

## ACCURATE ESTIMATION OF THE MAIN OIL PROPERTIES

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Reservoir oils PVT properties are of primary importance for determination of nearly all the aspects of petroleum engineering computations such as well testing, material balance, volumetric reserve estimates and numerical reservoir simulation. PVT data are essential in reservoir engineering calculations. It is important to obtain reservoir fluid samples to determine PVT properties. To determinate such quantities in laboratory is expensive and time consuming and also results are dependent on the validity of the reservoir fluid sample. In case no fluid samples are taken or experimental PVT data is not available, For saving time and money, correlation methods can be used to estimate PVT data. This study presents a novel model of correlation for the prediction of the pressure, volume, and temperature (PVT) properties of crude oil samples. It illustrates a methodology with which to obtain higher prediction precision of parameters by applying this newly developed model of correlation to a set of crude oil samples from different wells of oil reservoirs. The correlations based on a large PVT database and was considered nitrogen content, viscosity of oil and methane content of crude oil, in order to evaluate more accurate correlation. The correlations based on a large PVT database and was considered nitrogen content, viscosity of oil and methane content of crude oil, in order to evaluate more accurate correlation. The new model developed in this paper would suit a large number of reservoirs from different geographical location in worldwide with different properties. By means of extensive research and comparison, the strength of this new model of correlation is tested against traditional methods of predicting PVT properties, such as Al-Marhoun and Standing [1,2].

As it is clearly seen, either of the models developed in this study has very simple mathematical format. In addition, in contrast to most of the existing correlations which have several parameters, either of the developed models in this study has only parameter which can easily be turned for any oil sample. The new correlations gave better accuracy in estimating PVT properties of crudes as compared with other known correlations available in the literature.

### References

- 1) Al-Marhoun, M. A. (1988). PVT correlations for Middle East crude oils. J. Pet. Technol. 40:650– 666.
- 2) Standing, M. B. (1947). A pressure-volume-temperature correlation for mixtures of California oils and gasses. In: Drilling and Production Practice. Tulsa, OK: American Petroleum Institute, pp. 275–278.