



HYDROCARBON EXPLORATION IN ONLAND FRONTIER BASINS OF INDIA – PERSPECTIVES AND CHALLENGES*

JOKHAN RAM

BASIN MANAGER, FRONTIER BASIN, ONGC, DEHRADUN

ABSTRACT

There are 26 sedimentary basins of India having an estimated resource of 29 MMT, out of which only one-fourth has been converted to reserves. Most of the present production comes from the young passive margin and rift type of basins (mostly Tertiary), whereas the other basins - Compressional fold-thrust belt and foredeeps (Himalaya, Ganga/Punjab) and older rift basins (Proterozoic, Gondwana) are yet to be fully explored. There are seventeen basins considered as frontier basins, most of which are in the phase of knowledge building. Ideas and concepts play important role in their exploration. A few emerging concepts are discussed in this article, e.g. Vindhyan is an intra/pericratonic rift having well preserved sedimentary facies of different phases of rift development; Bundelkhand massif is a floating basement glided along south-vergent thrust sheets during Himalayan orogeny; possibility of existence of the Gondwana rocks below Vindhyan of Central India; coal has the potential to generate gaseous and even liquid hydrocarbons within the Gondwana basins of India; presence of Palaeozoic-Mesozoic sequence is envisaged below the Tertiaries of the Punjab plain in the Western Himalayan foredeep, etc. Hydrocarbon prospectivity of individual basins with the current state of knowledge has also been discussed. The basic constraints of exploration are identified, such as the identification of source pods through geochemical investigation and poor seismic images particularly in the complex orogenic belt, subtrap and subsalt conditions. It is felt that at the present stage of exploration of the Indian frontier basins, industry needs research support from the academia in a few key aspects such as geochemistry, geochronology and biostratigraphy. At the same time, sufficient thrust should be given to develop non-conventional petroleum system e.g. basin centered gas, biogenic gas and Coal-bed Methane.

Key words : Frontier basins, exploration, geodynamic evolution, Hydrocarbon prospectivity