

SEG 100 Conference: Celebrating a Century of Discovery

R8 The Onto Cu-Au Discovery, Eastern Sumbawa, Indonesia: A World-Class Middle Pleistocene Lithocap-Hosted Covellite-Pyrite Deposit

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In 2013, a PT Sumbawa Timur Mining (80% Vale, 20% PT Antam) diamond drill program testing an extensive advanced argillic alteration lithocap within the Hu'u project on eastern Sumbawa Island discovered a giant hybrid high-sulphidation epithermal/porphyry copper-gold deposit under ~500 m of relatively unaltered, barren andesitic cover. Copper occurs almost exclusively as covellite with disseminated pyrite and in pyrite-covellite veins and veinlets, and gold occurs in the both the covellite and associated pyrite.

Cu-Au mineralization occurs in a tabular block measuring at least 1.5 x 1 km, with a vertical thickness of ≥ 1 km largely within the top of a series of coalesced porphyry stocks (60% of resource) and in a surrounding premineral polymictic diatreme breccia. A December 2019 resource estimate for Onto reported an indicated resource of 0.76 billion tonnes at 0.93% Cu, 0.56 g/t Au, and 350 ppm As and an inferred resource of 0.96 billion tonnes at 0.87% Cu, 0.44 g/t Au, and 350 ppm As for 15.3 Mt of contained copper and 27 million oz of gold in both resource categories. In addition to these resources, an exploration target of 0.6 to 1.7 billion tonnes at 0.4 to 0.7% Cu and 0.2 to 0.3 g/t Au has been delineated in a surrounding envelope based upon 64 drill holes (<http://sumbawatimurmining.co.id/mineral-resource-estimate-statement/>).

The porphyry-style mineralization, related to an intense AB quartz vein stockwork, and high-sulphidation-style mineralization overlap spatially and temporally, and more than 90% of the resource is hosted in either quartz-alunite or quartz-pyrophyllite \pm diaspore alteration with only minimal potassic and chlorite \pm sericite alteration on the margins and very deep within the system. It is exceptionally young and formed rapidly in the middle Pleistocene, and much of the geological system and alteration is intact without significant erosion.

We will discuss the tectonomagmatic setting and the unique insights provided by this deposit into porphyry-epithermal transitions.