength is also underpinned by projects in Kazakhstan, Australia, the deepwater Gulf of Mexico, and attractive future options in West Africa, South America, Asia and North America," he stated.

Chevron executives said the \$US37-billion Wheatstone LNG project had followed a phased start-up of its offshore feed-gas resources.

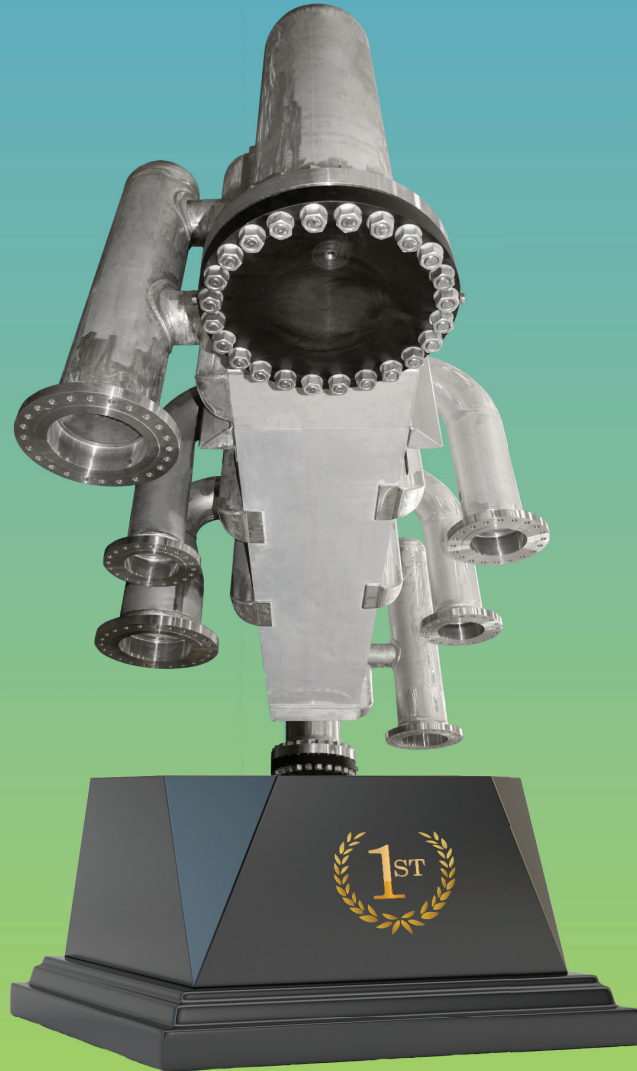
This ensured that bulk gas was available onshore for the first production Train to begin producing commercial cargoes at the plant near Onslow in the Pilbara region of Western Australia.

The executives said the Wheatstone facilities, both onshore and offshore, had now gone through the start-up sequence to meet production and commissioning schedules.

According to the timetable, the Train 1 is ready to be ramped-up followed by Train 2 in early 2018.

Chevron owns just over 64 percent of the Wheatstone project and the other shareholders include Australian energy company Woodside with a 13 percent stake.

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NEWS NUDGES

Bunkering ship is named

A naming ceremony has been held for the 5,800 cubic metres capacity "Coralus", an LNG bunkering and distribution vessel that will enter service in June for Nordic company Skangas. The vessel was commissioned by Dutch owners Anthony Veder and Sirius Shipping in 2015 and was built at the Royal Bodewes shipyard. "This new vessel will offer LNG bunkering services for Skangas, mainly operating in the North Sea, the Skagerrak area and the Baltic Sea," said Skangas, the charterer.

German Gazprom volumes rise

German natural gas imports from Russian company Gazprom have soared by 15.7 percent in the first five months of 2017 compared with last year. Gazprom said it supplied 22.3 billion cubic metres of gas to the German market from January until the end of May, which is 3 Bcm more than in the same period last year. The figures came from a meeting in St Petersburg between Gazprom Chairman Alexey Miller and Klaus Schaefer, Chief Executive of German energy company and unity Uniper.

