

## ***Geology of subsheets N, T and O of Bure map sheet (NC 37 - 5)***

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### **ABSTRACT**

The map area is situated in Bure sheet (NW Ethiopian Plateau) bounded by 10°45'-11°00' The Precambrian, Paleozoic (/or Mesozoic ?) sedimentary and Cenozoic volcanic rocks are exposed in the map area. The Precambrian rocks include Neoproterozoic volcano-sedimentary-plutonic sequences and gneissic rock associations, which constitute three north-south trending structurally bounded lithotectonic domains. These include, from west to east, the Gongo, Manden and Albasa domains. The NNE-SSW trending Dimtu mafic-ultramafic assemblage occurs sandwiched between the Gongo and Manden domains.

The Gongo domain comprises metasedimentary, metavolcanic and deformed intrusive rocks, whereas the Manden domain is constituted of metavolcano-plutonic rock associations with minor interleaving metasediments. On the other hand, the Albasa domain is composed of granitic gneiss with minor amphibolite and quart-mica schist intercalates. Syn and late-post tectonic dioritic-granitic intrusive bodies variably intruded the rocks of these domains.

Four phases of Pan-African deformation designated as D1, D2, D3 and D4 events and accompanying regional metamorphism had affected these rocks. Structures developed during the D1 event include eastward closing recumbent folds, gently east-dipping lithologic contacts, and discrete north-south shear zones along thrust contacts, which may have developed along shortening zones of the D1 thrusts. The D2 event resulted in north-south folding of the D1 structures and development of tight to open, upright to overturned antiformal and synformal major folds with subvertical to steeply east-dipping axial surfaces, which contain subhorizontal to shallowly north-plunging fold axes. On the basis of structural fabrics, the deformed mafic-felsic intrusive bodies are interpreted to have emplaced into the sequence during and/or waning period of the D2 event.

The D3 shearing event resulted in the development of major north-

south trending brittle-ductile left-lateral Bapuri Shear Zone in the Gongo domain and steep D3 fabrics along discrete zones to the east, whereas the D4 event resulted in the development of an east-west trending strike-slip Donbon Shear Zone with a characteristics gently north-dipping shear fabrics, which crosscuts the composite north-south D1/2 planar fabrics in the Albasa gneissic domain. The D4 structures are interpreted to have occurred later and are correlatable with similar structures developed during the post-convergence extensional regime elsewhere in the East African Orogen.

Field evidence and metamorphic mineral assemblages of rocks suggest that the Precambrian rocks were coevally metamorphosed at greenschist to lower amphibolite facies conditions during the D1/2 events, which subsequently were retrograded to greenschist facies conditions during the D3/4 events.

Paleozoic (/or Mesozoic ?) mudstone occurs overlying the Precambrian rocks to the north. Also, occurs overlying these rocks, altogether, is Cenozoic basaltic rock to the north and southwest of the map area.

Gold and sulphide mineral occurrences within the metavolcano-sedimentary rocks and along structural zones as well as marble and granitoid bodies in the map area, may be of potential economic interest.