

The Luxi Gold Belt of Southwest China's Yunnan Province: A True Analogue for "Carlin" (Nevada) Style Gold Mineralization?

Lee Barker*

Sparton Resources Inc., 216-81A Front St. E., Toronto, Ontario M5E 1Z7, Canada

*E-mail, dflawls@yahoo.com

The 50-km-long Luxi Gold Belt, located near the western border of Yunnan Province in southwest China, has produced well over 500,000 ounces of gold since 1991 from five areas, exploiting both oxide "soil" and bedrock deposits hosted in Permian and Jurassic impure carbonate and limey clastic sedimentary rocks, with the former formed as deflation gold concentrations by weathering of primary mineralization.

The area is located in a zone of "basin and range" structures (subsidiary normal, reverse, and transverse faults) in a 20-km-wide zone underlying a major crustal suture separating the Indian plate and the South China plate. Here, Proterozoic rocks are thrust over younger Jurassic and Permian sediments, and a serpentinized ophiolite belt representing the old Tethys sea floor is exposed sporadically along the main thrust plane. This tectonic zone hosts active hot springs (nonsulfurous), a number of mercury occurrences, and several gold-mineralized trends, associated with extensive zones of silicification and jasperoid development, high -level epithermal fluid alteration, and disseminated gold mineralization related to various types of breccia development (solution, tectonic, hydrothermal), decalcification of limey host rocks, and fine secondary pyrite.

Micron-size gold mineralization occurs as metallic particles in breccia matrices and in porous arsenical rims on fine pyrite crystals in silicified and decalcified zones of breccia development in impure carbonate and limey clastic lithologies. There are no known placer gold deposits in the area. Geochemically, the gold mineralization is associated with elevated levels of arsenic, antimony, bismuth, mercury, and thallium. There are a number of types of intrusive rocks exposed in the area, including lamprophyre and felsic porphyry dikes, basaltic dikes and sills, and quartz-rich granitic or monzonitic stocks. The area was discovered using multielement stream sediment geochemical surveys in the 1980s during regional uranium exploration programs.

While Nevada or Carlin-style, disseminated, sediment-hosted gold deposits are highly variable in nature, the majority of them have many of the same general characteristics that are listed above for the Luxi area. Continued exploration is expected to confirm the analogy and locate significant new primary deposits hosting this style of gold emplacement.