

## Short Reports

**DEVELOPMENT PECULIARITIES  
OF ECONOMIC AND MATHEMATICAL  
MODELS OF FINANCIAL EXPENDITURE  
WHILE GEOLOGICAL PROSPECTING  
BORING OF OIL AND GAS DEPOSITS  
IN UNCERTAINTY TERMS**

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Mineral and source sector has one of the central places in economies of oil-and-gas producing countries including Russia and Azerbaijan that causes high significance of dynamics and development of its mineral and source basis.

But we shall remember that oil and gas industry as a system is characterized by certain specific particulars which differ it from other productive industries. From the point of view of risk assessment the most significant one among them is a big dependence of the indexes and criteria of cost efficiency on

(i) geographical description, utilization level of explored and extractable hydrocarbon resources;

(ii) dynamic specifications of geographical factors;

(iii) probabilistic character of the majority of technical and economical indexes of design of oil and gas deposits; change of reproduction structure of capital investments in the scale of branch in the way of increase of their shares directed to compensation of output fall in old deposits; big duration of project implementation; high capital intensity of oil production, necessity of huge investments, and long period of initial capital reimbursement [1, 2].

Besides of these risks specific for oil-and-gas producing branch we can note the risks of deposit non-discovery; risk regarding inaccurate determination of geological and field specifications of development facility (volume of geological reserves, dynamics of hydrocarbon production and etc.); risk due to project non-completion; risk connected with the terms of outlets of oil, gas and oil products; risk associated with the quality of project participants; risk caused by excess possibility of appearance of force majeure situations and etc.

Uncertainty of the resources of developed deposits, their geological and technical specifications, prices of hydrocarbon raw materials and other initial indexes applied while working out and implementation of engineering projects and long-term develop-

ment plans of an enterprise lead to the fact that it is just impossible to plan economic loss beforehand in the case of unfavorable outcome [4, 5, 6].

In consideration of all aforesaid, to our mind the most scientific and practical novelty can be presented by making of economic and mathematical models of financial expenditure while equivocation terms for geological and economic assessment of the resources of oil and gas areas of different sizes as:

$$P_3 = \frac{A_3}{L - x_1} = \frac{\int_{k_1}^{k_{2L}} \bar{z}_2 d\bar{s}_2 - \int_{k_1}^{k_{1L}} \bar{z}_1 d\bar{s}_1}{x_L - x_1},$$

where  $P$  – general finance charge for  $l$  deepening along a whole depth up to  $L$  bottomhole;  $P_3$  – costs caused during geological prospecting boring works associated with unforeseen departures of schedule and specifications of implemented technical and technological events;  $A$  – size of a whole work;  $A_3$  – work connected with implementation of unforeseen and unplanned works.

The work on present project will allow to unite scientific and engineering potential of Russia and Azerbaijan around of a very significant and concrete task, to solve not only social and economic problems similar for our states but also to create one more area for mutual, fruitful, and long-term scientific and cultural cooperation among our peoples [3].

## References

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