Beiya Gold Deposit, Heqing County, Yunnan——One of China’s Ten Biggest Gold Deposits

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The Beiya gold polymetallic ore district covers an area of 22.06 km² and is located 47.5 km away in the direction 172° from Heqing county seat of northwestern Yunnan. Its geographical coordinates are 100°11′15″~100°13′00″ E and 6°07′30″~26°10′30″ N. Since its discovery in 1999 until November 31st, 2013, it has had accumulative proven (111b+122b+331+332+333) gold metal amounts of 258.475 t at an average grade of 2.61 g/t. This deposit contains 88.98 million tons of paragenetic and associated iron ores, with TFe grade varying from 9% to 36%; metal amounts are: gold 27 t; copper 0.6188 million tons; silver 5439 t; lead 1.35 million ton; zinc 0.31 million ton; and sulfur content is 10.09 million ton. Beiya is one of the top ten largest gold deposits discovered in recent years in China.

Located at the junction of the Yangtze, Dege–Zhongdian and Lanping–Simai blocks, the Beiya gold deposit is also the largest Cenozoic alkali-rich porphyry polymetallic deposit discovered in the Jinsha River–Ailaoshan alkali-rich porphyry belt. The exposed strata are Permian and Quaternary. This ore district has undergone strong tectonic activity, and magmatic rocks are well developed, including nine Himalayan hypabyssal alkali-rich porphyries. The Wandongshan rock mass associated with mineralization is 840 m long and 600 m wide, and is mainly quartz syenite porphyry. The contact zone of the rock mass and the structures are major ore-hosting positions for skarn and orebodies. There are five types of ores: skarn gold polymetalllic ores hosted in the rockmass–structural contact zone; structural fractured gold polymetalllic ores; calcium-silicate surface rock-gold polymetalllic ores; hydrothermal veined ores; and residual-type oxidized gold polymetalllic ores. About 1500 orebodies have been delineated through detailed survey, of which 45 large-scale orebodies were proven. The main orebody of KT52 has a super-large scale, and the proven gold reserves are 186,473 t, accounting for 72% of the total resources and reserves.

The Beiya mine is now a mining-and-milling joint production enterprise with a daily processing capacity of 9000 t. The mine smelts ores through a combined process of sliming cyanodation–magmatic separation, and produces alloy gold, iron concentrate and silver. It produced 4.90–5.30 ton gold, 1.06~22.56 ton silver and 0.35–0.7437 million ton iron concentrate from 2011 to 2013, with a total output value of 20.745×10⁹~21.99×10⁹ yuan (Fig. 1).

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Fig. 1 Photo showing a drilling site in the Beiya gold polymetalllic deposit passing through five phases of detailed survey as well as the plant with a daily processing capacity of 4000 t.

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