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Abstracts of Posters

Influence of paleostresses in controlling the gold mineralization in Lubok Mandi area, Peninsular Malaysia

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The geology of Lubok Mandi area, Terengganu is very interesting especially its geological structures which control the overall geology of the area. A detailed geological study was conducted at part of the PCCL Sdn Bhd Gold Mine that show very good rock exposures. The underlying bedrock is dominated by metasedimentary (slate and phyllite) and volcanic rocks (tuff, tuff lapilli and litihc tuff), calcareous sandstone which in some places are carbonaceous. This rock formation of Middle Carboniferous to Permian in age, is cut by dacite intrusion and quartz veins. The major geological structural trends in the Lubok Mandi area are aligned in WNW-ESE and NNW-SSE directions These structural trends were intercepted by several fault zones which could be classified as either thrust right lateral slip fault and sheared or right lateral slip fault zones. The directions of N(300°–320°)E or WNW-ESE show thrust right lateral slip faults and most of the high angle faults in the directions N(345°–355°)E or NNW-SSE show right lateral slip, while those in N(045°–060°)E or NE-SW directions indicate right lateral slip faults. The mineralization in the quartz veins and wall rocks was also related to the intensive alteration by silicification, argillization and propilitization (chloritization) dominantly around the right lateral fault zones (NNW-SSE). The stress history or paleostresses in the area, which were operating at the time or after the formation of the fault planes, determined the movement or slip that took place on the fault planes. At the same time the paleostresses also governed the orientation of the gold-quartz veins which are related to the gold mineralizations of the area. Paleostresses determination or reconstructionis was done by using all the available slip data of the meso structures observed on the fault planes. The paleostress history is constructed based on the cross-cutting relationship and the displacement of the fault zones. Generally, the gold

mineralization in the quartz veins is related to and follow the NNW-SSE fault and shear zones. Among the common minerals observed are chalcopyrite, arsenopyrite, sphalerite, goethite and pyrite. Based on the fault slip data of the meso-structures (fault planes, pitch and pitch directions), the direction of paleostress was obtained. The first paleostress that was acting from NNE-SSW (s_1 = 10°–11°, N183°–198°E) controlled the formation of WNW-ESE thrust fault zones and quartz veins, while the second was NE-SW (s_1 = 04°–16°, N194°–203°E) controlled the NNW-SSE right lateral fault zones and quartz veins. The third paleostress was acting from ENE-WSW (s_1 = 18°–21°, N 232°–236°E) and is related to the NE-SW right lateral fault zones. The WNW-ESE and NNW-SSE quartz veins are related to the compressional paleostresses. The NNW-SSE quartz veins related to the right lateral slip fault zones are high-grade gold mineralization, especially those in the form of quartz breccia.