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**THE WANG PHAR WOLFRAMITE MINE (SOUTH THAILAND)**

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**ABSTRACT** The Wang Phar tungsten mine is located west-southwest and 32 km by road from Haad Yai, South Thailand. On a regional scale this mine is situated on the eastern slopes of a north-south trending granite range overlooking a vast flat-lying plain.

The oldest rocks occurring in and around the Wang Phar mine consist of a suite of metamorphosed sedimentaries of Palaeozoic age. Within the mining lease, the dominant rock-type of this suite of rocks is a weathered pale grey phyllite which is seen to underly the foothills and valley floors. The phyllite is substantially deformed and steeply dipping with erratic dip directions and strikes. Towards the west, the country rocks have been thermally metamorphosed by a granite intrusive into a hard and massive dark-gray argillite.

The granite body which intrudes the phyllite and argillite occupies the entire western portion of the area and of probable Triassic in age. An important consequence of this granite emplacement is the formation of hydro-thermal vein systems brought about by ore-forming agents liberated during the consolidation of the granite magma and which were concentrated on the granite cusps immediately beneath the invaded rocks. The vein systems did not penetrate into the country rocks because the argillite provided an

effective impounding body which blocked the passage of the mineralising solutions.

The mineralised veins are essentially greissens consisting of quartz, muscovite as the main components followed by lesser proportions of tourmaline, topaz and the ore-minerals wolframite, cassiterite, scheelite and sulphides. The most important ore-mineral found in the veins is wolframite which is present in significant amounts in some of the veins to be economically exploited.

The mineralised veins occurring in the Wang Phar area vary in thickness from about 2 cm to a maximum width of about 1.2 m, frequently pinching and swelling along the way. The bigger veins may extend for about 200 m along strike, often petering out at the granite-argillite contact or disappearing beneath the argillite. All the veins have very steep dips and on the whole are westerly dipping though they may bend and dip to the east at very localised spots. Down-dip extensions of the veins vary according to the size of the veins, with some of the prominent ones extending down to at least 90 m from surface.

The wolframite occurs commonly as greyish-black well-formed crystals and as large aggregates in the vein, often in close association with muscovite. There appears to be a general enrichment of wolframite in places along the vein where the muscovite content is increased.

The Wang Phar tungsten deposits comprise five different localities where significant vein developments are exposed on the surface. They are Kuen Mai Phai, Kuen Lang, Khog Yang, Klong Kung Lang and Klong Kung. Of these five places, only three namely Kuen Leng, Khog Yang and Klong Kung have underground tunnel workings.

Kuen Leng has the most extensive underground workings, totalling about 2 km of tunnels and with adits driven at 50 m, 80 m and 120 m elevations above sea-level. At this place, five significant mineralised veins have been worked and the average grade of ore determined from actual

production is about 0.7-0.9%  $WO_3$ . Cassiterite and scheelite are also recovered but constitute only 1% and 0.2-0.3% of the final heavy concentrates from the treatment plant respectively.