East Kalimantan LNG Project Analysis

Indonesia is one of the main exporters of LNG, which is fast gaining popularity as a viable energy source. The Kalimantan LNG project is a major LNG project in Indonesia. This paper examines and evaluates the commercial aspects and viability of the East Kalimantan LNG project.

With production of over 7.6 BSCD of natural gas, Indonesia ranks eighth in the world in gas production. 52% of production is produced for export while the remaining 48% is consumed by the domestic market. Today Indonesia is the second-largest LNG exporter in the world, with exports of 22 million tons of LNG in 2007. This represents about 14% of the world LNG market and a 25% share of the Asia Pacific LNG market. Indonesian LNG exports emerge from the Bontang LNG plant in East Kalimantan and the Arun LNG plant in Nanggroe Aceh Darussalam (northern part of Sumatra). Arun LNG output has actually been declining due to the depleted gas reserves in the Arun gas fields.

Indonesia hopes to increase its LNG production as a number of gas production centers are expected to come onstream in the near future. The Donggi Senoro LNG plant, to be built in central Sulawesi, and the Tangguh LNG plant in Papua will soon begin supplying LNG, mainly for the export market. The Tangguh LNG plant, with an initial capacity of 7.5 MTPA, has started its commissioning and is expected to make its first shipment to customers in the second quarter of 2009. The Donggi-Senoro LNG, with initial capacity of 2.0 MTPA has concluded sales negotiation with buyers. The other potential LNG gas sources are Natuna D-Alpha in the South China Sea and the Masela project in the Arafura Sea. Natuna is said to have contained about 45 Trillion Cubic Feet (TCF) of recoverable reserves and is currently being reviewed for development, while gas reserves in Masela have been estimated at more than 10 TCF of gas, and the contractor of Masela PSC has submitted its Plan of Development to the Government of Indonesia (GOI). With this development, Indonesia aims to continue to play its role as one of the leading LNG producers and exporters in the world.

East Kalimantan Lng Sales

LNG exports from Bontang reached 17.95 million tons of LNG in 2007, of which 72.42%, or 13.00 MT were exported to Japan, 8.87 % or 1.59 MT exported to South Korea and 18.71% or 3.36 MT exported to Taiwan. These LNG sales generated over 8.5 Billion USD in revenues for the state and the gas producers collectively. This represents about 35% of total oil and gas revenues.

TOTAL E&P INDONESIE (TOTAL) together with the other two gas producers in East Kalimantan, collectively known as East Kalimantan (EK) Gas Producers, currently produce, supply and deliver over 3,100 MMSCFD of natural gas, of which 88% was delivered to the Bontang LNG plant in support of the Seller's performance, under its LNG contracts. The remaining 12% was delivered to domestic fertilizer plants. TOTAL is the biggest gas producer, supplying more than 80% of inlet gas requirements to Bontang LNG plant. The natural gas supply comes from the gas fields in the Mahakam PSC areas.

To develop an LNG export project following the discoveries of Badak gas field in East Kalimantan in 1972, the EK Gas Producers signed an agreement with Pertamina. Under this agreement, Pertamina is the sole seller of LNG and LPG exports. Pertamina also agreed to finance and build the Bontang LNG plant. The East Kalimantan producers provide consultation regarding marketing, plant construction and

operation. The Bontang LNG plant was completed in 1977, only five years after discovery of the Badak gas field.

The first LNG Sale Contract, for a total volume of 8.4 million tons of LNG from Indonesia, was signed in 1973, between Pertamina and a consortium of six Japanese buyers. This LNG sale contract was the largest single contract in the world and it was historically set as the pricing benchmark for other LNG sales in the Asia Pacific market. It was an ex-ship contract, of which the Seller was responsible for securing LNG transport. It was also a unique contract because the source of supply came from Arun and Bontang LNG plants, and therefore provided more flexibility and security of supply. 8 LNG tankers were built to transport the cargoes to Japan. As buyers were becoming more familiar with LNG transport, they preferred to arrange this to accommodate their subsequent LNG contracts as well. Therefore, the LNG sales contracts signed in 1981 with four Japanese buyers, for a volume of 3.6 MTPA, were delivered on an FOB (where the responsibility for shipping rests with the buyer) basis. The 1973 and 1981 LNG sales contracts, with a total volume of 12 million tons per year, will expire in December 2010 and March 2011, respectively. For sales beyond 2010, the Seller and the Japanese buyers signed a Heads of Agreement in February 2009, and this will be followed by a sale contract negotiation. Under the Heads of Agreement, Bontang will supply 25 million tons of LNG for 10 years.

