Tectonics of the Chamba Nappe, NW Himalaya and its regional implications

S. Lahoti[1], Yash Gupta[1], Kislay Kumud[1], Arvind Kumar Jain[2]

[1] Department of Earth Sciences, Indian Institute of Technology, Roorkee-247667 India
[2] CSIR-Central Building Research Institute, Roorkee-247667 India

Southern parts of the Himalaya in western Himachal Pradesh along the Ravi River and its tributaries are remarkable in narrowing down of the Lesser Himalayan Shali/Panjal sedimentary zone between the Main Boundary Thrust (MBT) and the Panjal Thrust (PT) due to southward propagating Chamba Nappe. This nappe is comprised of the Proterozoic-Paleo-Mesozoic Tethyan sedimentary zone with infolded Triassic-Jurassic Kalhel-Tandi carbonates having diverging vergence towards southwest and northeast, respectively.

Over the vast terrain of this succession, the low grade Chamba Group metamorphics of psammite-pelite sequence can be regionally traced into the Salkhala Group of Kashmir in the west, Chail-Jutogh metamorphics further southeast, and the Haimanta Group of Spiti-Lahaul regions. The Chamba Nappe thrusts over the Higher Himalayan Crystalline (HHC) Belt of Chenab-Miyar valleys and cuts through it in such a manner that the HHC is not exposed along the frontal parts. Intensely mylonitized 'Outer Granite Band' in the frontal parts within low grade metamorphics at the base of the Chamba Nappe probably represents the subthrust extension of Kulu-Bajura Nappe/Munsiari thrust belt.

The Chamba Nappe contains four formations: Chamba Formation (quartzite-phyllite alternations), Manjir Formation (pebbliferous slate, quartzite, diamictite), Salooni Formation (metagreywacke, siltstone, carbonaceous slate) and Kalhel Formation (fossiliferous dolomite, sandstone, shale, volcanics). These have suffered three deformation phases of which the first phase D1 appears to be the most pervasive simple shearing during southward propagating Chamba Nappe. It has produced NE-trending down-thedip plunging pebble, pyrite and mineral lineations on equally-prominent foliation, transverse to the general regional trend of the Chamba Nappe. Subsequent deformation phases D2 and D3 produced regional superposed folds and their axial planar foliations. Bedding-cleavage relationships at several localities in monotonous quartzite-phyllite sequence of the Chamba Nappe provide indisputed evidences for the presence of large D3 folds.

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