ENTREPRENEURS AT LNG'S GATE

Small, Medium-Scale Liquefaction Plant Development Survey, Analysis

Spring 2008

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Entrepreneurs at LNG's Gate

Small, Medium-Scale Liquefaction Development Survey & Analysis

Zeus Development Corp
Spring 2008
Houston

Introduction

The LNG industry is on the cusp of major change – a group of highly motivated entrepreneurial firms, 21 in total from China, Japan, Australia, Indonesia, Norway, South America and North America, are using standardized liquefaction technology with capacities less than 3.0 million metric tons per year (mty) to develop new gas markets and go after fields too small for world-scale trains. Current liquefaction volumes at 1.0 million metric tons are small, but already another 6.0 million metric tons is under construction for commissioning during the next three years.

Public equity markets are enthused. Seven different markets in Hong Kong, Sydney, Oslo, Jakarta, London and New York offer stock of twelve of the entrepreneurial enterprises; nine can be considered pureplays, valued at $3.5 billion (see Figure P-1). If they are successful, these firms will bring in large amounts of LNG supplies as perhaps hundreds of fields less than 10 trillion cubic feet are monetized. LNG would then more closely resemble the LPG industry, where suppliers, distributors and transporters of all sizes and business models compete for a larger market.

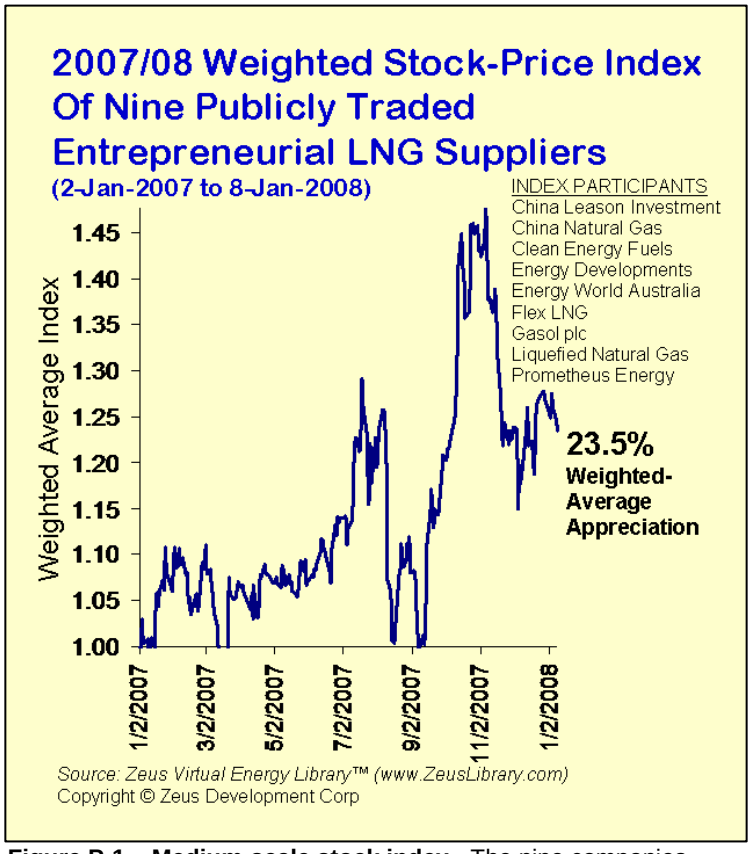
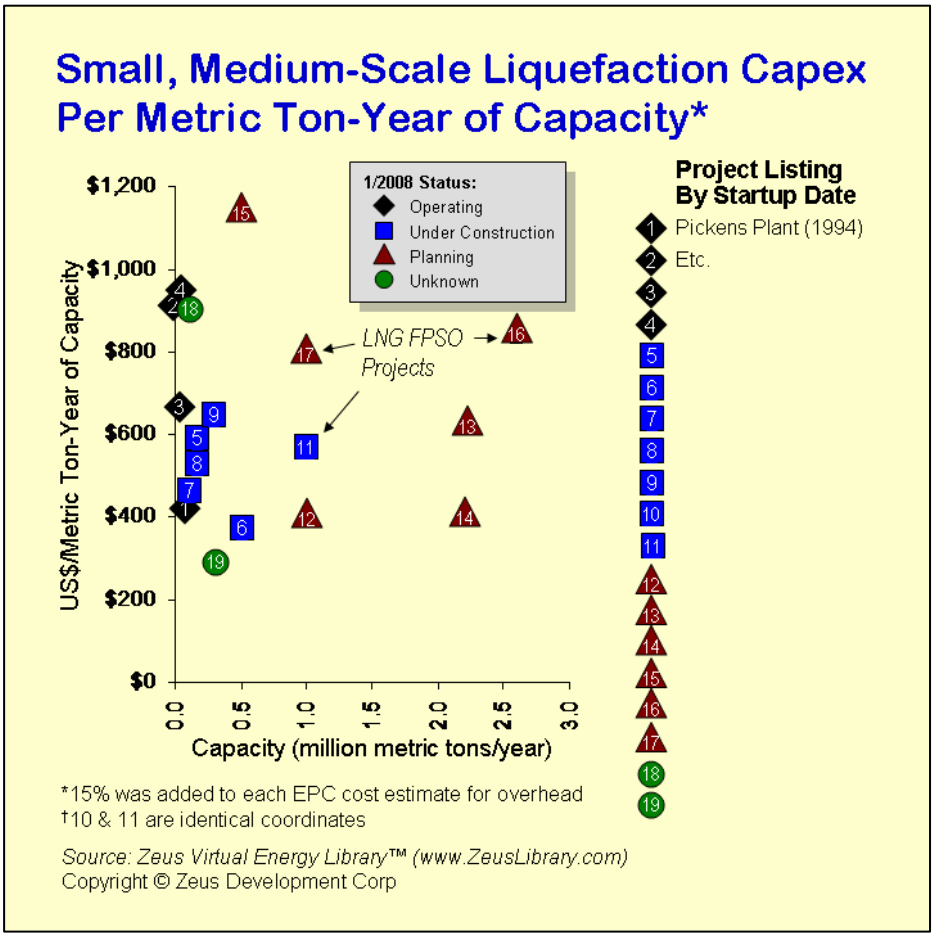