Gasunie credit profile boosted

Dutch natural gas utility Gasunie, a shareholder in the Gate LNG import terminal in Rotterdam, has had its credit outlook changed to "positive" from "stable" by US ratings agency Moody's Investors Service. Gasunie said its A2 credit rating was affirmed. The positive outlook means that the Gasunie credit rating could be upgraded in the next 18 months because of its "solid financial profile despite lower future revenues and lower capital expenditure in the coming years."

Golar posts shipping losses amid plans for second EG FLNG hull

Our Europe editor

Golar LNG, the fleet owner and project developer, posted more operating losses at just over \$40 million in the first quarter of 2017 while advancing with floating LNG production ventures in West Africa where a second FLNG hull project for Equatorial Guinea is being proposed.

Golar posted a first-quarter operating loss of \$41.4 million, an increase in the losses registered in the previous three months of \$32.7M as the company described the shipping market as remaining relatively weak.

The latest Golar operating loss was still less than the \$141M of losses posted in the first quarter of 2016.

Fleet

The company operates a fleet of 26 vessels, mostly comprising conventional carriers, though including Floating Storage and Regasification Units on long-term charters and conversions being carried out to turn some carriers into floating liquefaction vessels.

While shipping activities were unimpressive, Golar reported advances in its LNG production joint ventures.



LNG carrier 'Hilli' under conversion at Keppel in Singapore

Golar also reported "good progress" with the Fortuna floating LNG project offshore Equatorial Guinea.

"Execution of an Umbrella Agreement that provides for government participation in the LNG mid-stream ensures the crucial alignment of key stakeholder interests," it said of the venture being developed with the UK's Ophir Energy and oil services company Schlumberger.

"Further co-operation with the government of Equatorial Guinea to commercialize gas reserves elsewhere in the country via an additional FLNG unit is cause for optimism and further underscores the benefits of good stakeholder alignment," said Golar.

The company said the conver-

sion of the "Hilli Episeyo" liquefaction hull was progressing "to a tight but achievable" schedule for a Cameroon FLNG project in West Africa.

The former carrier "Hilli" with Moss-type storage tanks was delivered in 1975 and was laid up by Golar before the market developed for FLNG production vessels.

"Transit to Cameroon and commissioning will be the next milestones," it said of the project being developed with European energy company Perenco.

"The mooring is expected to be ready for connection to Perenco's onshore processing facilities during July and Perenco are on track with their infrastructure responsibilities," the company explained.

Rolls-Royce wins ship propulsion order for five Norwegian LNG ferries

Rolls-Royce of the UK said its maritime propulsion unit signed an agreement to supply 15 gas engines to Norwegian ferry company, Torghatten Nord AS, to power five ferries to be operated on liquefied natural gas fuel.

The five LNG-fueled vessels will carry passengers, freight and vehicles on the route from the Norwegian port of Bergen to Stord.

Torghatten Nord currently has 33 ferries and 10 express boats in operation in Norway.

Two of the vessels will be built

at the VARD Brevik, yard in Norway and the other three will be built at the Tersan Shipyard in Turkey. The vessels are expected to enter service in January 2019.

Four earlier Norwegian LNG ferries, equipped with Rolls-Royce Bergen gas engines, were built at the Polish Remontowa shipyard and have been operating on two routes serving the Lofoten archipelago in Norway.

"Since the introduction of our first marine gas engines 10 years ago, Rolls-Royce has delivered

more than 700 gas engines on land and at sea accumulating over 25 million running hours of operating experience," said Kjell Harloff, Rolls-Royce Vice President for the marine engines unit.

"We have proved that the Bergen lean-burn, pure gas, medium-speed engine range, combined with efficient hull designs, can help customers, like Torghatten Nord, cut their ships' emissions and fuel bills significantly," said Harloff.

