

Methane Hydrate Issues -- Resource Assessment

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Abstract

The estimated amount of gas in the hydrate accumulations of the world greatly exceeds the volume of known conventional gas reserves. However, the role that gas hydrates will play in contributing to the world's energy requirements will depend ultimately on the availability of sufficient gas hydrate resources and the "cost" to extract them. Yet considerable uncertainty and disagreement prevails concerning the world's gas hydrate resources.

Gas hydrates occur in sedimentary deposits under conditions of pressure and temperature present in permafrost regions and beneath the sea in outer continental margins. The combined information from Arctic gas-hydrate studies shows that, in permafrost regions, gas hydrates may exist at subsurface depths ranging from about 130 to 2,000 m. The presence of gas hydrates in offshore continental margins has been inferred mainly from anomalous seismic reflectors known as bottom-simulating reflectors, that have been mapped at depths below the sea floor ranging from about 100 to 1,100 m. Current estimates of the amount of gas in the world's marine and permafrost gas hydrate accumulations are in rough accord at about 20,000 trillion cubic meters.

Gas hydrate as an energy commodity is often grouped with other unconventional hydrocarbon resources. In most cases, the evolution of a non-producible unconventional resource to a producible energy resource has relied on significant capital investment and technology development. To evaluate the energy resource potential of gas hydrates, will also require the support of sustained research and development programs.

Despite the fact that relatively little is known about the ultimate resource potential of natural gas hydrates, it is certain that gas hydrates are a vast storehouse of natural gas and significant technical challenges need to be met before this enormous resource can be considered an economically producible reserve.