Geology of subsheets C, D and E of Bure map sheet (NC 37 - 5)

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ABSTRACT

The study area is located in northwestern Ethiopia in NW plateau, in Amhara National Regional States of Awie zone. It is bounded by 36°45' and 37°15' latitudes and 10°45' and 11°00' longitudes, and covering 2250 Km^2.

The study area is entirely covered by Cenozoic volcanic rocks and superficial deposits. It can be broadly classified in to Tertiary; locally stratified basaltic successions, trachyte and minor basaltic dykes, and Quaternary; basaltic flow and scoria cones. The Tertiary basalt is divided in to the lower, middle and upper basalt based on composition. The lower basalt is aphyric and plagioclase phyric basalt with minor intercalations of olivine phyric basalt. The middle basalt contains aphyric basalt with interstratifications of olivine phyric, pyroxene-olivine phyric and olivine-pyroxene phyric basalt. The upper basalt is olivine-pyroxene phyric basalt with minor aphyric basalt and in some places caped by pyroxene-plagioclase phyric trachy basalt. The trachyte and basaltic dykes are found cutting the above three basaltic succession implying that they are younger than the basalts. The scoria cones are mostly situated at the central part of the mapped area and found topping the middle basalt. The recent basaltic flow, olivine phyric basalt, is exposed at the lower topography filling an old channel (paleo-channel) or river valley and overlies the Quaternary superficial deposits.

The main structures observed in the study area can broadly be grouped in to non-diastrophyic and diastrophyic structures. Non-diastrophyic structures include flow banding/primary layering and columnar joints. While the diastrophic structures include faults, joints/fractures and photo lineaments. Volcanic landforms such as plugs and scoria cones with linear arrangement have been noted suggesting structurally control for their deposition. Moreover craters and minor intrusions (basaltic dykes) are observed.

In general volcanic rocks are used for construction purpose in particular for masonry works, crushed aggregate and filled material. Moreover, the cinder cones can be potential source for production of blocket and road construction. The basalts and trachytes are used for construction purpose such as for stone masonry work, as boulders or crushed stones for road construction and crushed aggregate for concrete. The scoria is also useful for road construction.