MINERALOGY

Veins are filled with quartz and an ore mineral assemblage of cassiterite, sulfides and sulfosaltas. Cassiterite constitutes the earliest formed mineralization. Rutile occurs as a late phase associated with a late generation of cassiterite. It forms thin needle-like crystals. In addition, Sn also occurs in sulfides as stannides, cassiterides and kieserite-arsenides, as frankeite. Other sulfides are pyrhotite, pyrite, arsenopyrite, galena, sphalerite, marcasite and argentite. Bismuthinite and bismuthmate are found in trace amounts.

CONCLUSIONS

There are different stages of mineralization linked to the progressive cooling of the parental pluton with relative temporal difference in the Santa Fe ore deposit. At least three stages can be differentiated:

a) the first corresponds to the formation of phases with high tin content as cassiterite and other tin sulfides within pyrite and arsenopyrite
b) the second stage corresponds mainly to a sulfide mineralization, with the formation of galena and sphalerite and minor contents of Cu-sulfides as chalcocite. At the same time, these minerals have precipitated in association with several sulfides of Sn and Ag

c) finally, a stage of hydrothermal alteration associated to hydrated phases, clays and phosphates.

In addition to cassiterite, other Sn- forming minerals in the Santa Fe deposit occur in important amounts, mainly stannite, but also other sulfides and sulfosaltas.