Chilean LNG terminal stakeholder and utility sign \$400M supply deal for Valparaíso region

Our South America editor

State-owned Chilean energy company Empresa Nacional del Petróleo (ENAP) and power utility Colbun have signed a 12-year deal worth up to US\$400 million for natural gas supplies and regasification services from the Quintero LNG import terminal in Chile.

The agreement includes the delivery of regasified LNG from Quintero, with Colbun taking supplies from ENAP or third parties.

ENAP is one of the main shareholders in the Quintero terminal along with Spanish utility Enagas.

The Quintero facility was the first land-based LNG import terminal in the southern hemisphere when it came online in 2009.

Chile is also now the second-largest recipient of US LNG shipments from the Sabine Pass export plant in Louisiana, behind Mexico



Accord includes delivery of LNG from Quintero terminal

and ahead of China. The Quintero facility can handle 15 million cubic metres per day of natural gas and has LNG storage capacity in three tanks amounting to 334,000 cubic metres.

Germany's Siemens has just been awarded a contract by Colbun to upgrade its Nehuenco

power plant, which will receive the regasified LNG.

The 368-megawatt combined-cycle gas-fired plant is located in Quillota and is a main provider of electricity for the Valparaíso region.

ENAP and Colbun said the contract would come into force in January 2019, allowing continuity

of operations at the Nehuenco power facility.

"With this agreement, ENAP ensures the placement of its gas in a time horizon that allows giving sustainability to our LNG business," said ENAP Chief Executive Marcelo Tokman.

"ENAP continues to consolidate its position in the natural gas market, fulfilling its mandate on the energy agenda to boost natural gas development for homes, industrial use and electricity generation," added Tokman.

According to Colbun CEO Thomas Keller the main advantage of the accord is that it allows the utility direct access to the international LNG market.

"This increases our options to operate Nehuenco and makes them more flexible," he said.

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Small-scale ships built in China for Stolt-Nielsen's off-grid projects

Stolt-Nielsen, the Norwegian-listed shipping and storage company, said it ordered two 7,500 cubic metres capacity liquefied natural gas carriers with options for three similar ships as it builds a small-scale portfolio to serve projects in areas such as the Italian Island of Sardinia and Scotland.

The contract for the initial two ships is valued at around \$80M, including site-team costs and capitalised interest during construction.

The ships are to be built at Keppel Singmarine's shipyard in Nantong, China, with deliveries scheduled in the second and third quarters of 2019.

"The ships will be capable of operating on either diesel fuel or LNG, with a class notation and technical capability for STS (ship-to-ship) bunkering, thus significantly enhancing their versatility," the company said.

The Stolt-Nielsen Gas unit has established a wholly owned subsidiary called Avenir LNG to focus mainly on the development of small-scale LNG supply chains serving "stranded demand", where off-the-grid customers lack access to natural gas.

SNG's current projects include plans to build and operate an LNG terminal and distribution facility in the port of Oristano in Sardinia and a venture to provide LNG to areas of Scotland not served by the existing natural gas grid.

"The newbuilds would be deployed, at least in part, in the supply chains serving these projects," SNG added.

SNG has negotiated a Heads of Agreement with an oil major with the intention to charter the first ship for trading in the Mediterranean. The second ship is expected to trade in Northern Europe.