To date, there are 8 LNG sales contracts in place with Bontang LNG buyers in Japan, South Korea and Taiwan, with a total commitment of 20 million tons of LNG per year. All administration and implementation of these LNG sales contracts are to be handled by a joint management group established by the Seller and the EK Gas Producers. This group has three basic functions:

(a) Planning and scheduling of LNG lifting
(b) Invoicing
(c) Handling technical matters.

To manage the deliveries of ex-ship LNG cargoes, Seller and the EK gas producers established a joint transportation group, to be responsible for administration of chartering LNG vessels with ship owners.

The gas from EK producers is gathered at the Badak manifold station and then delivered to the north, to Bontang LNG plant, via two 36" and two 42" pipelines. The East Kalimantan pipeline is one of the largest pipeline networks in the world, capable of handling up to 4 BCFD of natural gas (see Figure 1).

The Bontang LNG plant is operated by a non-profit company owned by Pertamina (55%) with remaining 45% split among TOTAL and other parties. Bontang LNG plant has eight (8) LNG processing trains (Trains A-H), each with LPG extraction capability, with an annual production capacity of 22.2 million tons of LNG, 1 million tons of LPG and 10,000 kbbls of condensate. Other facilities include three loading docks (2 with LPG loading capability), 6 LNG storage tanks (with total capacity of 630,000 m3), 5 LPG storage tanks (total capacity 200,000 m3) and 2 condensate storage tanks (total 22,000 m3). More than 340 LNG mixed or real cargoes are loaded annually in Bontang. The operating costs borne by the operator of the plants are shared by all gas producers, based on their percentage of BTU's lifted. The operating company must submit its operating and capital budgets for approval. The operating company does not own the plant, but merely operates and maintains the LNG plant, receiving gas from EK gas producers, liquefying it into LNG and loading it into LNG tankers. In 2006 LPG extraction was discontinued, due to a shortage of LNG deliver-

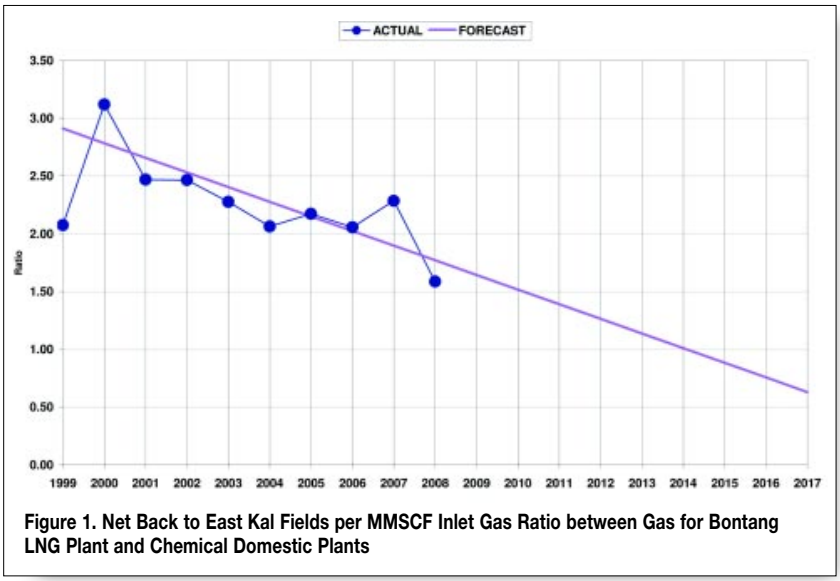

Figure 1. Net Back to East Kal Fields per MMSCF Inlet Gas Ratio between Gas for Bontang LNG Plant and Chemical Domestic Plants

ies. Hence, C3 (propane) and C4 (butane) are spiked into LNG. The LPG extraction will be resumed if supply and demand for Bontang LNG is matched.

East Kalimantan Gas Supply Arrangement

Since Pertamina is the sole seller of Bontang LNG contracts, each of the EK Gas Producers then enters into a supply agreement with Pertamina in which the EK Gas Producers agree to supply natural gas in support of Pertamina's LNG sales. Under the supply agreement, each EK Gas Producer commits to deliver a certain percentage of gas in support of the sale contract, making the combined gas supplies of all gas producers constitute 100% of the gas to be sold and delivered to the buyer under the sale contract. Thus natural gas requirements for Bontang's sales contracts have generally been ratioed among the EK Gas Producers on the basis of their uncommitted recoverable reserves, as determined from time to time by an independent engineering company, which issues a certification of gas reserves for the purpose of such sales. The total quantities to be supplied under the supply agreement are expressed in TSCF (trillion standard cubic feet) and percentages.

