

Adapting Probabilistic Methods to Conform to Regulatory Guidelines

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There are conflicting interpretations regarding the application of statistical analysis while complying with reserve certification guidelines. The objective of this paper is to present and discuss some pitfalls commonly encountered in the application of statistical methods to evaluate reserves. Several Regulatory Guidelines that should be followed during the calculation of recoverable hydrocarbon distributions are discussed. An example of the evolution of reserve categories as a function of probabilities is also presented.

Most of the conflicting reserve interpretations can be attributed to the current SPE/WPC reserve definitions,

wherein reserve categories are expressed in terms of probabilities of being achieved. For example, proved reserves are defined as those hydrocarbon volumes with at least a 90% probability of being equaled or exceeded (P90). Unfortunately, these definitions fall short on guidance for the derivation of the distributions to which these percentiles will be applied. A simple example of this problem is the derivation of an exploratory prospect hydrocarbon resource distribution. While a P90 can be calculated from this distribution, no proved reserves should be assigned to the prospect until it has actually been drilled and proven economical.

Notes