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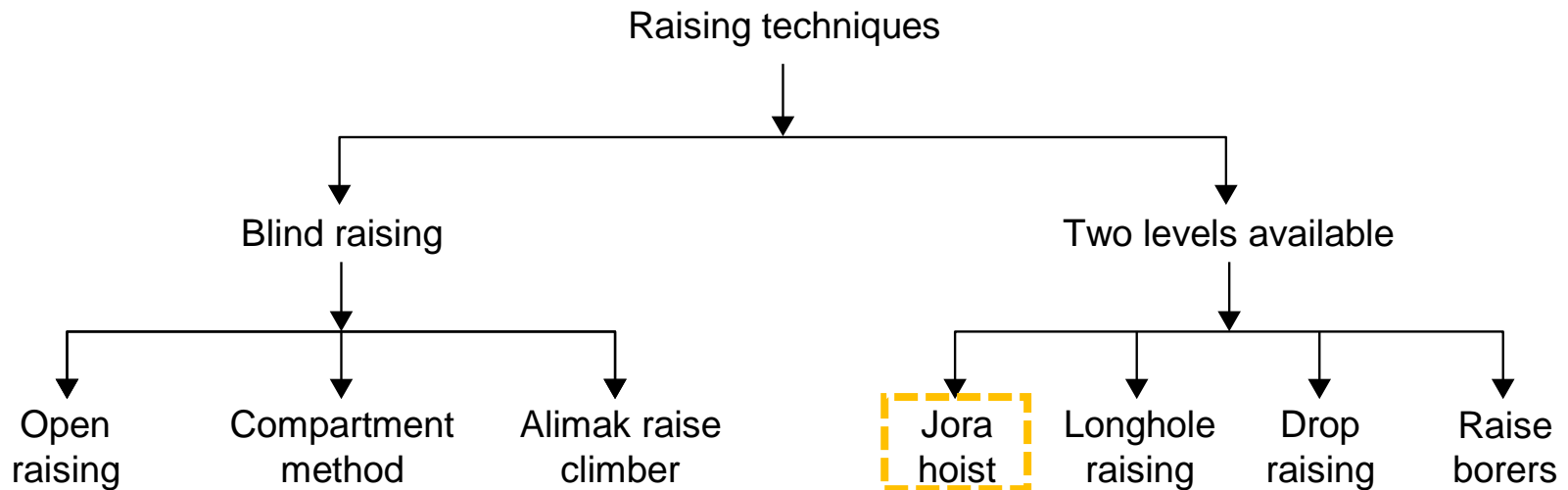
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U/G Metalliferous Mining Lab

“JORA HOIST – A method of Raising”