Figure P-1 – Medium-scale stock index: The nine companies listed above and represented in this index are involved in 20 small- to medium-scale LNG projects. Their combined market capitalization on Jan. 8, 2008, was nearly $3.5 billion.

These newcomers are highly diverse, ranging from upstart firms comprised of seasoned LNG executives to new management teams in staid enterprises. Some intend to seize first-mover advantage by taking regional markets. Others are attempting to pioneer whole new

classes of technology, such as LNG floating production storage offloading (FPSO) vessels. They all share, however, the common goal of using modularized equipment, manufactured and assembled efficiently with short lead times, and standard business practices to develop projects simultaneously.

During the research, however, analysts found that managers at each firm are largely unaware of others that share their goals. This report is the first to review and compile worldwide efforts to downscale LNG to monetize smaller (mid-tier) reserves and thereby open up the market. Zeus identified 34 small and medium-scale liquefaction projects under development, ranging from capacities of 50,000 mty to 2.7 million mty. Each is reviewed and analyzed. Accompanying databases of 53 small and medium-scale baseload liquefaction projects[1], including 19 that are operational and 18 under construction, are provided in the appendix to the report and online at www.ZeusLibrary.com.



The online databanks will be updated and expanded as new projects are announced and details learned.

[1] Baseload liquefaction plants are assumed to produce and distribute LNG via truck, rail, barge or ship on a continuous basis, averaging 330 days of operation per year. LNG-storage plants (peakshavers) are not included in this category.

