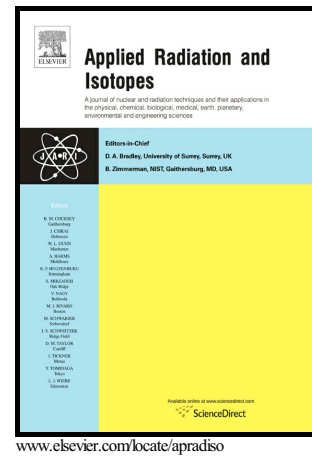


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# MATHEMATICAL DERIVATION OF DENSITY LOG FROM TOTAL GAMMA RAY AND NEUTRON LOGS IN CLASTIC ROCKS, A CASE STUDY, EGYPT

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## ABSTRACT

An empirical equation was adequately prepared to calculate the density log values without running the density tool from total gamma ray and neutron log values, on clastic reservoir rocks. This equation was applied to calculate the density log values in three important regions in Egypt (Gulf of Suez, Nile Delta and Western Desert) for hydrocarbon exploration.

The derived density log was calculated depending on the neutron and total gamma ray logs, which were used to calculate porosity and volume of shale percentages, and finally sand percentage.

Applying the derived equation to calculate the density log values from total gamma ray and neutron logs, and comparing the results with the really measured log in the three wells, located with three different regions; the calculated values were mostly comparable with the measured log values. The computed correlation coefficients of the three linear regression equations attained 0.92, 0.96 and 0.97 for the Gulf of Suez, Western Desert and Nile Delta regions, Egypt, respectively.

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