
Potential Extent and Thickness of Gas Hydrates in the Deep Water of the Northern Gulf of Mexico

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ABSTRACT

A model of potential distribution and thickness of gas hydrates in deep-water areas of the northern Gulf of Mexico was developed using data from public sources and the literature. First, stability curves for Structure Type I and Type II hydrates were generated using commercial software and their reliability was checked with reported experimental data and gas compositions and gravities. Next, mudline and subsurface temperatures and pressures in 111 fields and 44 wells in the deep-water Gulf were calculated, to establish the minimum and maximum conditions at which hydrates would be stable. Intersecting the pressure-temperature trend lines from the field calculations with the Type I and Type II stability curves and using the geothermal and pressure gradients allowed an estimate of subsurface pressures and depths at which the two types of hydrates could exist in each field or well. Using the modeling results the potential extent and thickness of each type of hydrate were mapped. The resulting maps together with geophysical data can be of practical use for assessing the hydrate resource and for evaluating possible geohazards to drilling and production operations.