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Results of New LNG Transfer Technology Developments and What Possibilities They Foretell

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Abstract

“Results of New LNG Transfer Technology Developments and What Possibilities They Foretell”

New LNG transfer technologies today cannot be introduced without addressing all of the potential associated risks, and demonstrating to a most conservative LNG Industry that all aspects have been addressed through comprehensive test and qualification programs. Indeed the new EN1474 standard, (now in 3 parts: Pt 1 – Design & Testing of Transfer Arms; Pt 2 – Design & Testing of Transfer Hoses; Pt 3 – Offshore Transfer Systems) clearly states that; “*where novel transfer solutions (new technology or novel application of known technology) are intended to be used, this technology is to undergo a recognised qualification procedure*”

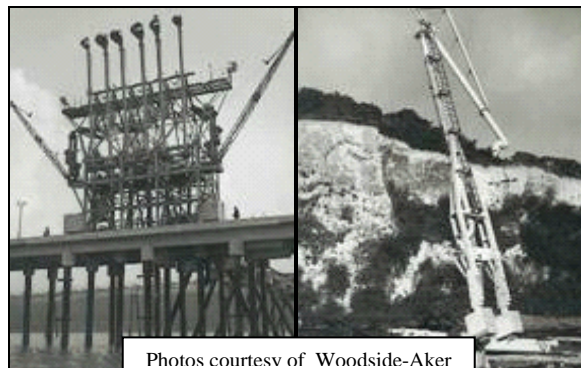
Through a series of Joint Industry Programmes, Technip has developed cryogenic Pipe-in-Pipe technology that is now complete and being proposed on several projects, both for export & import terminals. Technip’s cryogenic aerial flexible will be fully qualified through the Montoir JIP trials by the middle of 2007. Model tests on floating cryogenic flexibles have been successfully completed, and the results are being used to validate detail design tools. In-water trials are planned to take place during Q3 or Q4 2007.

The paper will summarize results of all these development programs including results from the full-scale Montoir tests. Emphasis will be given to describing the tools and methods used to qualify these new cryogenic components and systems. The paper will then go on and present some applications of these new LNG transfer technologies, both rigid and flexible, which today’s terminal designers are currently requesting for nearshore & offshore developments.

Introduction

The transfer of bulk materials or liquids has been evolving for many centuries. With the advent of modern methods including hydraulics, electronics and new steel compounds this evolution was able to match industry requirements throughout the 19th and especially the 20th century, for the transfer from shore – ship – shore of a large range of refined liquids and chemicals, including, as from the 1960’s, Liquefied Natural Gas (LNG).

Figure 1 shows two examples of such early loading arms.



Today these LNG loading arms have evolved into a complex system, which has to respect increasingly stringent rules and standards whilst continuing to maintain high levels of safety and availability.

More recently another factor has been added to this mix of requirements. – that of real dynamic movement of the LNG Carriers in marine conditions. This paper will detail the development programme that has been carried out over the past 6 years to provide the LNG Industry with a viable and new method of LNG transfer, using cryogenic flexibles and rigid pipe-in-pipe technology, to meet this new requirement and allow the LNG Industry to further evolve into real offshore and nearshore transfer operations.