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INVESTIGATION OF HYDROCARBON GENERATION POTENTIAL OF OML 64 IN WARRI STATE, NIGERIA

*[1]E.K. Nyantakyi, [2]S. Mohammed, [2]P. Anumah, [2]J. Borkloe, [2]A. Morgan
[1]*School of Engineering, University of Energy and Natural Resources, Sunyani*
[2]*Faculty of Engineering and Technology, Kumasi Technical University, Kumasi*
**E-mail: emmanuel.nyantakyi@uenr.edu.gh*

Abstract

This study has investigated hydrocarbon generation potential for OML 64 in Warri State, Nigeria. Ten (10) core samples collected at stratigraphic depths from four producing fields of the Oil Mining Lease, OML 64 in Warri State were investigated for total organic carbon (TOC), Rock-Eval analysis and vitrinite reflectance. Results have revealed that they have generally high total organic carbon (TOC) contents, suggesting that there exist conditions in the OML64 that favoured organic matter production and preservation. The Rock-Eval results showed that the samples from fields G and H contain predominantly Type I Kerogen with a capacity to generate oil and hence has a good generation potential. The samples from fields E and F contain mainly Type III Kerogen and are gas-prone with a moderate generation potential. From vitrinite reflectance measurements, all the samples from the producing fields E, F, G and H reveal moderate source-rock grade.

The Agbada Formation can be regarded as having good petroleum source rocks for hydrocarbon generation and could be part of a petroleum system (geologic components and processes necessary to generate and store hydrocarbons, including a mature source rock, migration pathway, reservoir rock, trap and seal) if sufficient burial and maturation have occurred.

Keywords: Warri State, hydrocarbon generation potential, total organic carbon, rock-eval pyrolysis, vitrinite reflectance.