

## DEPOSIT DESCRIPTION

**DATA  
METALLOGENICA**

### Rosia Montana Gold Deposit - Transylvania, Romania Summary after O'Connor, Marshland, Barnes & Cunnold, AMF 2001

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The Rosia Montana gold deposit is located approximately 65 km north-west of the city of Alba-Iulia in the Transylvanian region of Romania where mining was first recorded before the first century AD. The Roman Empire seized control of gold production in 106 AD over what was known as the Golden Quadrilateral, an area of approximately 500 km<sup>2</sup> within the Apuseni and Metaliferi Mountains, north of the regional centre of Deva. The area is thought to have produced as much as 42 million ounces of gold during 2000 years of almost continuous exploitation. Maximum development and peak production occurred under the Austro-Hungarian Empire between the late 17<sup>th</sup> century and 1918. Estimated hard rock gold production from Rosia Montana is 900,000 ounces, to which must be added colluvial and alluvial production difficult to estimate. The intensive surface workings gave rise to the name of Rosia Montana, which means "red mountain". Private mining continued between the World Wars and after World War II. Minvest, the state mining company, currently controls production at the Cetate open pit.

Geologically, Rosia Montana lies within the Carpatho-Balkan province of the Tethyan-Eurasian metallogenic belt. The district hosts numerous known epithermal and mesothermal Au-Ag, Cu-Au and Cu deposits associated with the mid-Miocene-Pliocene (Neogene) andesitic-dacitic volcanic and sub-volcanic bodies, which are intruded into a variety of lithologies. South of the Rosia Montana area, mafic bodies, probably mid-Jurassic oceanic crust basalts, occur overlain by late-Jurassic to Cretaceous age marine to deltaic sediments, including thick limestone sequences. These sedimentary units form the host rocks for igneous activity in the Rosia Montana area.

At Rosia Montana, rhyodacite intruded this sequence of sediments laterally along the contact between Cretaceous sediments and breccia, and vertically into a polymict "vent breccia", possibly in a lake/crater or, more likely, a maar. Mineralisation in the breccia occurs as relatively flat-lying zones up to 200m thick. Structurally controlled mineralisation is also found within Cretaceous sediments beyond the edges of the maar.

The epithermal low-sulphidation system is characterised by magnetite-destructive alteration. Alteration mineralogy consists of a sequence of adularia, quartz (silicification), illitic clay and pyrite, followed by late carbonate, base metal sulphides and clays. Most gold deposition is related to the quartz-adularia-pyrite zones; the presence of silicification is the best field guide to gold mineralisation. Carbonate, with rhodochrosite and base metal sulphides, accompany gold of often high grade in narrow late-stage veins, the focus of early mining, but which do not constitute the largest gold resource. Most gold occurs as disseminated electrum of "gold porphyry" type.

Gabriel Resources Ltd completed a resource update and definitive feasibility study in 2001 which outlined a measured and indicated resource of 302 million tonnes at an average grade of 1.3 g/t Au and 6 g/t Ag for a total resource of 12.77 Moz of gold and 61.0 Moz of Ag. The study also defined total measured and indicated reserves of 10.5 Moz Au and 54.6 Moz Ag contained within 225.94 Mt grading 1.4 g/t Au and 7.5 g/t Ag.