

A B S T R A C T

The Lower Proterozoic Aravalli rocks around Salumbar, Udaipur district, Rajasthan, have been involved in folding of four generations. The first set of folds (F_1) affecting stratification is isoclinal with very high amplitude/wave length ratio. A pervasive axial planar cleavage (s_1) is effectively parallel to stratification in the limbs of these folds, cutting across it only in the sharp hinge zones. The axial planes of the F_1 folds have been involved in gentle coaxial refolding (F'_1) at some places. These early structures have been overprinted by a set of open, upright folds (F_2), with nearly NS-striking axial planes. A crenulation cleavage (s_2) parallel to the F_2 axial planes is well developed in the schistose rocks. Folds of two more sets of small scale have been identified in localized zones. The earlier of these (F_3) are conjugate kinks with subhorizontal axial planes, whereas the later ones (F_4) are upright kinks and conjugate folds with ENE and ESE axial planes.

Analyses of the geometry of folds and associated structures indicate that the F_1 folds were initiated by buckling and modified extensively by flattening normal to the axial planes. The F_2 folds also developed by buckling due to a maximum compressive strain in an EW horizontal direction. Determination of stress patterns from conjugate axial planes of the F_3 and F_4 folds shows that the maximum compressive stress was vertical during the F_3 folding, whereas it was oriented in an NS horizontal direction during F_4 movement.

The Aravalli metasedimentary sequence, which shows an extreme variation in sedimentary facies, has a conglomerate unit at the base, followed successively by a marble-amphibolite-quartzite unit and a mica schist unit. These rocks were

metamorphosed in the garnet grade, syn- to late-tectonically with respect to the first deformation.

The granitic and gneissic rocks of the area have been divided genetically into three groups. The Banded Gneissic Complex (BGC) is a basement gneiss underlying the basal Aravalli metasediments. BGC has, however, been mobilized in part during the F_1 deformation, so that structures of F_1 generation, identical in style and orientation with those in the metasediments, have developed. The "Composite Gneiss" in the southern part of the area represents the migmatized product of the Aravalli metasediments during the F_1 folding. The Lakapa granite gneiss forming a lenticular body in the northern part of the area was emplaced syntectonically with the first folding.