

LNG Review April 2018 - Recent issues and events - Hiroshi Hashimoto*

Introduction

During the first quarter of 2018, the Northeast Asia's big LNG markets (Japan, China, Korea and Chinese Taipei) imported 54 million tonnes of LNG, 15% or 7 million tonnes more than the same period one year ago. The average landed price in the region in the period was USD 9.0 / million Btu, 18% higher than that of one year ago. Judging from the trend in crude oil prices, to which term-contract LNG prices in the region are still largely pegged, average LNG prices paid by Northeast Asia's consumers are expected to be trending up at least for the next two months (until June).

Japan's LNG import during the quarter was 24.49 million tonnes, larger than any single quarter in the history. The total LNG import in the fiscal year to March was slightly below the one-year earlier number at 83.89 million tonnes, though the Japanese importers paid JPY 4.07 trillion for this, an increase of more than 20%. The average unit price of the commodity increased by almost USD 1.5 per million Btu for the fiscal year.

Meanwhile, spot LNG prices in the region, assessed by multiple price reporting agencies, gained USD 1 from USD 7 at the beginning of April to around USD 8 at the end of the month, partly pulled by higher oil and oil-linked contracted LNG prices.

There were progresses in LNG supply projects and gas supply projects targeting existing LNG projects here and there around the world.

This paper looks at some important issues in the LNG industry in April 2018.

[Asia Pacific]

According to Japan's customs statistics, the country's LNG imports in March 2018 amounted only to 7.93 million tonnes, the smallest for March since 2013. But the LNG import during the quarter ending in March was 24.49 million tonnes, larger than any single quarter in the history.

Retail gas sales by the incumbent city gas utility providers (203 entities) in the fiscal

* The writer belongs to Gas Group, Fossil Fuels and Electric Power Industry Unit.

year ending in March 2018 was 38.16 billion cubic meters (based on 41.8605 MJ/cubic meter), a 1.2% increase year-on-year and the highest ever, according to the Japan Gas Association.

The Japan's transport and environment ministries began to invite companies to a subsidy programme designed to find the best available technologies to encourage LNG-fuelled vessels.

Tokyo Gas Engineering Solutions (TGES), Shikoku Electric Power, Sumitomo Chemical, Sumitomo Joint Electric Power and Shikoku Gas established the Niihama LNG Company to build an LNG terminal inside Sumitomo Chemical's plant in Ehime to supply gas to a planned power station and other customers in surrounding areas.

Korea expects its natural gas demand to rise to over 40 million tonnes in 2031, the Ministry of Trade, Industry and Energy said, as Korea shifts away from coal and nuclear. It had previously forecast natural gas demand falling to 34.65 million tonnes.

Singapore's Pavilion Energy imported its first cargo of LNG for domestic use in early April 2018. Pavilion had previously bought LNG cargoes, and they had been reexported.

According to China's customs statistics, the country imported 3.25 million tonnes of LNG and 2.71 million tonnes of pipeline gas in March 2018. The cumulative imports in the first quarter of the year were up 59% year on year at 12.43 million tonnes of LNG and up 37.5% at 20.67 million tonnes of natural gas as a whole including both pipeline gas and LNG. According to China's NDRC (National Development and Reform Commission) on 28 April 2018, the country's natural gas apparent consumption in the first quarter of 2018 was 69.0 bcm, up 17.4% year-on-year.

China National Offshore Oil Corporation (CNOOC) sold cargoes of LNG on a domestic exchange for the first time. CNOOC sold 60,000 tonnes for delivery in July 2018 and 30,000 tonnes for November delivery through an auction on the Shanghai Petroleum and Gas Exchange, sources said. Sinopec aims to more than double its receiving capacity of LNG over the next six years and lift domestic shale gas production by two thirds by 2020. Sinopec plans to add new LNG receiving facilities to a total of 26 million tonnes per year by 2023, up from the current 9 million tonnes.

Indian Oil Corporation (IOC) executed a tolling agreement with Dhamra LNG Terminal (DLTPL) for booking 3 million tonnes per year of regasification capacity in the 5 million tonne per year LNG terminal, being constructed at Dhamra Port, in Odisha. DLTPL is owned by Adani Group.

BP and Reliance Industries Limited (RIL) announced the sanctioning of the 'Satellite cluster' project in Block KG D6. The 'Satellite cluster' is the second of three projects in the Block KG D6 integrated development. The first of the projects, development of the 'R-Series'

deep-water gas fields, was sanctioned in June 2017. Together the three projects are expected to bring 30 - 35 million cubic metres a day new domestic gas production onstream from 2020 to 2022.

H-Energy launched India's first FSRU (floating storage and regasification unit) based LNG terminal at JSW Jaigarh Port in Ratnagiri District, Maharashtra. It is scheduled for commercial operations by Q4 2018.

