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GEOLOGICAL SURVEY OF CANADA'S APPROACH TO PETROLEUM RESOURCE ASSESSMENT

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The Geological Survey of Canada uses two methods to evaluate oil and gas resources, both of which operate at the exploration play level, selected because they are capable of estimating the size and reservoir characteristics of individual pools as well as estimating the total play potential. The two approaches are called the discovery process model and the subjective probability methods.

The discovery process model is a statistically based method developed by Lee and Wang. For established plays, with as few as eight discoveries, this method has been found to be the more powerful of the analytic approaches. The underlying theory is that discoveries made in the course of exploration represent a biased sample of a population of pools, the sum of which is equal to the resources in a play. If the discovery process can be understood and modelled, then methods can be developed to estimate the characteristics of the population. The discovery process model of Lee and Wang uses the sizes of discoveries that have already been made and their sequence of discovery to produce estimates of both play potential and individual pool sizes. This method, using two of the most reliable sets of input data, deals equally well with stratigraphic and structural plays, a feature that not all methods have.

The subjective probability method is used mainly for conceptual and very immature plays. For these plays, subjective opinion, combined with such data from exploration as exist, is used to estimate the size and number of prospects by constructing frequency distributions of the variables involved. The method also required the subjective estimation of either the exploration risk of the total number of pools.