



Chapter 3

Discovery History of the La Colosa Gold Porphyry Deposit, Cajamarca, Colombia

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Abstract

In May 2003, AngloGold Ashanti began greenfields exploration in Colombia with a team of four geologists. By 2007, the program employed 127 field geologists covering about 10.5 million hectares (Mha) with systematic reconnaissance exploration. To date, the result of this work is the discovery of several gold deposits, the most important being La Colosa, containing an initial resource of 381.4 million metric tons (Mt), grading 1.00 g/t Au or 381.4 t Au, using a 0.3 g/t cut-off grade.

The La Colosa deposit is a gold-only porphyry system related to a late Miocene multiphase porphyritic diorite-granodiorite complex. Gold grades exceeding 1 g/t are associated with early dioritic phases that are altered to potassic and sodic-calcic mineral assemblages. Potassic and sodic-calcic alteration also affects later diorite porphyries, but gold grades are, on average, <0.4 g/t. A late granodiorite porphyry is mostly barren, with only erratic anomalous gold grades, which are all <0.4 g/t, and weak to moderate propylitic and intermediate argillic alteration. The deposit contains >5 vol percent magnetite. Pyrite content varies between 3 and 5 vol percent. Gold is mainly contained within pyrite. Copper and molybdenum contents are generally at background values for diorite.

The La Colosa deposit is a grassroots discovery. It was made by AngloGold Ashanti geologists only 18 months after the initiation of a regional exploration program in the defined Mariquita target region. Discovery is the result of systematic regional data synthesis, conceptual target generation, and disciplined, multiphase, field-based, follow-up, which included stream sediment geochemistry, prospecting, rock chip sampling, and drilling.

Early target generation work by AngloGold Ashanti, undertaken at a northern Andean scale between 2000 and 2003, focused field activities into the most prospective regions of Colombia, based not only on geology and mineral potential but also upon factors that would lead to the discovery and eventual development and operation of a successful, socially, and environmentally responsible mining operation. The exploration strategy has maintained a systematic methodology that includes conceptualization, reconnaissance stream sediment surveys and related prospecting, target definition, target drilling and conceptual economic study, and finally prefeasibility and feasibility studies. Clear decision points were established at the end of each work phase, always keeping in mind the company's minimum economic target criteria.

The key factors that led to the discovery of La Colosa included the execution of a well-planned business and exploration model, with recognition of the "first mover" advantage; the acquisition of a large land position with respect to legal exploration tenure, covering essentially all of the deemed prospective areas; implementation of exploration from the regional scale, working down to the prospect scale, instead of vice versa; maintaining a disciplined and systematic field-focused approach; use of a skilled exploration team; and maintaining a long-term (>5 yrs), adequately funded view to exploring in frontier mineral exploration regions.