

Reservoir Minerals: 12 Years of Exploration Targeting and Discovery in the Balkan Sector of the Tethyan Metallogenic Belt

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During the past 12 years, Reservoir Minerals (RMC) identified a number of mineral exploration targets in a variety of metallogenic and tectonic settings in the Balkan sector of the Tethyan Belt. Quality targets were identified before joint-venture partners participated in the exploration for economic mineral deposits, as successfully demonstrated by the 2012 discovery of the Cukaru Peki copper-gold deposit in the Timok magmatic complex, Serbia, in joint venture with Freeport Minerals Exploration Company (FMEC), and RMC's recently signed earn-in and joint-venture agreement with Rio Tinto to explore its 100% owned permits in the Timok magmatic complex. A variety of Balkan metallogenic and tectonic settings have been and are currently being explored, including the following (from oldest to youngest in geological time): Gold mineralization and copper-gold mineralization related to Early Permian magmatism are the targets in the early Paleozoic Deli Jovan and Stara Planina mafic to ultramafic igneous complexes, eastern Serbia. High-grade, orogenic-type gold mineralization in shear zone-controlled quartz veins at Deli Jovan supported four years of intense exploration in joint venture with Orogen Minerals. Similar orogenic gold and intrusive-related copper-gold mineralization was tested in the Stara Planina complex. Sediment-hosted copper-silver mineralization hosted by Permian red-bed sandstones in eastern Serbia is the subject of an ongoing exploration program. This metallogenic scenario has not been widely recognized in southeast Europe, but is the setting of major copper-silver deposits in central Europe (Kupferschiefer deposits) and central Asia (Kazakhstan). Sediment-hosted massive sulfide Zn-Pb-Ag-Au-barite mineralization at Bobija, western Serbia, is hosted by Triassic pelites, cherts, and keratophyre tuffs within a sequence of Anisian and Ladinian limestones. The barite has been exploited, but the associated sulfide mineralization remains an exploration target. Drilling proved extensions to the known occurrences, and mapping, geochemistry, and geophysical surveys identified new targets in concealed prospective stratigraphy. The Upper Cretaceous Timok magmatic complex and the Banat District of southern Romania are the host to important porphyry and high-sulfidation epithermal copper-gold deposits, including the world-class Bor porphyry and high-sulfidation deposits. Diligent geological mapping, deep-penetrating geophysics, and an advanced understanding of the mineralization and alteration in the Bor deposits contributed to the discovery in 2012 of the Cukaru Peki copper-gold deposit, 6 km south of the Bor mines. The deposit demonstrates the potential for discovery in mature mining districts. RMC's exploration is continuing in the Timok with FMEC and Rio Tinto as joint-venture partners. Tertiary magmatism within the Vardar suture zone developed during the closure of the Neo-Tethys ocean is the setting for important porphyry copper-gold (Skouries, Bucim, Tulare), epithermal gold (Zletovo, Perama Hill), and carbonate-replacement and vein-type lead-zinc-silver deposits (Trepca, Sasa, Stratoni). Large areas in Macedonia are being explored for both porphyry copper-gold and epithermal gold mineralization, and ongoing exploration in the Konjsko area has revealed new occurrences similar to the Carlin-like Au-Sb-As-Tl mineralization at Alshar. In central Serbia,

successful validation drilling of carbonate-replacement lead-zinc-silver mineralization at Parlozi attracted joint-venture participation.