

## EVALUATION OF CHARTS IN DETERMINING WATER CONTENT OF SWEET NATURAL GAS WITH METHANE COMPONENT OF 60 - 67%

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### ABSTRACT

Published studies had shown that the majority of the charts for determining the water content of natural gases, were developed from gas compositions with methane component greater than 70%. Limited information exists on their ability to provide reliable and accurate results for gas compositions with a methane fraction below 70%. As a result, this study was on the validation of five (5) existing charts; commonly used in the natural gas industry; with the Cubic Plus Association Equation of State (CPA-EoS) and published experimental water content data, to ascertain their accuracy and reliability. The result of the study showed that all the charts, comprising the McKetta and Wehe, Campbell, Gordon, Katz, and the Guo and Ghalambor charts, gave relatively accurate results with average absolute deviations of less than 10%. When used with care, the McKetta and Wehe, Campbell, Gordon, Katz, and the Guo and Ghalambor charts, are recommended for use in estimating water content of sweet lean natural gas with methane mole fraction of 60 - 67%. Based on gas compositions, a new coefficient; the Voss Coefficient; for easy determination of water content of sweet natural gases, was developed.

**Keywords:** Sweet natural gas, Water content charts, CPA-Equation of state, Voss Coefficient.