

Geology, Alteration, and Mineralization of the Sagay Porphyry Copper Deposit, Negros, Philippines: A New Discovery

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Major copper and gold deposits in Negros, Philippines, are located in the southwestern part of the island. These are hosted in the late Oligocene to early Miocene Ancient Negros arc. Northern Negros is thought to be underlain by the Recent Negros arc (Pliocene to Recent) and no known porphyry deposit had been reported. Sagay, in northeastern Negros, is covered by andesite volcanics. Extensive sericite and quartz-pyrophyllite-alunite-kaolinite alteration is confined in two prospective areas in the project, namely, Nabiga-a Hill and Sherman Hill. Occasional quartz-pyrite ± chalcopyrite veins are also exposed at surface.

Drilling at Nabiga-a Hill intercepted at least three episodes of diorite intrusion with alteration ranging from chlorite-sericite to biotite-magnetite-k-feldspar at depth. Advanced argillic alteration at depth is confined to narrow structures. A relatively fresh andesite porphyry is interpreted to be a late intrusion which indicated the waning of the hydrothermal alteration and mineralization. Veins are hosted in the diorite and the andesite volcanics proximal to the diorite intrusives. The different vein types are early magnetite, quartz-chalcopyrite ± pyrite, quartz-molybdenite ± pyrite, pyrite ± chalcopyrite, coarse pyrite, late magnetite-chalcopyrite, calcite ± quartz-sphalerite-galena-pyrite, and drusy quartz ± pyrite. U-Pb dating of the andesite volcanics yielded ages ranging from 12.48 ± 0.38 to 9.15 ± 0.51 Ma, while the diorite intrusives yielded ages of 9.74 ± 0.34 to 9.22 ± 0.26 Ma. The andesite porphyry is dated at 9.36 ± 0.30 and 9.35 ± 0.24 Ma. These ages indicate that an older porphyry mineralization is present beneath the volcanic deposits of the Recent Negros arc.