Summary Contents

Selected Figures & Tables

Project Objectives & Approach

This survey and report was conducted to assess and examine the growing momentum behind downscaling and modularizing liquefaction technology and standardizing business practices to expand world LNG supply. Specific objectives included:

1. Identifying and profiling as many of the companies and projects as possible to give the reader a sense of the magnitude and capabilities of the firms behind this initiative.
2. As much as possible, investigating the economics of the projects to gain a sense of their viability, market drivers and financing capabilities.
3. Assessing opportunities from an investor's standpoint, looking at the breadth of growth potential.
4. Considering the growth opportunities, such as the number of oil-fired power plants worldwide that could benefit from LNG distribution and the amount of investment and activity focused on LNG FPSOs.
5. Offering a conference and highly readable report for subscribers to learn more from the analysis and industry participants.
6. Offering an online library of databases and statistics updated regularly so readers can track the progress of this industry over 12 months.

Deliverables, Including Conference

1. **250-Page Report** which includes narrative and profiles of 53 small- and medium-scale liquefaction projects and some 150 oil and distillate-fired power plants (see Summary Contents and selected Figures and Tables above for an outline of the report).
2. **Two online modules updated real time in the Virtual Energy Library™** - Small- and Medium-Scale LNG and Oil- and Distillate-Fired Power.
3. **Registration to the April 8 one-day conference** that will review the report conclusions, projects, economics and latest news as well as third-party presentations and perspectives
    a. Draft Agenda
        i. What is Driving Medium-Scale Liquefaction to Grow So Rapidly
        ii. Progress to Date
        iii. What's Under Construction

iv. What's Envisioned
v. Breadth of Business Strategies
vi. Convergence
vii. Economics
viii. Key Obstacles
ix. Risks
x. Forecasts
xi. Equity Analysis

TARGETED AUDIENCE

This report, online database and conference is targeted to five types of audiences:

1. Energy developers interested in how they can participate in world LNG trade.
2. Current participants, including fleets and markets who wish to learn where new supplies might be available and the requirements for moving them to market.
3. Investors interested in potential high-growth pureplays in LNG supply.
4. Financial or senior managers of LNG-related companies that are interested in investor perspectives.
5. Equipment suppliers who wish to learn of the depth and breadth of this market.

Sample excerpt from the report…

4. Medium-Scale Projects For Overseas Export

Norway's Gasnor and Australia's Energy World Corporation, as was mentioned in Chapter 3, are crossing the threshold from projects based on small-scale overland transport to ocean-based medium-scale export markets. This chapter examines seven companies and 13 medium-scale projects focused on ocean-going export trade.

4. A. African LNG (www.gasol.co.uk).

March 2007 reports stated that UK-based African LNG (AfLNG), a subsidiary of Gasol plc (AIM: GAS), is pursuing a 1.0-million-mty floating LNG export plant in a shallow-water part of the Niger Delta. AfLNG has commissioned London-based Energy & Power Consultants (EPC) to look for ways to commercialize flared gas on a few potential sites. See Table 4-1 for a discussion of recent flare-gas issues in Nigeria.

EPC has come up with a novel solution involving a vessel recovering LPG from flared gas that would be "cleaned up" on an existing oil production platform before being transferred to a "fairly simple liquefaction process" on a barge. The project was estimated to cost roughly $700 million.

EPC stated that their approach was cheaper and faster to develop than a traditional floating LNG system that they estimated would cost roughly $1.0 billion for the same amount of capacity. AfLNG is 20% owned by London-listed Gasol, which has an option to buy the remaining 80%. EPC's proposed project, according to Gasol, would take less than four years to come onstream.

Nigeria's New Flares-Out Program
Table 4-1

Olatunde Odusina, Minister of State for Energy (Gas) said on January 18, 2008, that oil companies operating in Nigeria must comply with the new gas flare-out date, Dec. 31, 2008. The old date was Jan. 1, 2008.

