International Symposium on Uranium Raw Material for the Nuclear Fuel Cycle: Exploration, Mining, Production, Supply and Demand, Economics and Environmental Issues - IAEA CN-216

Contribution ID: **154** Type: **Poster**

Sub level open stoping mining method for the Remaja type deposits, Kalan, West Kalimantan, Indonesia

Wednesday 25 June 2014 17:10 (1 minute)

According to historic drilling, probing and trenching, geologists previously assumed that the Eko Remaja type deposits belonged to the vein type family. To test this assumption, it was decided to drive a tunnel into Eko Remaja hill, in which eighteen mineralised intersections were discovered. A small mining test has been carried out in the area where the potentially mineable veins are concentrated. The idea was to check the continuity of the mineralisation and assist in considering possible mining methods. Two methods were considered: the traditional and well known cut and fill method, or the long parallel holes method. This second method has not been used a lot up to now so was dropped. Regarding cut and fill testing, it was decided to test vein 179 from the tunnel level at 450-460 m above sea level. As a vein continuity check a ramp was driven in vein 169 and a drift in vein 169 at both levels 169 and 179. Vein 179 vein seemed rather regular at 450 level, but was quite different in the ramp in 169 vein and in the 179 drift at level 460. No continuity at all existed between the two levels or at level 460. Although good quality ore was found, it was considered that it could not be mined by the cut and fill method due to a lack of continuity.

Hence the regular vein type concept was abandoned for the Eko Remaja type deposits, which looked more like some kind of "stockwork", although not very complicated, because there are at the maximum three general directions of the mineralisation. Fortunately, the major part of the reserves are concentrated in the four veins 157,169,179 and 184 which are rather close to each other. Although the quantity of waste will be important, diluted ore could still be extracted. Fortunately ore and the waste are quite distinctive in aspect, colour, shape, specific gravity and radioactivity. Therefore sorting is included in the present study, considering low capital and operating costs means and equipment. Two methods have been studied and compared respectively as part of Vertical Crater Retreat and Sub Level Stoping mining methods. Actually the latter method is not strictly Sub Level Stoping, because in order to minimise the risk of collapse of the hanging wall, which dips at 65°, the major part of the depleted stope is back filled with the waste and could be called Sub Level Open Stoping. This method has been considered as the more convenient but might be do more for the feasibility study, and slightly modified it in order to make the loading of the broken ore at the bottom of the stope easier and allow earlier back filling in order to increase the hanging wall stability.

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Session Classification: Poster Session

Track Classification: Uranium mining and processing