Qatargas delivered its first LNG cargo to Bangladesh's Petrobangla. The commissioning cargo was loaded at Ras Laffan aboard the Excelerate Excellence shipped to the new site near Moheshkhali Island in Bangladesh. The following commercial deliveries represent the first long-term agreement to be delivered through ship-to-ship transfer in open water. In September 2017, Qatargas signed a long-term SPA to supply up to 2.5 million tonnes per year to Petrobangla for 15 years.

Santos agreed to grant Harbour access to due diligence pursuant to Harbour's non-binding offer to acquire 100% of the fully diluted ordinary shares of Santos.

Santos completed commissioning and start-up of the Scotia CF project in Queensland, with initial full field production exceeding 40 TJ/day (0.27 million tonnes per year). The project, situated in the Bowen Basin, 340 km northwest of Brisbane, will supply about 70 TJ/day (0.47 million tonnes per year) at peak production in late 2019, boosting gas supply to the Santos GLNG project.

Liquefied Natural Gas Limited (LNGL) executed an agreement with LNG Queensland for the acquisition of all the shares of LNGL's wholly-owned subsidiary Gladstone LNG.

AGL Energy announced its commitment to build a 252 MW gas-fired electricity generation plant near Newcastle in NSW near AGL's Newcastle Gas Storage Facility. Construction would be targeted to complete during the 2022 calendar year.

Australia's Woodside Petroleum's first quarter 2018 revenue rose 30% from a year earlier on increased output and higher LNG prices. Output increased to 22.2 million barrels of oil equivalent (mboe) from 21.4 mboe in the March quarter 2017, helped by a ramp-up in production at the Wheatstone LNG project.

Woodside Energy entered into a non-binding memorandum of understanding (MOU) with Perdaman Chemicals and Fertilisers. Woodside will supply approximately 125 terajoules per day of domestic gas (0.84 million tonnes per year) for use in Perdaman's proposed 2 million tonne per year urea plant on the Burrup Peninsula. Natural gas will be supplied from Woodside's portfolio of domestic gas underpinned by the proposed Scarborough development.

Inpex and partners bought a cargo of LNG to cool their Ichthys LNG plant in Australia ahead of a potential start-up of the facility, a spokesman said.

The Barossa joint venture, consisting of ConocoPhillips, SK E&S and Santos, approved entering the Front End Engineering Design (FEED) phase on the Barossa Offshore Project. Barossa is an offshore gas and light condensate project that proposes to provide a new source of gas to the existing Darwin LNG facility. The offshore development concept includes a Floating Production Storage and Offloading (FPSO) facility, subsea production system, and gas export pipeline. The existing Darwin LNG infrastructure owners are assessing several options to backfill the facility from 2023 when the current offshore gas supply from Bayu-Undan is expected to be exhausted.

The Northern Territory Government announced that it had accepted all 135 recommendations of the independent fracking inquiry. Based on the inquiry's advice about no go zones and coupled with areas where there is no petroleum potential, 49% of the Territory will be frack free, including in National Parks, Conservation Areas, Indigenous Protected Areas, towns, residential and strategic assets, and areas of high cultural, environmental or tourism value. Strict new laws and regulations will be put in place when fracking takes place.

Sapura Energy and partners reached a final investment decision (FID) to develop the Gorek, Larak and Bakong fields in the SK408 production sharing contract. The fields will be developed as three separate wellhead platforms tied back to the existing processing facility and to the MLNG complex in Bintulu.

Eni announces the approval of the Plan of Development (POD) for the Merakes field located in the East Sepinggan PSC in the Makassar Strait, offshore East Kalimantan, Indonesia, by the Minister of Energy and Mineral Resources of the Republic of Indonesia. The Merakes field is located 35 kms South West of the Jangkrik Floating Production Unit (FPU). The gas will be shipped from the Jangkrik FPU to the Bontang LNG Processing facility operated by PT Badak in the East Kalimantan.

The Indonesian government approved the transfer of a 56.96% stake in state gas utility Perusahaan Gas Negara (PGN) to Pertamina. PGN will become a sub-holding company under Pertamina, managing gas from midstream to distribution and marketing.

Transborders Energy signed a Joint Study Agreement with a major Asian LNG Buyer to work on Transborders' Generic Floating LNG (FLNG) Solution for a range of discovered but stranded gas resources. It is anticipated that the Joint Study will be completed by early 2019 and provide a sufficiently mature product to be marketed to resource owners for the development of their resource. Transborders is working with its partners Add Energy and TechnipFMC, its technical advisor MODEC and a major Asian LNG Buyer to progress the development.

