

Probabilistic evaluation of oil and gas reserves and resources

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Reserves and resources of oil and gas are calculated either by deterministic or probabilistic methods. Both of them add to the improvement of economic and corporate level management decisions. The methods of selecting the input data and their respective distribution functions are duly discussed. Both incremental (histogram) and cumulative distribution of the parameters are discussed together with the determination of the respective quantities of reserves and resources. Comparison of the results of the probabilistic and deterministic calculation allows draw the conclusion that both types of estimation do have their own role in the different phases of the exploration and prospecting. Although they are based on the identical input data sets the earlier one needs the knowledge of geographical distribution as well (which provides information on the geographical distribution of the reserves and resources with the not negligible information regarding the connectivity of the layers containing the oil and gas.) In the later phases of the exploration with adequate number of wells, the joint application of the deterministic and probabilistic calculations is adequate tool to compliment each other eliminating their respective weakness. In the prospecting phase of the exploration with no or limited well control the probabilistic calculation combined with geological risk is applied. It is introduced from the theoretical base to the practical application. Practical examples demonstrate how to deduce reserves categories applied in Russia in probabilistic (cumulative) calculations.