

### Seismic reflection survey in Bangladesh for hydrocarbon

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*The Bengal delta forms one of the largest geosynclinal basins in the world. Bangladesh is covered for the greater part by alluvium laid down by three mighty rivers, the Ganges, Brahmaputra and Meghna, and their innumerable tributaries and distributaries.*

*The Holocene sediments are developed over the extensive plains and the Neogene sediments are found exposed in the folded flank of the Bengal Foredeep. They are traceable from the southeastern border of the Sylhet district, Comilla-Noakhali districts and cover all the territory of Chittagong and Chittagong Hill tracts.*

*The oldest exposed sediments here are the Tura sandstone of Palaeocene age and are situated in the Takerghat area of Sylhet. Mesozoic and Palaeozoic sediments and Pre-Cambrian basement rocks are not exposed anywhere in the country but are encountered in drill holes in the Gondwana basin and adjoining areas of North Bengal. Here geological survey has little possibility because the area is fully covered by alluvium with very little rock outcrops exposed. Extensive seismic reflection survey is required to locate hydrocarbon accumulation into structural or stratigraphic traps especially adjacent to the Eocene hinge zone.*

*The Bangladesh portion of Bengal basin can be divided structurally into three main units:*

- i) Pre-Cambrian platform or the Buried Indian Shield*
- ii) The deeper basin*
- iii) Folded flank of the Chittagong trough.*

*Here, the low velocity zone (LVZ) generally varies from 5 m to 60 m and velocity varies from 350 to 2000 m/sec. The average thickness is about 15 m. Vertically the LVZ can be divided into different layers,*

each of them being characterised by a constant velocity. Lateral velocity variations were also observed within the LVZ (750 - 1200 m/sec.). The quality of reflection records mainly depends on the constitution of the LVZ. It also influences the behaviour of the first arrivals and the lining-ups of the consequent deeper reflections. The deepest reflection recorded comes from 4.9 sec. (depth 7.8 km).

Till today only 61 wells (8 offshore and 24 developed wells) have been drilled mainly on geophysical data, resulting in the discovery of one offshore and 11 onshore gas fields. Of the 12 gas fields only Chotak, Sylhet, Habigonj and Titas are producing gas and condensate at the rate of 180 million  $\text{ft}^3/\text{d}$  though the total recoverable gas is estimated at 12 trillion  $\text{ft}^3$ .

An average of 1.6 million tons/yr. of petroleum products is used in Bangladesh, all of which is imported and is taking away nearly 2/3 of total foreign exchange earnings (US\$600 million).

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