The deadline is "realizable in spite of previous postponements," he said. Odusina was speaking with the Ambassador of Portugal, Maria De Fatima. All stakeholders are aware of the government's position, he added. Managed properly, Odusina believes there is enough gas to satisfy export programs and domestic utilization.

According to the Department of Petroleum Resources (DPR), oil companies in Nigeria flare an average of 2.5 billion cubic feet (71 million cubic meters) per day, enough to produce ~18 million metric tons of LNG.

(continued next page)

On Dec. 19, Gasol PLC announced that it had negotiated an extension to its option to acquire the balance of 80% of the share capital of African LNG (AfLNG). Gasol management state that AfLNG has made significant progress. "[AfLNG] has identified a portfolio of LNG opportunities to monetize flared and stranded gas in West and Central Africa, and is in the final stages of discussions with major European utilities in respect of partnerships and strategic alliances."

Nigeria's New Flares-Out Program (concluded)

To meet the new deadline, Nigeria has set up a Flares Reduction Committee from oil companies and Nigerian energy and government officials. The committee will review activities of each company towards compliance, evaluating economic implications versus environmental impact.

Isaac Osuoka, director of Social Action, a flares-out pressure group, said 13 organizations have now endorsed a petition that criticizes the government for not adhering to the previous deadline.

"The 2008 flare-out date is yet another concession to the oil companies operating in Nigeria. The Nigerian government and the National Assembly must confront the impudence of the oil companies by legislating on the 2008 deadline," Osuoka said.

Shell and other oil companies operating in Nigeria said they could only end gas flaring by 2010 citing inadequate funding for gas-gathering projects and insecurity in the Niger Delta for not being able to meet the 2008 deadline.

4. A. 1. African LNG & Gasol PLC Contact Information

Theo Oerlemans, chairman of African LNG, and Soumo Bose, CEO, Gasol plc, 40 New Bond Street, London, W1S 2RX, United Kingdom, info@gasolplc.com, Tel: +44 (0)20 7290 3300

According to Gasol, AfLNG's portfolio is comprised of multiple land-based and floating LNG opportunities in the Gulf of Guinea region which have the potential to underpin Gasol's objective of liquefying and selling 5 million tonnes of LNG within five years, according to the company. Gasol has negotiated an additional discount of 5% to the independently assessed price of the Option Shares and has agreed to continue to provide £50,000 ($98,000) a month to the working capital of AfLNG during the extension period.

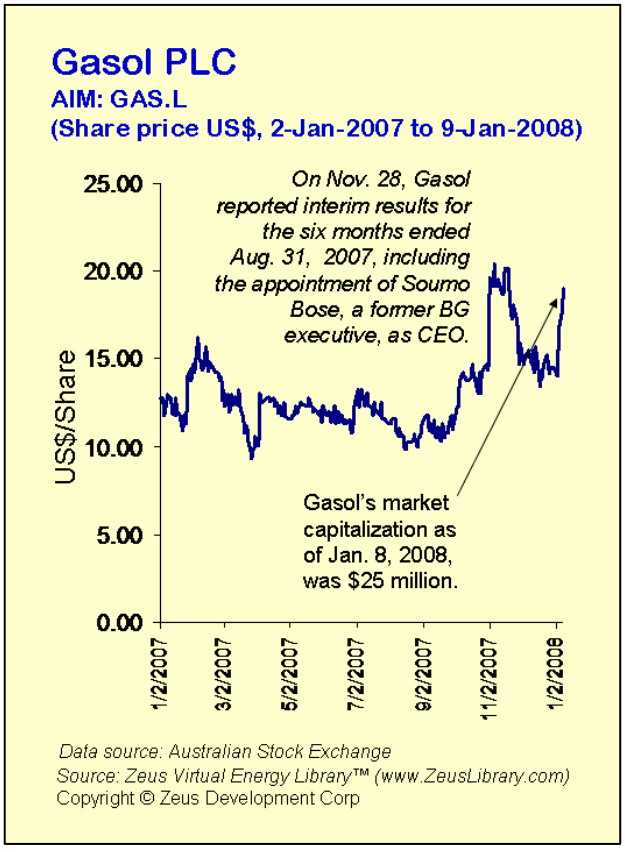


Figure 4-1: Gasol stock-price performance in 2007.

