Underground Mining of Metalliferous Deposits
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Lecture 51
Resuing Method of Stoping

RESUING METHOD OF STOPING

Resue method or Resuing mining is referred to be used in 1920 at Sub Nigel Gold Mine of South Africa in Late 1920s.

Resuing is a method of stoping for working narrow veins of valuable ore and involves blasting of a sizable quantity of barren wall rock in contact with the vein.

It is a selective method of stoping.

This figure 1 shows the general scheme of working.

(D) is a vein of high grade ore having barren wall rock B C as the hang wall.

A flat-back overhand stope of minimum width is first started by the side of a portion of the vein as shown at B C.

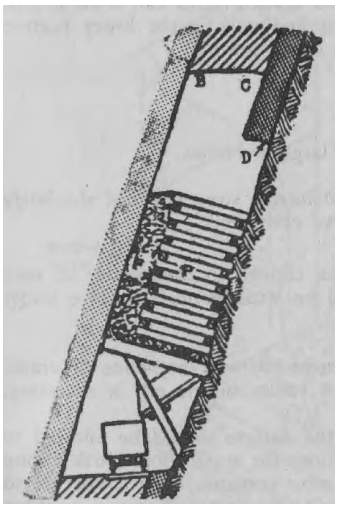

Figure 1. Resuing method of stoping

The broken rock of the barren wall is used for filling as shown at (F).

The valuable vein so exposed Is then blasted down and allowed to fall through the chutes (P), which are usually placed at interval of 5-15 m.

Development work

The chronology of level operations:

1. Construction of x-cut/haulage roadway – First the access way or X cut needs to be excavated from the shaft to the nearest point of ore body.
2. Construction of Haulage drifts – On completion of X-cut, Haulage drifts are constructed.
3. Construction of X-cuts between drift and orebody–On completion of Haulage drifts, X-cuts between the drift and orebody are constructed.
4. Construction of Raise/winze– Raise/Winzes are constructed to connect the two levels.

Description

In resuing method,

1. The initial slice is taken after the sill pillar from the raise. The first slice is driven manually for the waste rock first and then for the reef/vein separately. The valuable ore is taken out through the ore-chute.
2. After the first slice subsequent slices are taken. The slices in the waste rock runs ahead of the ore face.
3. The method of mining is drilling and blasting. The blasted waste rock is left in the stope itself to act as packing. However, this pose a risk of dilution of the ore. Therefore, all the mines practiced the method are high grade gold ore mines.
4. Burn cut or wedge cut is used as blasting pattern. The blasting practiced in vein is similar to bench blasting.
5. Variations are observed – where footwall rock is excavated along with vein instead of hang wall. This decision depends on the wall rock quality, inclination of vein etc.
6. Finally, a crown pillar is left before ending the stope.
7. Scope of mechanization is very limited.

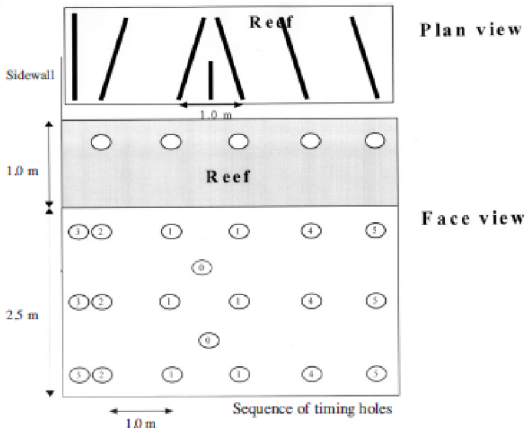

Figure 2—Drilling of the cut holes

Applicability:

The method is applicable where there is

(a) a well-defined plane of weakness, such as a clay seam on one side of the valuable ore vein.

(b) the vein is preferably steep .

(c) the vein is valuable enough to pay for the unprofitable work of blasting down a sizable portion of the barren wall.

Advantages

1. Grade -The cleaner the product sent to the mill the more economically attractive it must become.

2. Economy - The cleaner the product the less utilization of scrapers, rolling stock, hoists, etc.

3. Maintenance - With definite and well defined cycles, stope services such as winches, air and water, etc., can be maintained and extended during the waste cycles.

4. Labour control - All labour is concentrated on the working faces and is therefore easily supervised and controlled. There are no old areas in the stope where persons can hide, idle or get lost.

5. *Fire*. The fire hazard is reduced, fire being confined by the waste fill to gullies, track cuttings and working faces.

6. *Support*. Although the stope width in many cases exceeds 2.4 m comparatively small packs may be used. The waste fill is of no use as an immediate support since the shale rapidly disintegrates and loses height on its own, but it does provide a steadying base for long and thin mat-pack support.

7. *Supervision*. The stoping width enables supervisors to move about readily and in comfort: labour being confined to the face permits detailed supervision of actual jobs, and well-defined separate cycles require the minimum of labour organization once a routine has been established.

Disadvantages

1. *Intermittent Face Advance* - Faces are stopped every 3 m on strike for reef lifting, etc.

2. *Hanging Control* - Permanent supports can be installed only after the reef lift is completed. During the waste overcut and reef lift period temporary supports only can be used.

3. *Irregular Supply of Reef* - The amount of reef sent to the mill daily depends on the number of panels on reef lift and this fluctuates widely throughout the month.

4. *Labour Variations* - The time taken to complete a cycle of operations is almost a direct function of the labour available to hand pack the waste overcut. Fluctuations in labour strength are almost immediately apparent in output

5. *Excessive Waste* - When excessive waste is present it must be trammed as waste and in many cases this necessitates holding up work on other reef panels until all surplus waste has been trammed