Old and new problems of producing natural gas from gas hydrates

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For over 40 years the world has known the three basic technologies for the development of gas hydrate fields: depressurization, heating, and chemical (Makogon, 1966). More than one billion USD has been spent to date on research on how to develop and produce gas from hydrate deposits. As a broad set of positive results we have found 230 gas hydrate deposits, studied some properties of gas hydrate and hydrate saturated cores in the real conditions and in laboratory. However, we have only one effective result of commercial production of hydrated gas from the Messoyakhi field, where over 7 billion cubic meters were produced (Makogon, 2009).

We have several results from testing of various basic technologies with very modest results from the Mallik and Nankai Trough gas hydrate fields. We have good results from India, Korea, China and many other countries. The volume of natural gas in the hydrate state in the subsurface has been estimated to be on the order of $1.5*10^{16}$ m^3 [**1**] and $1.6*10^{16}$ m^3 [**2**].
We know the conditions where gas hydrate deposits can exist on land and in the ocean: 9-12 % of the globe's surface. Existing technologies can commercially produce only up to 17-20 % of the total hydrated gas.

In parallel we need to study the geologic properties of gas hydrate saturated reservoirs. Production of hydrated gas can be up to 90% dependent on the geologic properties of a deposit.

We need to use a principally new technology to become effective in the development of gas hydrate deposits in permafrost and, especially in the offshore conditions. Conditions of formation and development of gas hydrate deposits in permafrost and offshore are different.

We will show some geology conditions and potential technology for development Gas-Hydrate Deposits in Black sea. Also we can discuss about complex Research and Development program on gas hydrates for Ukraine.

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