Research Management

Bob Nimocks

Mr. Nimocks is founder of Zeus Development Corporation, a research company focusing on emerging technologies and their impacts on energy markets. The company has completed research in the areas of mid-tier gas fields and blocks, non-traditional concepts for receiving and regasification, the impact of a global recession on LNG trade flows and the gasification of coal and refinery bottoms for substitute natural gas. The company publishes periodicals, including: *LNG Express* (semimonthly), *Syngas Refiner* (semimonthly); *Upstream Technology Magazine* (monthly) and *Gas Leads* (monthly) as well as numerous single issue white papers and special reports.

Prior to founding Zeus in 1991, Mr. Nimocks was vice president of corporate development for the North American division of an Australian-based energy and natural resources company. He earned an MBA from Harvard University (1987), served in the management consulting division of Accenture (1981-84) and obtained BS and BBA degrees from Mississippi State University (1981).

J. Patrick LaStrapes

A senior manager and global energy consultant, Mr. LaStrapes brings the leadership necessary to take complex energy deals to fruition. He has developed world-class integrated energy projects with investments/revenues in the $billions and has established new international business platforms in rapidly evolving energy markets. He brings experience in leading multi-disciplinary international development and asset acquisition teams, including project development, structured finance, due-diligence and risk mitigation, contracts, operations, energy policy and strategic planning.

Prior to joining Zeus, Mr. LaStrapes served in various management roles, including President and member of the board of directors of Texas-Ohio Power, VP/Principal of EnerTran Technology Company, VP of Heartland Development Corporation and VP/General Manager of Entra Technologies. As a consultant, he has testified before state (provincial) and federal authorities and has prepared expert testimony in contested proceedings. Mr. LaStrapes holds an MBA degree from the University of Houston and a BS degree in Chemical Engineering from Texas A&M University.

Poushali Roy

Ms. Roy is the database manager for Zeus Development Corporation. Responsibilities include creation and design of the firm's energy-business research databases comprising a central clearinghouse of critical information on the financial markets, LNG trade, global gas development and other key segments of the gas value chain, including gas-to-liquids, megamethanol and other conduits for monetizing remote gas deposits. Roy holds an MA degree in English from Calcutta University and has completed coursework in graphics, digital communications and database management.

Chris Williams

Chris Williams is an energy market analyst for Zeus Energy Consulting Group and a contributor to LNG Express. He brings core knowledge in both the physical and financial aspects of the commodities markets, with experience in contract analysis, pricing structure and a variety of leading and lagging indicators. He has held positions in the energy industry and brings knowledge in gas, crude oil and refined products markets. Over the course of his career, he has advised companies on structuring sales and purchase agreements in connection with physical transactions. Williams earned his BS degree from the University of Houston.

Online enrollment and access is available at www.ZeusLibrary.com.

Faxable Enrollment Form

Enrollment Options (SINGLE-USER)

1. Full report, online access for 12 months to the medium-scale liquefaction databank (currently 53 projects) and the oil and distillate-fired power plant databank (currently 154 projects), and registration to the April 8 conference. $2,497
2. Full report, online access for 12 months to the medium-scale liquefaction databank (currently 53 projects) and the oil and distillate-fired power plant databank (currently 154 projects), without registration to the April 8 conference. $1,997
   Extensive multi-user options are available for discounted prices. Please contact Amy Nussmeier at 713-333-5780 or (anussmeier@zeusdevelopment.com) for details.
3. Registration to the April 8 conference only. $997

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