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SPECIAL SESSION:

Energy Bridge LNG Projects: Technological Innovation To-Date and Into the Future

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Introduction

The use of a number of proven technologies in a new application, that of the Energy Bridge Regasification Vessel (EBRV) and the *Gulf Gateway Energy Bridge*TM, has allowed the development of a promising, innovative means of introducing new sources of natural gas supply into the U.S. infrastructure while providing a high degree of safety, reliability, function and market flexibility.

This paper will address the technological innovation and application for the Energy BridgeTM concept through discussion of the individual proven technologies currently available aboard the EBRV and the *Gulf Gateway Energy Bridge*TM and those technologies that may be developed in the future.

Executive Summary

In January of 2005, history was made when Excelerate Energy chartered the world's first Energy Bridge Regasification Vessel from her owner's, a subsidiary of Exmar N.V. of Belgium. The EBRV, named *Excelsior*, was built by Daewoo Shipyard and Marine Engineering in the Republic of South Korea. The EBRV was delivered with the capability of loading a cargo of 138,000 m³ of liquefied natural gas (LNG) at any loading facility in the world and delivering it to traditional LNG receiving terminals in the Atlantic and Pacific basin markets, as typical of conventional LNG carriers, but more significantly, the EBRV could also deliver the cargo at Energy BridgeTM receiving facilities as vaporized natural gas through the use of the on-board regasification and offloading system. This, in effect, makes the EBRV a portable, floating, LNG storage,

regasification and natural gas delivery system with through-put capabilities similar to many medium sized shore-based LNG receiving terminals.



Figure 1. The *Excelsior* departing builders yard in Korea.

The counterpart of the EBRV is the Energy BridgeTM Deep Water Port (receiving facility) of which there is currently only one in operation worldwide, *Gulf Gateway Energy Bridge*, located 116 miles offshore in the Gulf of Mexico. The Port, licensed by the U.S. Department of Transportation, functions as the offshore mooring system for the EBRV and the natural gas delivery system for the EBRV to deliver regasified LNG into existing pipeline infrastructures which transport the natural gas to downstream markets ashore in the United States.

Gulf Gateway Energy Bridge (GGEB) is the second Deep Water Port (DWP) to be licensed by the U.S. Department of Transportation¹ and is the first offshore natural gas receiving facility of any kind in the world. The driving impetus for the development of GGEB was the Deep Water Port Act (DWPA) of 1974, as amended in 2002, as a knock-on result of the 9/11 terrorist attacks. The U.S. Congress enacted legislation amending the DWPA as a response to fears that land-based LNG receiving facilities, some of which were located near

¹ The first Deep Water Port was licensed in 1974, known as the Louisiana Offshore Oil Port (LOOP), and remains in operation today.