IMPLICATIONS OF FLOW STRUCTURES IN THE DECCAN TRAPS AROUND PUNE, INDIA

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Although recent petrochemical studies have helped in defining the source and origin of the Deccan Trap lavas of India; descriptive physical volcanological studies of the precise mode and mechanics of their eruption are still lacking. These continental flood basalts occupying over 0.5 x 106 km2 area, present certain unanswered problems. These flows have been traced across a few hundred km and display individual thicknesses of several tens of metres. How the viscosity, temperature of eruption, volatile contents and composition have interacted during the actual eruption of these lavas is perhaps the most significant one.

Physical characters such as a) the nature and hummocky geometry of the flow units,b) distribution and geometry of vesicles,c) ropy structures, squeeze-ups, lava tunnels and blisters and, d) cooling joint patterns were studied around Pune (~18º30'N; 74º50'E), where Bushe, Poladpur and Ambenali Chemical Types are exposed. Very few dykes are exposed in this region. Evidences indicate the presence of eruptive foci in this area. The northern parts of this area are dominated by compound hummocky pahoehoe lavas, while the southern parts display the presence of thick, simple flow sheets alternating with thin compound pahoehoe flows and volcanic breccia. This diversity within adjoining flow piles separated by less than 20 km has several implications.

These studies have shown that the lavas were erupted on an undulating surface, which probably had a regional south-eastward slope. The lateral spreads were controlled not only by the substrate morphology, but also was achieved through the mechanism of inflation.

It is likely that the observed inflated flows around Pune are not unique and are widespread throughout the Deccan Trap Province of Late Cretaceous age.