

WEIGHTED LEAST SQUARE ERROR TOLERANCE TECHNIQUE FOR FORMATION EVALUATION COMPUTATION OF MINERAL VOLUMES AND FLUID SATURATIONS

Muhammad Saqib and Rehan Hanif

*LMK Resources, 300 Software Technology Park-1 ETC, Sir Agha Khan Road, F-5/1 Islamabad, Pakistan.
Telephone: 92 (51) 111101101. Fax: 92 (51) 2879854, 2879855. Emails: msaqib@lmkr.com, rhanif@lmkr.com.*

Increasingly complex reservoirs, more sophisticated Wellbore measurements, and advanced interpretive models are challenging conventional reservoir evaluations. Often, a conventional evaluation is restricted to one interpretive model and is incapable of fully using all available data. Conventional methods do not recognize inconsistent data nor do they check the quality of analytical results thus leading towards poor calculations of mineral volumes and pore fluid saturations.

A weighted least square error tolerance technique, along with a series of iterative algorithms, is used here to overcome these limitations to provide precise Petrophysical analysis with a high degree of confidence.

This technique is used to process log data in making comprehensive formation evaluation computations for determining mineral volumes and volume of pore space and the percentage of saturation of individual fluid components that occupy total pore spaces.

Estimated volumes of minerals, oil and gas may be improved considerably by using this technique. An increase of only 1% in petroleum may have a significant financial impact, for even a small development, and frequently estimated reserves are increased by 10% to 15%.