The Seller and the EK Gas Producers also established a gas management committee, responsible for ensuring an adequate supply of natural gas. One of the EK Gas Producers is appointed as gas coordinator, implementing production plans to ensure sufficient deliverability. A production agreement was then entered into among them, whereby each PSC operator agreed to maintain on a daily basis sufficient natural gas production to meet its deliverability requirement. If a PSC operator either over-or under-produces, then its deliverability requirement for the succeeding year is adjusted. The supply agreement, however, is not an agreement whereby a gas producer would supply another gas producer.

Initially, a new base load LNG sales contract would require a certificate of gas reserves issued by an independent engineering company, to certify that sufficient reserves exist to satisfy existing sales as well as new sales. The EK Gas Producers have set up a system whereby their share in net revenues of a sales contract is the same percentages as the gas they commit to such a sale. Due to a gas supply shortfall in certain PSC areas supplying gas the Bontang LNG plant, the EK Gas Producers have agreed to apply a new system, whereby their respective share in the net revenues under the sales contract is determined on the basis of their actual gas production against their supply commitment.

East Kalimantan Lng Transportation

To date, more than 7000 LNG cargoes have been loaded and delivered from Bontang without a single marine incident. LNG cargoes from Bontang are sold pursuant to both ex-ship (where shipping is provided by Seller) and FOB arrangements (where the responsibility for shipping rests with the buyer). For delivered ex-ship sales, a Seller has to arrange shipment to transport LNG to a buyer's terminal, at which title and risk of loss passes to buyer.

19 LNG vessels currently serve the Bontang LNG trade. 11 of these vessels are under Seller's control (to deliver ex-ship cargoes) and 8 vessels are under buyer's control (for FOB cargoes). For ex-ship deliveries, the Seller enters into time charter party agreements with the shipowners to charter LNG vessels for a specific period of time. The Seller, in this case, acts as the Shipper, paying a certain charter hire to shipowners. A charter hire normally has two components, i.e. the Owner Cost Component (OCC) and the operating cost component (OpCC). An OCC covers financing costs and owner's fees, which are normally paid monthly to the owner. OpCC covers operating costs of the vessels (such as crew costs, insurance, maintenance and repair) administration cost of the owner's or operator's (also paid monthly). In addition, there are voyage costs to be paid, such as fuel, utilities, port charges (typically paid by the charterer after each port call). If the utilization of LNG vessel is optimized, a typical transport cost from Bontang to Japan is approximately 50 cents/MMBTU.

East Kalimantan Lng Project Financing

Since 1986, the development and construction of additional LNG processing trains (Train E-H) and enhancement projects at the Bontang LNG plant have made use of trustee-borrowing project financing. The total cost for these projects was 3.4 billion US dollars. Under a trustee borrowing scheme, a bank with its office in the United States was appointed as the trustee, by the Seller and EK Gas Producers. The trustee has the following roles and responsibilities: (i) to receive proceeds of LNG sales from the buyer, (ii) to act as borrower, on behalf of the Seller and EK Gas Producers,

entering into a loan agreement with the lenders and (iii) to act as the paying agent who will distribute the remaining proceeds.

So, after deduction of expenses related to the cargo, such as debt service (if sales are subject to financing), shipping costs (if ex-ship) and plant operating costs, the trustee will distribute the net proceeds to the Seller and EK Gas Producers, based on the same percentage of gas produced for such sales. The debt service for the above expansion and enhancement projects will be paid off by 2010. The use of trustee borrowing has provided assurance to the lenders and has become the preferred choice of project financing for subsequent LNG projects in Indonesia.

New Oil and Gas Law No 22/2001

Following the enactment of new Petroleum Law No22/2001, Pertamina remains the seller of Indonesian LNG and responsible for implementing the existing LNG sales contracts and other related agreements, until the contracts expire. Pertamina, however, no longer holds the mining authority, as this has been transferred to BPMIGAS (Badan Pelaksana Kegiatan Usaha Hulu Minyak dan Gas Bumi) a body established in 2002 by the Government of Indonesia to take over Pertamina's role of overseeing the implementation of PSCs. Due to the fact that BPMIGAS is not a business entity, it has to appoint the seller of the state's share of natural gas. The roles and responsibilities as the seller of the state's share are further stipulated under Government Regulation No 35 of 2004. Pertamina has been appointed as the Seller of the state's share for any new sales to the Japanese market.