ExxonMobil said that production of LNG resumed at the PNG LNG project in Papua

New Guinea following a temporary shutdown of operations after a severe earthquake occurred in the region on 26 February 2018. LNG exports resumed later.

ExxonMobil announced that the size of the natural gas resource at the P'nyang field in Papua New Guinea has increased to 4.36 trillion cubic feet of gas, an 84% increase from a previous assessment completed in 2012. The results support ExxonMobil's discussions with its joint venture partners on a three-train expansion concept for the PNG LNG plant, with one new train dedicated to gas from the P'nyang and PNG LNG fields and two trains dedicated to gas associated with the Papua LNG project.

[North America]

Cheniere Energy and the United States Pipeline and Hazardous Materials Safety Administration (PHMSA) entered into a Consent Agreement and Order that sets forth the corrective measures to be implemented before the company may return to service two LNG storage tanks at its Sabine Pass LNG export plant. The tanks have been offline since an inadvertent release of LNG earlier in 2018.

Cheniere Corpus Christi Holdings engaged several financial institutions to act as Joint Lead Arrangers to structure and upsize its existing approximately USD 4.6 billion of credit facilities to USD 6.4 billion. Cheniere expects to close the amended credit facilities, proceed with a final investment decision (FID) for Train 3 of the CCL Project, and issue a notice to proceed to Bechtel Oil, Gas and Chemicals, Inc. for Train 3 in the first half of 2018. Cheniere expects to make a positive Final Investment Decision on Train 3 at Corpus Christi project in the coming weeks.

The Dominion Energy Cove Point (DECP) LNG plant entered commercial service. After completing a planned maintenance outage, the facility has been ramping up to full production of LNG from natural gas provided by its export customers since late March 2018. DECP will produce LNG for ST Cove Point, the joint venture of Sumitomo Corporation and Tokyo Gas, and for Gail, under 20-year take-or-pay contracts. The plant shipped its first cargo of LNG to Japan on 22 April 2018.

Freeport LNG announced that the first liquefaction train is expected to enter service around September 2019, with the second and third trains expected in service around January and May 2020, respectively.

In its monthly status report to FERC (Federal Energy Regulatory Commission), Lake Charles LNG stated that on 2 February 2018, it requested from the Louisiana Department of Environmental Quality an additional 18-month extension of the deadline to commence construction of its proposed terminal at Lake Charles, Louisiana. The company requested a new deadline of 1 November 2019. The request is currently pending approval.

Texas LNG has signed eight non-binding deals with potential five buyers in China, two in Southeast Asia and one in Europe. The first phase is expected to begin production in 2023. The company expects to make a final investment decision (FID) in 2019.

LNG Canada selected the joint venture between JGC and Fluor as its Engineering, Procurement and Construction (EPC) Contractor. The contract award is conditional on a final investment decision.

[Middle East]

Qatargas and the Electricity Generating Authority of Thailand (EGAT) announced the signing of a Memorandum of Understanding (MoU) to explore collaborative efforts in the LNG business. The MoU includes a scope for the possible supply of LNG to Thailand.

BP will add another 0.5 billion cubic feet of gas a day to its production from the Khazzan field in Oman's Block 61, following a final investment decision (FID) to develop the second phase of the project. Together with its partner, the Oman Oil Company Exploration & Production, BP confirmed that the Ghazeer project is expected on stream in 2021.

[Africa]

Eni announced the start-up of the second production unit (T-1) of the Zohr project, which will increase installed capacity by 0.4 bcf/d (3 million tonnes per year), just 4 months after the field's start-up. Zohr has a capacity of 0.8 bcf/d (6 million tonnes per year). The production ramp-up is planned to continue, in order to reach 1.2 bcf/d in May 2018, 2 bcf/d by end 2018 and the production plateau (2.7 bcf/d (20.51 million tonnes per year)) in 2019. Eni holds a 60% stake in the Shorouk Block, Rosneft 30% and BP 10%. In March 2018, Eni agreed to sell a 10% stake in the concession to Mubadala Petroleum.

No news was heard on the status of the first LNG shipment from Perenco's floating export plant in Cameroon until the end of April 2018, after the previous information of delay earlier in the month. The first cargoes were previously expected in early April.

TechnipFMC was awarded a front-end engineering design (FEED) contract by BP for the floating production storage and offloading (FPSO) unit for the Tortue/Ahmeyim Field Development, an LNG project located offshore on the maritime border of Mauritania and Senegal. The Tortue/Ahmeyim Field Development is located in the C-8 block off the shore of Mauritania and the Saint-Louis Profond block offshore Senegal.

