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MEETING
PAPER

PETROPORT

NEW CONCEPTS FOR AN OFFSHORE TEXAS OIL PORT AND STORAGE FACILITY

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ABSTRACT

Petroport is a newly proposed combination offshore oil port and storage facility to be located in the Gulf of Mexico some 40 miles out from Freeport, Texas. Petroport has been conceived as an import terminal which could reduce shipping costs and lessen the risk of accidents and oil spills.

Since 1985 the United States petroleum industry has experienced a well-defined trend of declining oil production and rising imports. This trend is expected to continue. The bulk of imported oil is transported in oceangoing tankers and enters the U.S. through ports along the Gulf of Mexico. Texas seaports receive over 70 percent of the oil which arrives through the Gulf. Much of the imported oil arrives in supertankers, known as Very Large Crude Carriers (VLCC) and Ultra Large Crude Carriers (ULCC), which require minimum water depths up to 110 feet. However, Texas has no deepwater ports, so oil must be transferred to smaller vessels from the supertankers for the final portion of the journey, or be transported the entire distance from the country of origin in smaller vessels. These inefficient practices raise overall shipping costs and the added volume of traffic due to small vessels shuttling back and forth from supertankers to ports increases the risk of collisions and possible spills.

For 20 years or more, associations of major companies have studied and designed concepts for an offshore Texas Gulf Coast oil port which would permit unloading of supertankers at a mooring point in adequately deep water, and piping the oil ashore. However, high projected costs, permitting requirements and inadequate projected throughputs combined to discourage these earlier plans. Petroport differs greatly from previously proposed facilities by utilizing a unique new, recently patented concept designed to significantly reduce construction and operating costs and improve efficiency.

Petroport would use well proven single point mooring facilities for tanker unloading in a water depth of 110 feet or more. Part of the concept is to position the import terminal at the site of a subsea salt dome which would be used for development of multiple storage caverns. This on-site surge storage capacity would allow very rapid unloading of supertankers, would reduce the need for transfer to small vessels and would reduce the number and/or diameter requirements for terminal-to-shore pipelines. A half dozen candidate salt domes have been identified in the area of interest, 30 to 50 miles offshore from Freeport. Subsea salt dome storage caverns could be utilized for both temporary and long term storage of crude oil, other petroleum products, and even natural gas.

Unlimited seawater is available for leaching the caverns and the Gulf will conveniently accept the brine produced. After reaching full size, caverns which will store crude oil or other liquid products require an immiscible displacement fluid of differing density which will force the stored liquid out without causing further cavern enlargement. Normally, on land, saturated brine stored in an adjacent pond is used for displacement. In the case of Petroport a newly patented concept is proposed. The brine "pond" would be either an existing or excavated depression in the seafloor near the caverns. Density stratification will assure that the saturated brine stored in the depression is not appreciably diluted by the overlying seawater.

With the potential for lowering shipping costs and reducing oil spill risks it is believed that the envisioned Petroport facility is economically and environmentally sound.