

Preface

A summary of the main results achieved in the tectonic-structural regionalization with purposes of hydrocarbon exploration, from data of potential fields and airborne gamma spectrometry is offered, focusing on the mapping of possible new oil-gas objectives in the regions of the Earth Blocks 9, 23 and 17–18. In some of the new places of interest (Majaguillar, Motembo Sureste, Guamutas and Maniabón) reconnaissance works were carried out by profiles of **Redox Complex** (complex of unconventional geophysical-geochemical exploration techniques) with positive results. Thus, Maniabón, south of the bays of Puerto Padre and Nuevitas was established as the location of main interest.

The results of the geological-structural mapping of igneous and metamorphic rocks units in the western regions (Havana-Matanzas), central (Cienfuegos-Villa Clara-Sancti Spiritus), and central-eastern (Camagüey-Tunas-Holguín) of Cuba also provide data of potential fields and airborne gamma spectrometry.

The contribution of potential fields and airborne gamma spectrometry data for geological-structural mapping of different areas of study in Cuba satisfies the well-established regularity that potential fields help, basically, to tectonic-structural deciphering of the territory and, to a lesser extent, to lithological mapping of the different units present; resulting in reverse the contribution of airborne gamma spectrometry data. Gravity data allow to identify different geological-structural features: for minimum, those associated with the Cuban North Thrust Belt, the southern metamorphic massifs, the granitic igneous bodies, the synorogenic basins and structural depressions; by highs, linked with huge thicknesses of volcanic rocks, and ophiolitic bodies; as well as by lineaments, the major tectonic boundaries within the Cuban Orogen. The aeromagnetic data allow mapping the main tectonic boundaries; the southern metamorphic massifs; the synorogenic basins and structural depressions; granitoid belts; ophiolitic bodies; and development areas of volcanic rocks. In aeromagnetics, the faculty of lithological mapping is given from the differential distribution of magnetite in various rock units. These data allow also making quantitative estimates of depth to magnetic targets. The airborne gamma spectrometry data identify, by increased values of U(Ra), units with high graphite content (organic matter), and those associated with acid igneous rocks. Increased

values of potassium are linked mainly to medium-alkaline and acid igneous rocks. Thorium increased values characterize, in general, metamorphites. Some highly developed weathering mantles on ophiolites are expressed by increments of U(Ra) and Th. Hydrocarbon deposits are expressed by minimum of K/Th ratio surrounded by maximum and, at its periphery, local increases of U(Ra) is observed.

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