Gas Natural Fenosa of Spain to receive both Russian and US LNG cargoes

Our Europe editor

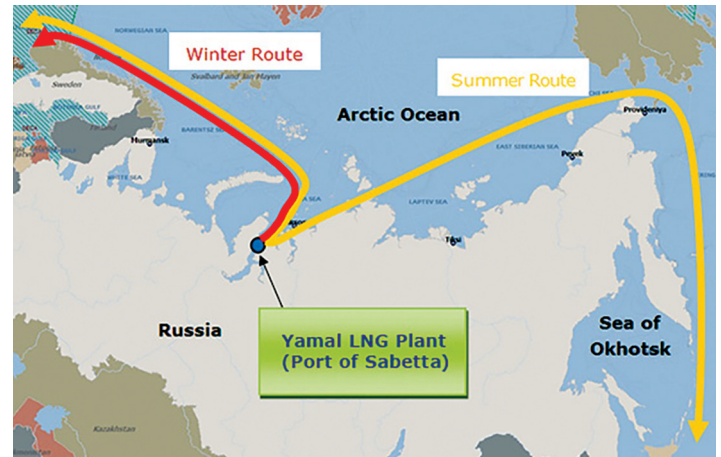
Russian natural gas company Novatek said Spanish energy company Gas Natural Fenosa would be one of the first customers to receive cargoes from the Yamal liquefied natural gas export project in Arctic Russia when it starts commercial operations.

Novatek Chairman Leonid Mikhelson said GNF had signed a 25-year contract back in 2013 which would see it receiving regular LNG supplies from the liquefaction plant currently being completed on the Yamal Peninsula in Siberia.

Confirmed

Mikhelson said GNF would receive 2.5 million tonnes per annum of LNG worth more than 30 billion euros (\$33.4Bn) over the life of the agreement.

The Yamal venture will be operated by Novatek and the other shareholders are French energy company Total and China National Petroleum Corp. The Yamal facility will eventually produce 16.5 mil-



GNF cargoes from Yamal can be shipped to Europe or Asia

lion tonnes per annum from three Trains.

GNF is based in Barcelona and operates in more than 30 countries, with over 23 million utility customers and a wide spread of assets.

In addition to being a buyer of Russian LNG, GNF is also a main contract holder for US volumes.

It has contracts with Cheniere Energy's Sabine Pass LNG export plant and its Corpus Christi facility under construction in Texas.

GNF is one of the six companies

that have signed 20-year agreements for Sabine Pass cargoes from its eventual 27 MTPA of capacity from six Trains.

Cheniere is also the developer of the Corpus Christi export project on the US Gulf Coast of Texas.

The Corpus Christi liquefaction plant will have three Trains with a total of 13.5 MTPA of output.

GNF is among Cheniere's list of buyers of Corpus Christi cargoes, along with two other Spanish utilities, Iberdrola and Endesa.

Australian Ichthys LNG project gets platform from South Korea shipyard

Japanese energy company Inpex said its central processing facility for the Ichthys liquefied natural gas project had arrived in Australian waters off the Northern Territory after being towed for 34 days from a shipyard in South Korea.

The CPF, called the "Ichthys Explorer", weighs 120,000 tons and has topsides measuring 130 metres by 120 metres.

It is being deployed 220 kilometres off the north coast of Western Australia to help send feed-gas through an 890-kilometre subsea pipeline to the liquefaction plant at Bladin Point near Darwin.

"The safe completion of the 5,600-kilometre tow of the 'Ichthys Explorer' from South Korea to the Ichthys Field is an-

other significant milestone for the project," said Louis Bon, Managing Director of Ichthys LNG.

The CPF is the central hub for initial offshore processing of all the well fluids and gas delivered from a 130-kilometre network of subsea well infrastructure.

Most condensate and water from the CPF will be transferred to a nearby floating production, storage and offloading facility (FPSO), the "Ichthys Venturer".

The "Ichthys Explorer" left the Daewoo Shipbuilding & Marine shipyard on April 28 for the tow to Australia.

Inpex aims to bring the liquefaction plant on stream to begin commercial operations later in 2017 or early 2018.

When completed by the main contractors, the JKC consortium comprising Japanese engineering groups JGC and Chiyoda and US engineering company KBR, the liquefaction facility will have two Trains with nameplate output of just short of 9 million tonnes per annum.

Inpex Chief Executive Toshiaki Kitamura recently declined to be pinned down on an actual date for the first cargo to be shipped after a series of delays at Ichthys LNG.

The latest problems included several issues such as wage disputes involving a local construction company working on the project which led to delays in building storage tanks and power facilities.

