

## CO<sub>2</sub>-N<sub>2</sub>-HYPER-SALINE-BEARING FLUIDS ASSOCIATED TO THE SANTA RITA HYDROTHERMAL GOLD OCCURRENCES, PARANOIA GROUP (GOIAS- BRAZIL).

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The gold occurrences of the Paranoia Group are distributed in carbonated-psemmo-pelitic units that have been metamorphosed to the greenschist facies grade (Olivo and Marini, 1988). The primary gold occurrences of Santa Rita are of sulphide-bearing quartz-carbonate vein type. The mineralization is structurally controlled by WNW-ESE high angle faults and fractures resulting from the reactivation of older NE-SW lineaments.

Gold grade varies between 0.1 to 10 ppm, locally 60 ppm. Auriferous pyrite is the main sulphide and it exhibits growing zones enriched in Co and/or Ni and As (up to 4%).

Hydrothermal metasomatic zones are enriched in Co, Ni, As and are characterized by a diffuse albitization, carbonatization, silicification and pyritization.

Fluid inclusion studies on quartz veins identified two kind of fluids : (1) a highly saline aquo-carbonic fluid with daughter minerals as halite and sylvite; (2) an aquo-carbonic fluid with moderate to high salinities. Types (1) and (2) occur in the same zones of quartz with a great variation of the degree of infilling and a notable dispersion of the microthermometric parameters. Heterogeneous trapping is suspected for these fluids. By heating, all inclusions decrepitated between 250° and 300°C.

Raman probe on types (1) and (2) revealed the presence of high concentration of N<sub>2</sub> in the gas phase, with a CO<sub>2</sub>/N<sub>2</sub> ratio between 1 and 19, and small concentrations of CH<sub>4</sub> (< 5 mole %).

The origin of the highly saline fluids is discussed on the basis of a possible leaching of halite which is present in sedimentary levels of the Paranoia lithostratigraphic column (Dardenne and Faria, 1985), and of the Na-rich São Miguel conglomerate. Gold was probably transported by the saline fluids and precipitated during pyrite deposition which marked changes in the f<sub>o2</sub> and pH conditions of the fluid.

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The regional thermal gradient which remained high in the interior of the belt and slowly decreased following the compressive phases of the Brasiliano Cycle, would have been responsible for the hydrothermal circulation.

The source of Ni and Co contents of the hydrothermalized Paranao rocks and Au-As- Ni/Co-bearing pyrites are discussed considering the proximity of the basic ultrabasic massifs of Niquelandia.

References:

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