

Structural Analysis on the Fundão-Cambotas Thrust Fault System, Quadrilátero Ferrífero, Minas Gerais, Brazil

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The south and southeastern sectors of the Fundão-Cambotas Thrust System (Quadrilátero Ferrífero, Brazil) has been divided in two structural domains: frontal and oblique ramps. The frontal ramp domain shows a larger dispersion of strain ellipsoids orientation and lower strain values, while in the oblique ramp domain strain is higher. In both domains, two generations of shear zones and thrust faults were defined, the first one composed by bedding-tangential shear zones and the second by steeper thrusts. Both generations share the same kinematics (E-W thrusting) and mineral associations (sericite + pyrophyllite + kyanite + chlorite \pm chloritoid). These structures are supposed to have been formed in a single progressive deformation event. Paleostress analysis resulted in average values of 25,6 Mpa (Mercier equation) and 46,8 Mpa (Twiss equation). Quartz-c axis orientation data shows that the deformation was characterized by coexistence of rotational and shortening components. The observed shape and crystallographic fabrics were generated by superimposed deformations. Brasiliano (0.6-0.5 Gy) E-W thrusting has modified and reoriented earlier fabrics, formed during Archean deformation event(s) circa 2.7 Gy – 2.6 Gy and/or in the Transamazonian (2.1 Gy – 2.0 Gy). Basement highs acted as obstacles to the thrust sheets' advance, generating a curved morphology, and the formation of a high-strain oblique-ramp domain. Field data and analogic tectonic models suggests that the thrust sheet's structural basement may be composed by an en-echelon, NW-trending and NE-dipping surface.