Golar LNG entered into a Preliminary Agreement and exchanged Heads of Terms (HoT) for a Charter Agreement with BP. The HoT represents a commitment between the Parties to translate the key commercial terms into a full agreement and proceed with Front End Engineering Design (FEED) on the provision of an FLNG vessel to support the

development of Phase 1A of the Greater Tortue / Ahmeyin field, located offshore Mauritania and Senegal.

Anadarko Petroleum said Mozambique LNG's near-term marketing objective has been met with non-binding key terms agreed with multiple buyers for more than 8.5 million tonnes per year.

Tanzania Petroleum Development Corporation (TPDC) said it was searching for a consultant to develop a commercial, legal and technical framework for the LNG project.

[Europe / Russia]

Fluxys took over the concession in the port of Antwerp at quay 526 - 528 to make LNG available as an alternative fuel for ships and barges. Fluxys will add a permanent LNG bunkering facility by the end of 2019 to complement the existing mobile (truck-to-ship) bunkering service. The ports of Antwerp, Amsterdam, Rotterdam, Zeebrugge, Bremen, Le Havre and Marseille are currently collaborating under the auspices of the International Association of Ports and Harbours to develop a suitable accreditation process, known as the LNG Accreditation Audit Tool.

Elengy and its subsidiary Fosmax LNG recently decided to build an LNG tanker loading station at the Fos Cavaou terminal. With the one already in operation at the Fos Tonkin LNG terminal, the new station will triple the loading capacity of tankers at the Fos terminals. Works will start in summer 2018 for a commissioning during the first quarter 2019. It is part of the "Motorways of the Sea" concept defined by the European Union, which co-finances it as part of its Connecting European Facility-Transport programme (CEF-T).

The European Commission cleared the acquisition of Engie's portfolio of LNG assets by Total. Total will take control of participating interest in the Cameron LNG project, long-term LNG sales and purchase agreements, an LNG tanker fleet as well as access to regasification capacities in Europe.

Total could join Novatek's second large-scale LNG project, Arctic LNG 2 in Russia, Novatek Chief Executive Officer said.

During the first three and a half months of 2018, Russia's Gazprom supplied 62.2 billion cubic meters of gas to outside the former Soviet Union countries, an increase by 6.3% compared to the same period in 2017.

At the Black Sea coast of Turkey, the deep-water pipelay for Line 1 of the TurkStream offshore gas pipeline was completed. The project is being simultaneously implemented on shore in Russia and Turkey and in the Black Sea. Upon completion of the landfall sections the works on the first line will be completed.

[South America]

- BP signed a memorandum of understanding (MOU) to explore areas of cooperation with Petrobras. The two companies have committed to exploring potential joint commercial agreements in areas of mutual interest in upstream, downstream, trading and across low carbon initiatives, inside and outside Brazil.
- Golar LNG announces that Golar Power, a joint venture with Stonepeak Infrastructure Partners, has reached financial closing on the 1.5 GW Porto de Sergipe I Power Project. Located in Sergipe, NNE of Brazil, the Project will be the largest and most efficient thermoelectric power plant in Latin America and the Caribbean upon its completion. CELSE (Centrais Elétricas de Sergipe S.A.), the Project company 50% controlled by Golar Power, will receive USD 1.340 billion under a non-recourse project financing structure. Total proceeds from the financing will be used to fund remaining capital expenditures of the Project, including: the 1.5GW Power Plant, a dedicated 34km 500KV high-voltage transmission line, and associated gas pipeline and mooring infrastructure required for the integrated LNG import terminal facility.
- Höegh LNG took delivery of Höegh Esperanza, its eight floating storage and regasification unit (FSRU), constructed at Hyundai Heavy Industries (HHI) in Korea and is designed for open, combined and closed loop regasification operation. It has a storage capacity of 170 000 cbm of LNG and a maximum regasification throughput of 750 million standard cubic feet per day. It is equipped with a GTT Mark III membrane containment system and dual-fuel diesel-electric (DFDE) propulsion. Höegh LNG is currently in advanced negotiations for intermediate employment of Höegh Esperanza on a combined FSRU and LNGC contract with seasonal use in FSRU mode until the anticipated start date of its intended long-term FSRU contract in Chile.
- According to the latest analysis by OIES, it appears likely that LNG vessels will secure two transit slots per day through the Panama Canal within the next year or so. Two slots per day represents just 38.3 bcm/year (28.15 million tonnes) of LNG exports from the United States to Asian markets. LNG exports to Asia, in excess of Panama Canal transit capacity, would take alternative routes costing USD 0.4 -0.63/million Btu more than that via Panama.

Reference: Company announcements, Reuters, Bloomberg, Times of India, Star Online Malaysia, Les Echos, OIES (Oxford Institute for Energy Studies), Cedigaz News Report.

Contact: report@tky.ieej.or.jp