

Bogdan Mihai NICULESCU ^{1*}, Gina ANDREI ¹

¹ University of Bucharest, Faculty of Geology and Geophysics, Department of Geophysics

6 Traian Vuia Street, 020956 Bucharest, Romania; * Corresponding author: bogdan.niculescu@gg.unibuc.ro.

Formation evaluation challenges in Pliocene gas-bearing reservoirs from the Romanian Western Black Sea shelf

Abstract

This paper addresses some formation evaluation challenges and petrophysical particularities regarding two gas fields of Early Pliocene age, belonging to the biogenic hydrocarbon system of Western Black Sea Basin - Romanian continental shelf. Although these structures are located at the same depth and only 15 km apart, the wells that intercepted the sands and silts gas-bearing reservoirs indicate an important lateral facies variation and different reservoir qualities. We analyzed and interpreted data from exploration and appraisal wells that targeted these reservoirs, showing that: (1) there is a limited radioactivity contrast between the reservoir and non-reservoir intervals, so a clay volume determination based solely on the gamma ray log is not practical; (2) the reservoirs are characterized by high capillary-bound water contents, leading sometimes to abnormally low resistivity readings; (3) an additional resistivity suppression might be caused by the limited vertical resolution of the electrical logging tools, in the presence of thinly laminated sand - shale intervals; (4) the identification of gas-water contacts based exclusively on pressure gradients may be inaccurate and should be checked against the results of conventional geophysical logs interpretation and of nuclear magnetic resonance logs, for delineating the intervals with bound water or with movable fluids.