

Turbidite Outcrops from Malaysia: Analogues for the Deep-Water Petroleum System

Hassan M. Baioumy¹

¹Arabian Geophysical and Surveying Co. (ARGAS)

Abstract

Turbidites are deposits resulting from turbidity currents and deposited when the current loses its energy. The geological significance of these turbidites includes their formation in a unique depositional setting as submarine fans that require specific geologic and tectonic settings. Since 1980, the contribution of turbidite deposits to worldwide petroleum reserves has been very significant.

Turbidites are widely distributed in Peninsular Malaysia, Sarawak, and Sabah. They also cover wide age spectrum including Triassic, Jurassic, Cretaceous, and Tertiary. This work describes the occurrence, geology, facies analysis, sedimentology model, and tectonic settings of the turbidites in Malaysia as potential analogies of the deep- water petroleum system.

Turbidites from Malaysia range from clay-dominated, sand-dominated, and tuff-dominated types. They represent outer fan, inner fan, channel, and slump parts of the submarine fan in a passive margin. The petroleum systems in these deposits including source, reservoir, and seal rocks were also modelled for each type of these turbidite. Based on their mineralogy as well as organic and inorganic geochemistry, maturation of the source rocks in these systems ranges from late diagenetic to over matured.

The abundance of turbidite outcrops that represent various geological settings and ages offer an opportunity to characterize the deep-water petroleum system. This work will help petroleum geologists for better understanding of deep-water petroleum system that will lead to more new hydrocarbon discoveries particularly in the deep-water reservoirs.