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# Volatile Oil and Gas Condensate Fluid Behavior for Material Balance Calculations and Reservoir Simulation

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## Abstract

This work presents a comparison of different methods for generating PVT properties for modified black-oil simulation of volatile oil and gas condensate reservoir fluids. These methods are evaluated by comparing the results of the modified black-oil simulation using these methods to the results of full equation-of-state (EOS) compositional simulation. Also the generalized material balance equation as straight line was used to calculate the initial-oil in place (IOIP). Comparisons between material balance calculations and simulation results were made. The methods are evaluated using nine actual reservoir fluid systems (six gas condensates, two volatile oils, and one wet gas) spanning a wide range of fluid properties. A new volatile oil-gas ratio RV correlation for volatile oil and gas condensate reservoir fluids is developed. According to our knowledge, no correlation to calculate Oil-Gas Ratio RV exists in the petroleum literature. In petroleum industry, calculation of Oil-Gas Ratio RV has to come from combination of laboratory experiments and elaborate calculation procedures using EOS models. Validation of the developed correlation is carried out by calculating IOIP using the developed correlation and comparing it with the value obtained using Whitson and Torp PVT.

## Keywords

PVT Properties , Equation-of-state , Modified black-oil simulation ,

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