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## **Economic Geology of Offshore Gas Hydrates: Where to Explore for Reserves?**

Commercialization of gas hydrate remains unproven. Economic analysis of gas hydrate recovery is retarded by the great uncertainty of the global gas hydrate resource and by limited knowledge of individual gas hydrate accumulations. In this study, the economic potential of well-studied offshore gas hydrate accumulations and provinces is assessed qualitatively based on consideration of geological, technological, and economic factors. Three types of gas hydrate accumulations are suggested. Their economic potential varies widely. Structural accumulations associated with faults, mud volcanoes, and other geologic structures (e.g. NW Gulf of Mexico, Hydrate Ridge, Haakon Mosby mud volcano) are characterized by high gas hydrate concentration in sediment, resource density, recovery factors, as well as low development and production costs. These accumulations may provide marginal or economic gas hydrate reserves if they represent significant volumes of hydrate-bound gas. Stratigraphic accumulations of bacterial methane hydrate in relatively permeable sediments (e.g. Blake Ridge, Gulf of Mexico minibasins) are characterized by low gas hydrate concentration in sediments and recovery factor, as well as high development and production costs. These accumulations mainly provide a subeconomic gas hydrate resource. However, in cases such as the Nankai Trough province, high gas hydrate concentration occurs in permeable sand layers and may represent a viable exploration and exploitation target. Less geological data are available on the combination gas hydrate accumulations controlled both by structures and stratigraphy, and their economic potential is unclear. Further exploration should concentrate on relatively large structural accumulations from which gas hydrate may be profitably recovered.