

THE APPLICATION OF GAS RATIOS IN PAPUA NEW GUINEA

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Hydrocarbon reservoir fluids contain discrete gas elements including methane through pentane, which occur in concentrations proportional to the nature of the fluid. The release of these gases during drilling, and subsequent alteration caused by changes in temperature and pressure during the rise to the surface, make quantitative analysis quite subjective. The analysis of trends of the Gas Ratios, however can aid in the characterization of reservoir fluids.

Rank wildcat drilling, presently underway in Papua New Guinea, has utilized this trend analysis for a first pass evaluation of the presence and characterization of the reservoir fluids.

Although the absolute values of the gas ratio curves vary slightly from those first introduced by Haworth *et al.* (1984) a distinct range of curve separation is exhibited that is directly correlative with the reservoir fluid. Values of separation generally below 10 are indicative of gas; the higher the value the richer in condensate is the gas. Values usually between 35 and 55 are indicative of a liquid-phase hydrocarbon. Occurrences of residual oil can also be identified utilizing trend analysis which create an overall decrease in separation with depth; a situation only present with a water contact or transitional zone of increasing water saturation.