Separation, Northward Drift & Collision of Indian Plate is Responsible for the Present Petroleum System in Pakistan: Enlighten the Idea " Present is the Key to the Past"

Muhammad F. Khan
Geology, University of Sindh, Jamshoro, Pakistan.

Indus Basin of Pakistan is an extensively explored and the major oil and gas producing area in Pakistan, having tectonic features like platform and foredeep comprising depressions, inner folded zones and outer folded zones. Geological setting revealed extensional tectonics came into existence when Indian plate in early Cretaceous was start separating away from Madagascar about 130 million year. However the major folding and faulting, formed the main entrapment mechanism, took place about 100 million years ago. During this period the source rock Sember formation of lower Cretaceous and the reservoir rock lower Goru of lower Cretaceous were deposited. This was followed by major unconformity which in turn was followed by a widespread transgressive event of upper Goru that provided the regional seal to the Lower Goru reservoir units 94 million years ago. Thermal generation of hydrocarbons in the Sember Formation began 65 to 40 million years ago, during Paleocene to Oligocene time. Hydrocarbon expulsion, migration, and entrapment are interpreted to have occurred mainly 50 to 15 million years ago, during Eocene to Miocene time, with the development of structural traps in Upper Cretaceous and Tertiary reservoirs. The principal reservoirs in the Petroleum System are Upper Cretaceous through Eocene sandstones and limestones. Total Petroleum System in the Indus Basin of Pakistan is low to moderately well explored. All of the necessary attributes for petroleum generation, expulsion, migration, entrapment, and preservation are present. The system has favorable characteristics for additional hydrocarbon discoveries using existing and new play concepts.