Completion in 2018 of shale-gas pipeline from Texas under Gulf of Mexico may limit LNG needs

Our North America editor in New York

The Mexican subsidiary of Semptra Energy of the US, owner of the Cameron LNG export project in Louisiana, and Canadian pipeline company TransCanada have started work on the \$2-billion Sur de Texas venture to transport shale gas under the Gulf of Mexico from South Texas to the Mexican city of Tuxpan and to power plants around the country.

California-based Sempra won the contract for its Mexican subsidiary Infraestructura Energetica Nova (IEnova) in a joint venture with TransCanada in June 2016.

The pipeline will be in service by June 2018 and will reduce the need of LNG in Mexico, which is currently the largest importer of LNG shipments from the Sabine Pass plant in Louisiana, operated by Cheniere Energy.

Capacity

The Sur de Texas-Tuxpan pipeline will have 2.6 billion cubic feet per



The Sur de Texas pipeline plan and other Mexican projects

day of capacity, the equivalent to about 40 percent of Mexico's natural gas demand.

The 42-inch diameter, 497-mile pipeline will begin offshore in the Gulf of Mexico at the border point near Brownsville in Texas and end in Tuxpan in the state of Veracruz.

In addition to a connection with the Cenagas pipeline system in Altamira, where a Mexican LNG import terminal is located, the project will interconnect with TransCanada's Tamazunchale and Tuxpan-Tula pipelines.

The new Sur de Texas-Tuxpan

line when completed will supply government-run power plants located in the states of Tamaulipas and Veracruz, as well as the Eastern, Central and Western regions of the country.

TransCanada will develop, operate and own 60 percent of the project, with IEnova owning 40 percent.

All associated Mexican projects are expected to be operational by the end of 2018 and are underpinned by 25-year take-or-pay natural gas contracts with Mexico's Federal Electricity Commission.

TransCanada currently owns and operates the Guadalajara and Tamazunchale natural gas pipelines and is investing US\$3.8Bln to develop and complete construction of four additional pipelines.

Enova already develops, builds and operates energy infrastructure in Mexico and is studying an LNG production and export plant proposal for the Semptra-owned Costa Azul import terminal on the Pacific Coast.

Sempra is also progressing with its Cameron LNG export plant. Sempra's head of infrastructure businesses, Joseph Householder, said the Louisiana venture remained on track after experiencing some weather-related construction delays.

Householder said Sempra and its French and Japanese partners, Engie, Mitsui and Mitsubishi were committed to the current Cameron schedule for the first of three liquefaction Trains to be on stream by early 2018.

Mexico to launch contract system for pipeline capacity as part of gas and energy market reforms

Mexico, the largest US LNG and pipeline natural gas importer, will launch a contract system on July 1 for natural gas pipeline capacity reservations as part of its transition to a fully competitive market.

There will be around two dozen items that will be new requirements and practices for domestic participants in the reformed Mexican natural gas market.

LNG imports will be subject to the same rules as pipeline natural gas. Mexico has imported around 25 cargoes of US LNG so far from the Sabine Pass export plant in Louisiana.

Mexico's Energy Secretariat (Sener), together with the National Natural Gas Control Center (Cenagas) are coordinating the new market.

From July 1, end-users will have to be in possession of information on issues such as nominations, contracting, daily gas levels, tax requirements and import permits.

During the third quarter of 2017 it is expected that sale price regulations covering gas and LNG imported from the US and elsewhere will be lifted.

Mexico will then move in 2018 towards removing its pricing formula for domestically-produced natural gas.

The Federal Electricity Commission (CFE) runs the power generating system and said that Mexico would get its own natural gas price indexes over time.

“As the gas pipeline network is expanded, the number of arbi-

trage points will increase, with imported gas by pipeline or LNG carrier competing with gas produced by Petróleos Mexicanos (Pemex)," the CFE said.

“These arbitrage points will help determine reference prices in their respective regions, based on the source of gas and transportation costs.

“Currently, the main arbitrage points are in northern Tamaulipas State, Encino (Chihuahua State), the Bajío region and Chiapas State.

