

SEISMIC IMAGING OF SEAWARD DIPPING REFLECTORS OF THE CONTINENTAL MARGIN WEST OF INDIA

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The wide continental margin west of India between 8° N and 22° N consists of sediment filled rift basins and the margin parallel Laxmi and Laccadive Ridges on the seaward side of the basins. Its crust consists of Precambrian granites, Tertiary basalts overlain by sediments. We have analysed about 6500 line km multichannel seismic reflection records, gravity both ship-borne and satellite derived, magnetic and bathymetry data along sixteen profiles across the margin in 70m to 4000m water depths. It had revealed near parallel reflectors of 3 to 4 km thick sediments intruded by igneous rocks forming again the margin parallel ridges in the shelf margin basins. The most significant of them are the series of distinct seaward inclined sub-basement reflectors beneath the sediments west of the Laxmi and Laccadive Ridges in 3000m to 4000m water depths. They are clearly seen wide spread along the margin. Lateral extent of the reflectors on the profiles vary between 15 km and 75 km and thickness between 1.2 km and 5.2 km on the profiles. They are maximum wide of Kasargod coast (12° N) and thick of Cochin coast (8° N). The seismic images of lower reflectors especially of Kasargod coast show offsets in lateral extents and considerable vertical displacement and at depth seaward dipping as low angle faults. It is important to note that on all the places the pack of inclined reflectors thin towards the east and lap on to the western flank of the ridges, terminate against sediment filled grabens at the crest of the ridges. The series of seaward dipping reflectors (SDR,s) are considered as volcanic layers emplaced aurally/ sub-aurally at the time of rifting of the continents. 2-D model studies of the crust of the shelf margin and ridges constrained by seismic results show more than sixteen kilometers thick crust. So, we infer the linear ridges are continental slivers rifted from main continent and the volcanic outpourings at the rifted edges of the continents eventually formed as seaward dipping reflectors as such we propose continental crust of the ridges.