

Deformation Episodes in Iron Formation of Eastern Province of North Odisha Iron Ore Craton, Eastern India

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Abstract

Banded Iron Formation (BIF), a bi-component rock of the Precambrian period is exposed along with iron ore in distinct geographical entities encircling the North Odisha Iron Ore Craton (NOIOC) in Odisha – Jharkhand states, eastern India. Iron formation of the eastern province is confined to Badampahar-Gorumahisani-Sulaipat belt. The litho assemblages belonging to this Iron Ore Group comprise of banded cherty quartzite, banded magnetite quartzite, banded magnetite grunerite quartzite, tremolite-actinolite schist and fuchsite quartzite. Deformations in phases affected the BIF members and associated rocks of the area resulting in successive fold structures. The first generation folds (F_1) are characteristically tight and isoclinal having NE plunging axes. The second phase fold (F_2) structures in the area with reference to first fold are co-axial, upright and tight to open in nature profusely overprinting the F_1 folds are parallel to the general trend (NE-SW) of the belt. Axial plane of the third phase folds (F_3) are gentle and broad warps having NW-SE trending axial planes and are found to be the last traceable ones in the area. trending in NW-SE direction are found to be the last traceable ones in the area having gentle and broad warps. The co-axial F_1 and F_2 folds along the general trend (NE-SW) of the belt are superposed by NW-SE trending F_3 fold, which exhibits a geometric configuration as $F_1 // F_2 \ F_3$. Such type of multiphase deformed terrain has produced many interference fold patterns in minor scale out of superposition *i.e.* dome and basin structures, hook shaped patterns, eyed fold and S, Z, and M shaped folds. The paper discusses the episodes of structural events and their signatures in the interference fold patterns in the eastern province of the NOIOC.

Keywords: Banded Iron Formation, Badampahar-Gorumahisani-Sulaipat Belt, Deformation Episodes, NOIOC

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