"Gas suppliers, including private companies, will be able to reserve transportation capacity in the Natural Gas Transportation and Storage System (Sistrangas)," the CFE added.

As a result, the market will

eventually move to prices determined by supply and demand, rather than being based on “first-hand sales” prices, which are essentially the maximum prices at which Pemex can sell natural gas.

Expected demand growth will be met mainly by a combination of increasing imports of natural gas from the US and by large expansions of both cross-border US-Mexico pipeline capacity and Mexico's domestic natural gas pipeline network.

It is acknowledged that it will take several years before what looks like a fully formed competitive market emerges.

"Liquidity will build up as private companies invest in the industry," the government said.

US LNG firm succeeds in latest equity round for Mississippi River and Calcasieu Channel plants

Our North America editor in New York

Venture Global LNG, the company developing two liquefaction and export plants in Louisiana, has now raised more than \$360 million in financing, attracting high-end investors to its latest equity offering.

The US export projects being developed by VG LNG include the Plaquemines plant on the banks of the Mississippi River and a second facility on Calcasieu Ship Channel in Louisiana.

Equity sale

In its latest sale of equity, arranged by US investment banks Morgan Stanley and Goldman Sachs, VG LNG raised additional capital of just over \$81M in what was its sixth round of equity investment.

VG LNG recently began its permit application process for the Plaquemines facility with the Fed-



LNG carriers will soon be part of Mississippi River traffic

eral Energy Regulatory Commission.

The Plaquemines plant will be located on 630 acres near river mile-marker 55 on the west side of the Mississippi, 30 miles south of New Orleans.

The Mississippi river project will produce 20 million tonnes per annum of LNG and will include 20 small-scale liquefaction Trains, four LNG storage tanks and three marine loading berths for ocean-going vessels.

VG LNG's second plant at Cal-

casieu Pass will produce at least 10 MTPA of LNG.

The company was founded by Michael Sabel, an equity fund manager and venture capitalist, and Robert Pender, a former partner at Hogan Lovells, a global law firm, and they recently signed an agreement with the oil and gas unit of General Electric to supply compressor power for liquefaction and to generally cooperate on the projects.

"This private placement represents the capital markets contin-

ued confidence in our ability to execute on our development of 30 million tons of LNG production," said Co-Chief Executives Sabel and Pender after the latest transaction.

"By 2021 we expect to launch commercial operations for Calcasieu Pass and deliver the lowest cost LNG from North America to the global market," they added.

The FERC permit application for the VG Plaquemines project also includes one for its affiliated Gator Express pipeline project.

VG LNG Has also taken on board GE Oil & Gas as a strategic partner. The Plaquemines plant would be incorporating GE's power, pre-treatment and modularized system for LNG liquefaction.

The Calcasieu Pass plant will be located on a 1,000-acre site at the intersection of the Calcasieu Ship Channel and the waters of the Gulf of Mexico.

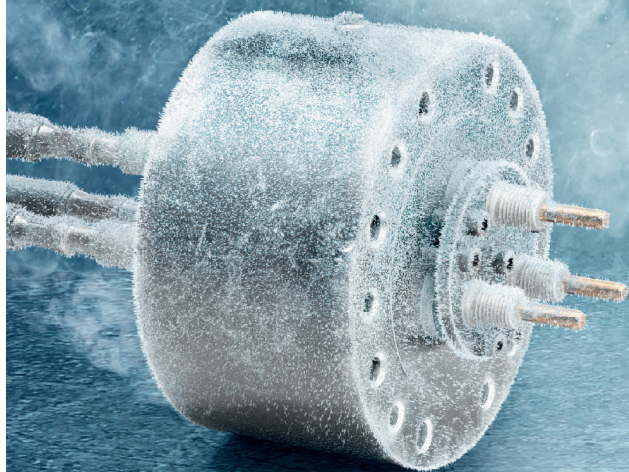


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