

Microthermometry of Carbonated Rocks of the Hondita-Lomagorda Formations, the Tiger Cave Sector, Municipality of Yaguara, Colombia

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Abstract : Colombia's limited oil reserves make the finding of new fields of extraction or the potentiate of the existing ones a more important task to do every day; the exploration projects that allow to have a better knowledge of the oil basins are essential. The upper Magdalena Valley basin - VSM, whose reserves are limited, has been one of the first basins for the exploration and production of hydrocarbons in Colombia. The Hondita and Lomagorda formations were deposited in the Late Cretaceous Middle Albian to the Coniacian and are characterized by being the hydrocarbon-generating rocks in the VSM basin oil system along with the Shale de Bambucá; therefore multiple studies have been made. In the oil industry, geochemical properties are used to understand the origin, migration, accumulation, and alteration of hydrocarbons and, in general, the evolution of the basin containing them. One of the most important parameters to understand this evolution is the formation temperature of the oil system. For this reason, a microthermometric study of fluid inclusions was carried out to recognize formation temperatures and to determine certain basic physicochemical variables, homogenization temperature, pressure, density and salinity of the fluid at the time of entrapment, providing evidence on the history of different events in different geological environments in the evolution of a sedimentary basin. Prior to this study, macroscopic and microscopic petrographic analyses of the samples collected in the field were performed. The results of the mentioned properties of the fluid inclusions in the different samples analyzed have salinities ranging from 20.22% to 26.37% eq. by weight NaCl, similar densities found in the ranges of 1.05 to 1.16 g/cc and an average homogenization temperature at 142.92°C, indicating that, at the time of their entanglement, the rock was in the window of generation of medium hydrocarbons -light with fragile characteristics of the rock that would make it useful to treat them as naturally fractured reservoirs.

Keywords : homogenization temperature, fluid inclusions, microthermometry, salinity

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