The antimony mineralization of Lalang Fault Zone, Central Sarawak

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Bau is not the only area in Sarawak where antimony mining had been carried out. Antimony in the form of stibnite had also been mined from several areas in the lower Batang Rajang Valley in the Sixth and Second Divisions of Sarawak. Wolfenden (1958) based in part on Wilford's work reported the presence of 7 sites which were mined for stibnite intermittently since 1876 and by 1900 120 tons of ores were produced by the Borneo Company Limited. Four other occurrences had been prospected but had not been worked economically. Four of the seven old workings and two of the recorded occurrences were examined and studied by the authors. Field investigation indicated some of these workings were illegally mined by the locals and miners from the Bau Area during the 1950 and 1960's.

The antimony mineralization occurred within the WNW-ESE striking Lalang Fault Zone (Batoi, 1988) which in the Central Sarawak area also marks the boundary between the Upper Cretaceous Layar Member and the Eocene to Paleocene Kapit Member both of which belong to the Belaga Formation. Based on our investigation,

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the Lalang Fault Zone is at least 2.5 km wide. Several high-angled reversed faults were mapped to occur in the Lalang area. These faults are believed to have initiated as thrust faults where the older Layar Member was thrusted towards the NNE over the younger Kapit Member and could had been initiated since Late Eocene time. This NNE Late Eocene thrusting could possibly be related to the subduction along the Bukit Mersing Line.

The Sb mineralization takes the form of veins, stockwork, parallel vein zone and dissemination and replacement of mainly the meta-sandstone of the Kapit Member. The veins are mineralogically simple with the white coarse-grained dark-grey to milky quartz constituting about 95% while the rest are stibnite with traces of pyrite and sphalerite. The stibnite are found as coarse laths and lumps which infilled late fractures in early deformed quartz veins or as replacement and infilling of sheared fractures of the metasandstone. Under the ore microscope the coarse-grained stibnite is seen to show translational twins and crumpled lamellae indicating that active deformation which occurred after the deposition of the stibnite. A second generation of stibnite (minor quantity only) was observed to be undeformed and these were deposited in fractures cutting deformed stibnite and quartz. Oxidation of the stibnite gave rise to the antimony ochre which under X-ray was identified to be mainly cerventite and kermesite

Limited soil geochemical soil survey was also carried out in the Gerugu and Nansan old workings to locate potential mineralization zone and possible extension of the of the mineralized lodes and veins. The – 80 # fraction of the B-horizon (at 20 cm to 30 cm below the surface) residual soil collected over these two sites were analysed for antimony (Sb) and arsenic (As) using the rapid method of Stanton (1966). At the Nansan old workings, the geochemical results indicate that a rich pod of stibnite worked illegally during the 1960's has a continuation up 100 m towards the WNW of the last dug pit. In the Gerugu area, the geochemical characteristics indicate the presence of several parallel veins or zones which are parallel to the strike of the Lalang Fault zone. This mineralized zone may be up to 200 m wide. The geochemical anomalies detected in this study had not been tested by trenching or drilling.

Study of the fluid inclusions for the quartz in the mineralized veins indicate that the fluids are of the low salinity type with a high fluid to low gas ratio. Primary inclusions in the deformed quartz are very rare as most had been affected by deformation. Homogenization temperature determination of a limited samples of the undeformed second generation quartz gave temperature of homogenization from 170°C to 175°C.

The stibnite mineralization in the Lalang Fault Zone appeared to show a remarkable similarity in tectonic setting compared to the Sb-As-Au mineralization of the Bau-Krokong-Kuching area. The stibnite mineralization in the Lalang Fault zone is located in the Sibu Zone and is about 100 km south of the Bukit Mersing Line which had been interpreted to mark a Late Eocene to Oligocene subduction zone which dips towards the south. Similarly, the Bau-Krokong-Kuching stibnite-gold mineralization is located in the Kuching Zone and is about 80 km south of the Lupar Line which is believed to mark an earlier subduction of probable Upper Cretaceous to Eocene age. The Sb-As-Au mineralization in the Bau-Krokong-Kuching area is related to the Miocene dacitic intrusives.

So far the production of stibnite by manual selective mining of several deposits in the Lalang fault zone is very discouraging. There is report of some show of gold in some of these stibnite veins though the potential for the occurrence of the noble metal in the mineralization of the Lalang Fault Zone is still untested. In terms of geologic setting, and other evidences (fluid inclusion and tectonic setting), the stibnite mineralization in the Lalang Fault Zone in the Second and Six Divisions of Sarawak could represent the top of a much larger epithermal (in part convective) mineralization system such as those observed in the Bau-Krokong-Kuching area.