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**GEOLOGY, ORIGIN AND MINING OF VEIN TYPE QUARTZ DEPOSITS  
AT AMBLAMANA, GALAHA**

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The vein type quartz deposits at Ambalamana, form the largest deposits of this kind in Sri Lanka and these have been described recently as 'Silicon Valley'.

Ambalamana area which lies on the western limb of the Uduwela Antiform, was mapped on 1:10,000 scale. The major lithology in the area includes quartzo-feldspathic gneiss, basic granulite, quartzite, garnet granulite and late graphic granitic pegmatites. The quartzo-feldspathic gneiss which hosts the quartz deposits, is intensively weathered and no vein quartz - host rock contact relationship was observed anywhere. The main deposit A (the deposits are referred to as A, B, C, D and E) is composed of mainly of massive milky quartz and minor rose and clear quartz. This high purity deposit stands out about 16 metres above ground surface and appears to be a small 'plug' rather than a laterally extending vein. Several vertical fractures traverse this deposit. Occasionally small (cm size) cavities contain quartz crystals. Most parts of deposit B have been mined. A kaolin deposit containing relict graphic granite texture, occurs within this deposit, at a depth of 15 meters below the ground surface. Deposits A and B have undergone moderate, ductile-brittle deformation. Though fluid inclusions are rare in quartz, two types of inclusions were recognised. One of these shows linear trails and the other shows band like feature. Two phase inclusions( solid and liquid) are present in them occasionally.

Field study of deposits C and D (abandoned deposits), suggest that intensity of fracturing plays a key role in determining quality of these quartz deposits. Deposit E is a boulder zone, containing metre scale boulders of massive milky quartz and quartzo-feldspathic gneiss and quartzite occasionally.

The study indicates that these quartz deposits may have been petrogenetically related to the intrusive graphic granite pegmatites. It is suggested that these pegmatites were formed by crystallisation from residual melt from a granitic system and long after crystallisation of the pegmatites, a silica rich hydrothermal solution was separated from the granitic system. This hydrothermal solution appears to have channelled through a fracture system along a down temperature gradient, giving rise to the quartz deposits. Furthermore it is suggested that this hydrothermal solution kaolinised the intrusive pegmatites. .

The quartz deposits at Ambalmana is selectively mined since 1982, using simple mining techniques such as blasting with dynamites and drilling and occasionally compressors, too, used. Recovery rate of this non-renewable deposit is relatively low. As recommended in an earlier study in the 1980's, there is an urgent need to find industrial uses for the low grade quartz deposits.