Under Law No 22/2001, BPMIGAS can appoint the production sharing contractors to be the sellers of the state's share. If natural gas is supplied from its PSC working areas, then all costs associated with sales will be treated as operating costs and will

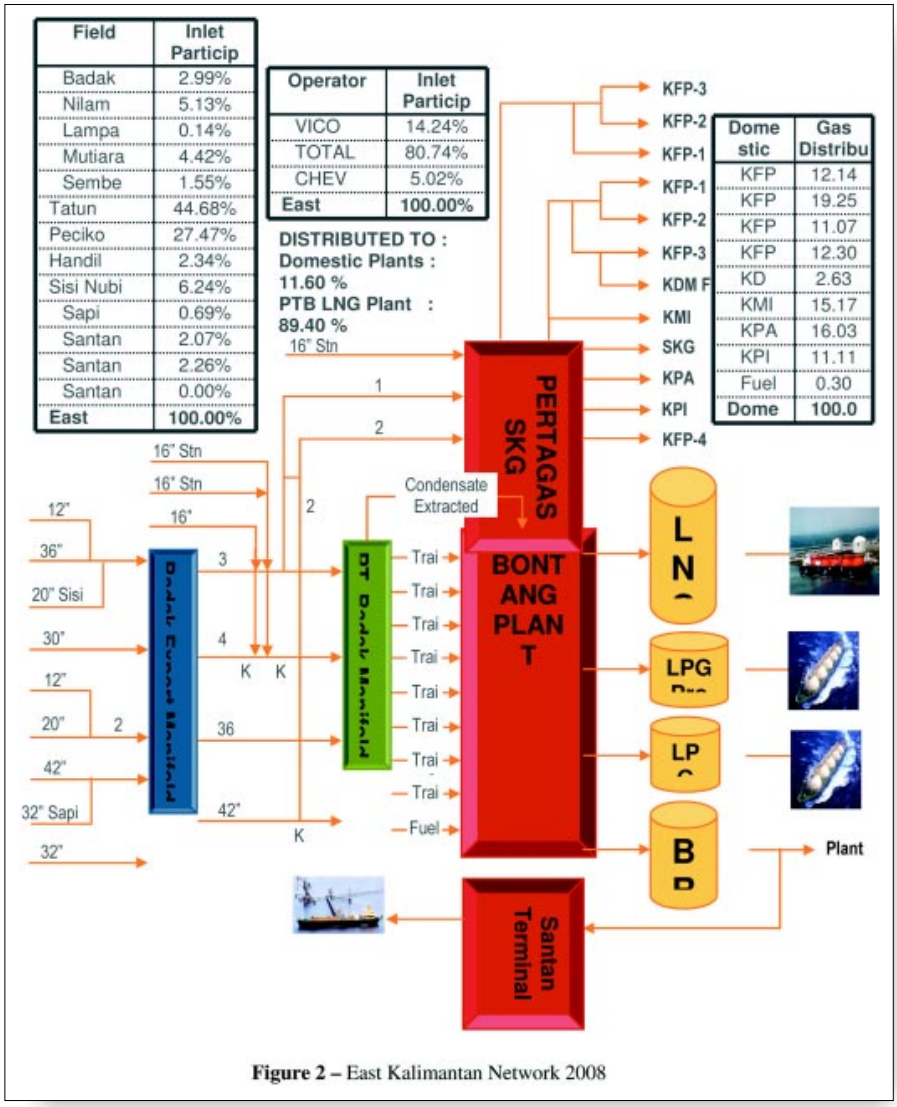

Figure 2 – East Kalimantan Network 2008

thus be recoverable. If the seller of the state's share is not the contractor of the PSC that supplies the natural gas, then a fee will be disbursed to such contractors, taken from the government share.

Net Back to Fields of East Kalimantan

LNG and LPG sales are the predominant transactions of natural gas in East Kalimantan. Natural gas sales to the domestic market are also increasing, however. A calculation was made to determine the ratio between these, on the basis of net back to fields, by subtracting the revenues from actual costs and dividing this by the inlet gas. Over the 1999-2008 period, the ratio indicates a downward trend against time and based on this trend, it can be estimated that a balanced ratio of 1.00 may occur by 2014. It can be concluded that at that point the netback of export versus domestic to fields per MMSCF inlet gas will be equivalent.

Conclusion

The East Kalimantan LNG project has demonstrated the interconnections of all players along the LNG chain. How an LNG project operates is determined by the interactivity of all gas players. Changes in any of these parameters could have an implication to the operation of an LNG project; thus far, the prevailing LNG structure in the East Kalimantan appears to have benefited all involved parties. Any disruption to the existing LNG structure should be kept to a minimum, to ensure smooth implementation of sales and operation. The Bontang LNG plant is expected to be managed as an upstream activity and will continue to be operated under this scheme.

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