

# SEG 2023 Conference: Resourcing the Green Transition

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## Calcatreu Project 3D Vein Modelling, Río Negro Province, Argentina

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The Calcatreu Project is a low-sulphidation epithermal Au-Ag deposit located in Río Negro Province, Argentina, currently undergoing advanced exploration stages. Indicated resources are estimated at 746 kOz, with ore grades of 2.36 g/t AuEq.

The district is located in the Somún Curá Massif, a geological province characterized by extensive Jurassic vulcanism related to extensional events linked to the Gondwanide Orogeny. This sub-explored region bears similar geological features and mining potential to the important low-sulphidation Deseado Massif province.

The deposit hosts an array of NE-SW-trending quartz-carbonate veins, hosted by Jurassic andesites and tuffs. Furthermore, the district is intersected by the Gastre Fault Zone, a Jurassic NW-SE regional megastructure that controlled vein disposition. The main gold ore is electrum, mostly linked to an open-space filling pulse composed of silica, carbonate, adularia, and ginguero bands.

The main exploration targets are the Nelson E, Nelson W, and 49 veins, where extensive mapping, drilling, and geophysical surveys were conducted. This data was used to create a 3D geological model of the orebodies by employing Leapfrog software.

The mineralization took place under  $\sigma_1$  stresses of an approximate 60°N orientation. The orebodies follow an overall NE-SW orientation and a 60° to 80° SE dip. Specifically, the main vein trends vary between 40° to 80° N, whereas related splays and offshoots fall between 0° and 30°N ranges.

Vein 49 features a well-defined 1-km-long strike with few secondary ramifications. Normal faulting with varying shear stresses occurred during mineralization, as evidenced by slickenlines with rake angles between 40° and 80°E. Post-mineral faulting is also present, as suggested by common vein displacements. A major E-O structure limits Vein 49 with the southern Nelson targets, which consists of a 2-km-wide vein swarm that defines a mesh-type architecture.