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The Hospital Sn-Nb-Ta deposit in Manono Mining District (Katanga-DR Congo): geological and structural settings and mineral potential

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The Hospital deposit is located in the world class Manono Sn-Nb-Ta mining district in the northeastern part of the Katanga province, along the NE trending grain of the Upemba graben, within the Mesoproterozoic Kibara fold belt.

This occurrence, together with 2 other main deposits of the Manono mining district, namely Kitotolo and Kahungwe, were tectonically controlled by pre-existing Kibaran grain and are related to post-orogenic Kibaran granitic intrusions.

Lithologically, these deposits consist of an aplite-pegmatite complex (APC) intrusive into lower Kibaran mica schists. Muscovites associated with cassiterite mineralisation have been dated by ⁴⁰Ar-³⁹Ar at 923.3 ± 8.3 Ma [1]. In the Hospital deposit, the APC displays a flat-layered pattern suggesting that its emplacement was related to a compressional stress state that involved right lateral (dextral) movements along pre-existing weakness planes. Some old reactivated normal faults of local importance are limited to the pegmatite. Their geometric and spatial relationships indicate that the faults could have been initiated in a context of local uplift of the APC and could probably explain its so-called “syncline-anticline” shape described in previous works [2]. The APC was emplaced at shallow depth as attested by the inclusion of numerous mica schists slivers of the basement, some of them several meters in size. This complex has been built up during at least 3 magmatic episodes that started with aplite, followed by 2 pegmatite intrusive bodies. Aplite occurs as lenticular bodies. Pegmatite 1 is by far the main component of this complex in volume. Pegmatite 2 occurs as dykes that cut across the previous intrusive bodies. Aplite and Pegmatite 1 pushed up the mica schists in which they were uncomfortably injected and they spread out over large surfaces beyond the feeder dykes. The estimated volume of pegmatite 2 is considered to be very limited.

The Hospital deposit comprises 2 main juxtaposed orebodies: the aplite-pegmatite intrusive rocks and an overlying major eluvial formation, which developed in the southern, western and northern parts of the area. The eluvial sediments include fragments of aplite, pegmatite, greisens, quartz veins and mica schists. The weathered part of the aplite-pegmatite orebody is expected to extend from 2 to 5 m below the current water table level that is visible in the ancient open pits of Carrière de l’Est and Carrière VI.

The Hospital deposit covers an area of 1.9 km² and its ore ranges in grade from 0.43 to 4.42 % SnO₂ and 0.04 to 5.88 % (Ta-Nb)₂O₅. With respect to its geological characteristics, aerial extent and Sn, Ta and Nb grades of the mineralization, the Hospital deposit can be classified among the most valuable economic targets of the Manono mining district.

References

- [1] Dewaele S (2012) 4th International Geologica Belgica Meeting - Brussels, Belgium.
- [2] Bernard H (1952) Ann. Soc. Géologique de Belgique, T LXXVII: 41–49

