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## Structural Controls of Gold Mineralization in Southwest Ghana: The Iduapriem Gold Mine (Pit 5)

Newman T. Odonkor

University of Ghana, Accra, Ghana

This study investigates the controls of gold mineralisation in Pit/Block 5 of the AngloGold Ashanti Iduapriem mine in Ghana, mainly by field mapping and drill core logging. The pit contains various rocks, including quartzite, Banket conglomerates, basalts, and rhyolites. The stratabound gold mineralization in the pit is associated with the Banket conglomerates, particularly in sub-facies Reef A, B, and C, which are well sorted and texturally matured. The ore geometry is generally subvertical with a thickness of 20 to 100 m. Locally, four deformational events were observed in the pit and denoted,  $Di_n$  to  $Di_{n+1}$ .  $Di_0$  in the study area is marked by preserved bedding and trough cross-stratification observed in the quartzites and the conglomerates.  $Di_1$  affected all the rocks in the study area and is marked by an N- to NNW-striking  $S_1$  foliation with dips ranging from  $25^\circ$  to  $42^\circ$  to the Northeast and East. The  $Di_2$  event, an E-W compression event, resulted in the formation of tight isoclinal folds with wavelengths ranging from 2 to 5 cm and axial planes inclined between high  $70^\circ$  to  $85^\circ$  to the East, which are more pronounced within the quartzites. The  $Di_3$  event is marked by the development of small or meso-scale ripple fold ( $F_3$ ) open folds with a wavelength of about 0.5 to 1 m.  $Di_4$  is defined by two subparallel shear planes striking N30E and N70E. The N30E shear planes have shallow dips ranging from  $30^\circ$  to  $35^\circ$  and the N70E shear planes have steep dips ranging from  $70^\circ$  to  $85^\circ$ . The N70E shear planes usually truncate at the N30E shear planes.

Overall, the findings indicate that the gold mineralization in the mine is mainly hosted by the Banket conglomerate and structurally controlled by the primary beddings. This means that the mineralization is mainly associated with the primary sedimentary deposition.