MINERALOGY AND POSSIBLE GENESIS OF METALLIC MINERALIZATION IN THE KENYAN COAST

ABSTRACT

Metallic mineralization of lead sulfide (galena), zinc sulfide (sphalerite), barium sulfate (barites) manganese, silver, iron and copper occurs along the Kenyan coast in veins emplaced in the Upper Mazeras sandstone. These minerals occur in Kilifi and Kwale counties and are associated with zones of faulting which lie almost parallel to the coastline. Mining of lead in Kinangoni and barites in Vitengeni as well as exploration have been going on in the area since 1970. Fifteen prospects with mineralization of manganese, barites and other metals have been reported in the area with only eight of them appearing to be of more interest: Mrima-Jombo, Vitengeni, Kinangoni, Mangea kwa Dadu, Mkang’ombe, Mwachi river, Lunga Lunga and Mkundi. With regard to Pb-Zn-Ag-barite, Vitengeni, Kinangoni, Mwachi River and Lunga-Lunga appear to be significant prospects. Initial investigations done by Caswell (1953) indicated that manganese reserve amounts to 600000 tones while samples assayed yielded 21.78%. Data analysis of stream sediment and soil sample geochemistry indicated high concentration (10000ppm) of Ba, Pb, Zn and low concentrations (<500ppm) for Au, Ag and Cu. The mineralization is vein type deposited by rising hydrothermal fluids, originating from a mixture of surface and sea water. The temperatures of the hot springs in the area ranges from 146-1640C recharged by shallow circulating surface water mixing with deeper sea water in a reservoir which lies at about 3Km below the ground level. Silicification is the dominant type of wall rock alteration in the veins which also an evidence of low temperature (>2000C) hydrothermal fluids in the faults with the intrusion providing the necessary heat. The primary minerals in the veins are galena, blende and chalcopyrite, while on the other hand, the secondary minerals are lead minerals (cerusite, anglesite, pyromorphite, massicot, plattnerite), zinc minerals (smithsonite), copper minerals (malachite, azurite, covellite) and iron minerals occurring together with quartz and barites as gangue minerals. The MVT is the proposed analogue of the mineralization as inferred from the mineralogy, age (~230Ma), morphology and ore genesis.