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GOLD MINERALIZATION AND ZONATION IN THE STATE OF KELANTAN

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ABSTRACT: Gold mineralization in Kelantan is mainly distributed in the central part of the state, bounded by Stong Igneous Complex and Senting Granite on the west, Kemahang Granite in the north and Boundary Range Granite in the east. The gold mineralization is more common in Triassic sedimentary rocks followed by Permian metasedimentary rocks. The oldest Silurian-Ordovician metasedimentary rocks only contain some insignificant gold mineralization, whilst the youngest Cretaceous-Jurassic sedimentary rocks are devoid of gold mineralization. Basically, the gold mineralizations are identified as volcanogenic massive sulphides, skarns and hydrothermal quartz vein deposits. Six types of hydrothermal quartz veins can be observed, viz; low sulphide quartz veins, high sulphide quartz veins, quartz veins in sheared granite zones, quartz veins at the boundary of sedimentary rocks, structurally controlled quartz veins in volcanic-sedimentary rocks and metamorphic segregation quartz veins. The main factors contributing succession of gold mineralization are source rocks, heating chamber as well as depositional structures. The principal source rocks are Permian-Triassic volcanic rocks that are associated with sedimentary rocks. The heating chamber that induced the hydrothermal fluids is the granitoind bodies that intruded under the volcanic-sedimentary rocks, whilst the structures which allow the infiltration and deposition of gold are shear zones and fault zones originating from depth. Based on the type of ore deposits, geochemical data and geological setting, the study area can be divided into five zones, namely gold zone (hydrothermal veins), gold-base metal zone (volcanic exhalative), gold-silver-mercury zone (hydrothermal veins), base metal-gold zone (massive sulphides) and silver-lead-zinc zone (skarn and massive sulphides).