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Public lecture «DETERMINATION OF HYDROCARBONS RESERVES»

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The determination of hydrocarbons-in-place is a fundamental calculation in reservoir engineering. The material balance method uses actual production data and therefore is generally accepted as the most accurate procedure for estimating original hydrocarbons-in-place. In order to generate a traditional material balance plot, the well is shut-in at several points during its producing life in order to obtain the average reservoir pressure. However, it is sometimes impractical, and usually the duration of the shut-in is often not long enough to obtain an accurate measurement. The flowing material balance uses the concept of boundary-dominated flow or pseudo-steady state flow, as well as flowing pressures and rates to calculate original hydrocarbons-in-place.

Flowing material balance (FMB) method uses depletion production data and thus evaluation of such data can be made by rate vs. time type curves. Further various wells' (vertical, horizontal and multi-fractured wells) responses may be history matched by different analytical models generated pressure-rate will time production profiles what helps reservoir engineer in simplifying reservoir complexity and thus may improve reservoir production understanding.

Production data analysis is complementary to well testing and reservoir simulation and as such should be more used in improving knowledge on reservoir performances particularly for those producing wells that are under well-established rate-time production decline.