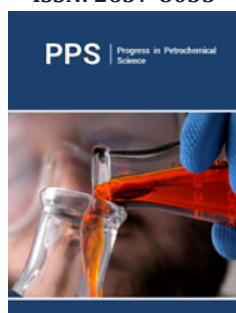



Patterns of Formation of Oil and Gas Fields and New Criteria for their Search, Exploration and Exploitation

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***Corresponding author:** Rudko GI,
Department of Geological and Mineralogical
Sciences, Geographical Sciences, Technical
Sciences, Kyiv, Ukraine

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Rudko GI*

Department of Geological and Mineralogical Sciences, Geographical Sciences, Technical Sciences, Ukraine

Opinion

For a long time of the existence of the hydrocarbon fields' formation organic theory it was believed that these fields were formed at shallow and medium depths. At the end of the seventies of the last century, hydrocarbon fields were discovered in Paleozoic deposits, and several decades later, in Precambrian deposits. Based on the results of many years of exploitation of hydrocarbon fields, the theory of the formation of hydrocarbon fields due to mantle degassing, as well as other models of the formation of oil and gas fields due to endogenous processes, appeared on the agenda. Summarizing the above mentioned, the following conceptual aspects are proposed for consideration.

The formation of hydrocarbon fields has several stages, the first of which is determined by the presence of a rift zone, which is the main indicator of the movement of hydrocarbons in the bowels. Interacting with the rocks of the geological environment, they determine conditions for the formation of hydrocarbon fields. Often, these stages of formation of fields stretch over millions of years, determining zoning or other conditions for the spatial position of productive complexes.

a) At the stage of formation of the field, there is a vertical zonation of hydrocarbon fields, and within the young mountain-folded complexes there is a horizontal one.

b) In our opinion, for any type of geological environment, it is necessary to create a preliminary oil and gas potential model in which all information on the complex of geological exploration is used.

c) Based on this information, preliminary geological and geochemical indicators for determining oil and gas content of the studied volume of geological environment can be detailed.

In conclusion, I would like to say a few words about the models for calculating reserves and resources of oil and gas. Fifty years ago, it was believed that these resources are limited and cannot be renewed. Today we see a picture in which it makes no sense to talk about the rapid depletion of hydrocarbon resources.

The most optimal tool for geological and economic assessment of oil and gas fields is the UN framework classification, which allows us to regulate all debatable issues most optimally. At the same time, each field is considered within the framework of a three-dimensional system, where one axis characterizes the socio-economic maturity of the project, one axis

is the technological conditions of the project, and one axis is geological exploration. The UN framework classification is widely covered in a number of publications and is a universal umbrella for further improvement of the criteria for the geological and economic assessment of hydrocarbon deposits. Today, in addition to the

above-mentioned issues, the concept of sustainable development is on the agenda, which implies the need for a sharp reduction in carbon dioxide emissions into the atmosphere in order to reduce the greenhouse effect.

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