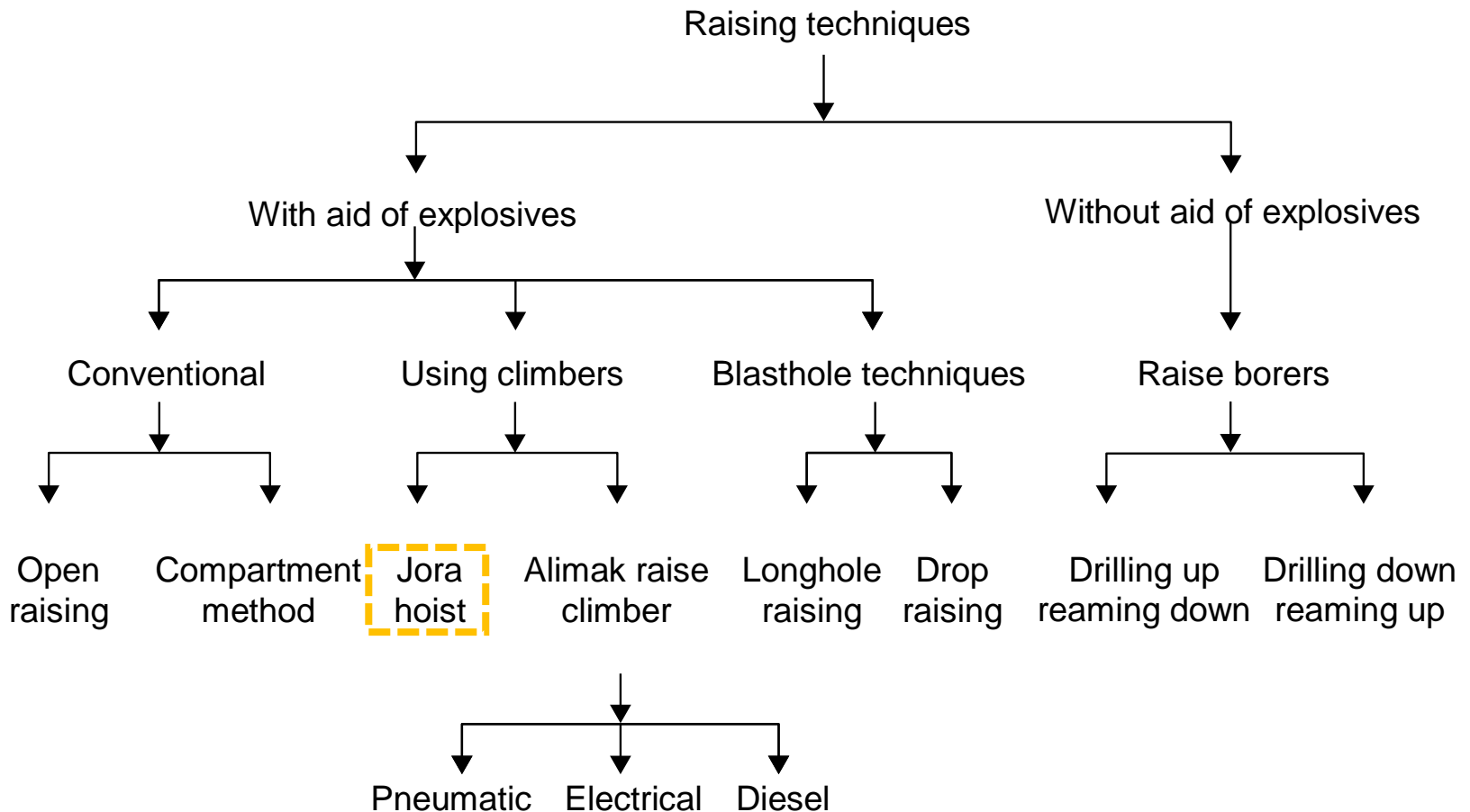
1. Introduction to Raising methods

Based on the availability of access to the intended raise site



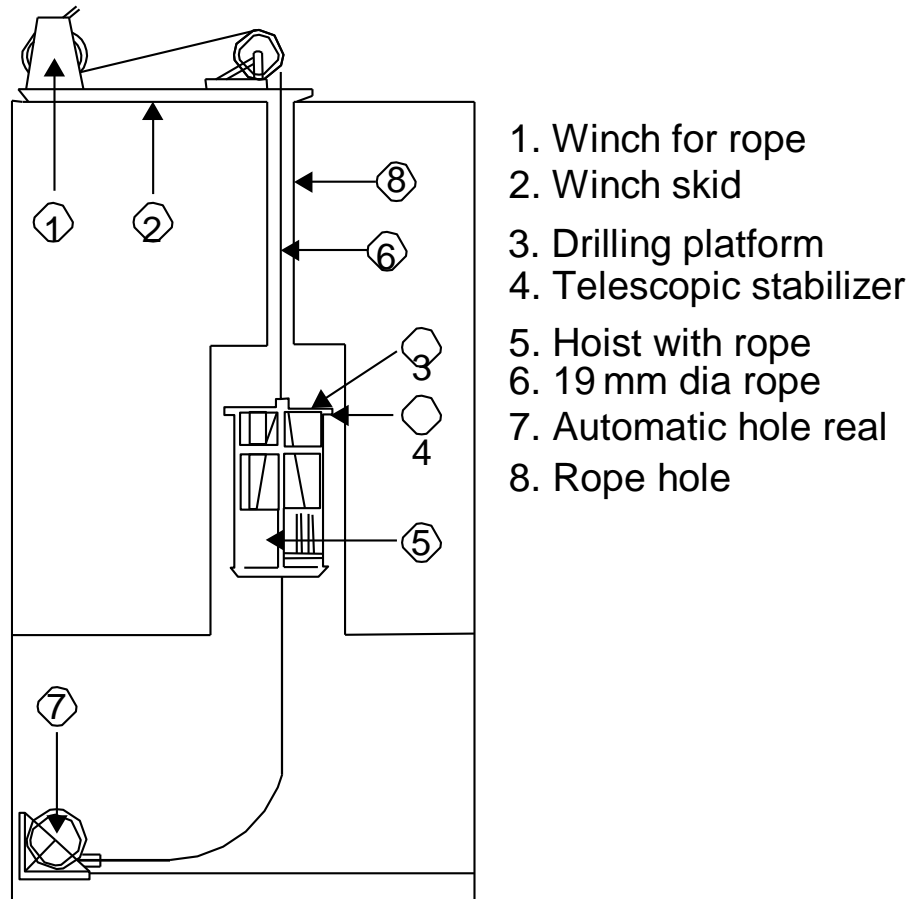
****Jora Hoist/Lift method was developed by Boliden Mining Co.
It became popular in early 1960s.**

Based on the rock fragmentation mechanism



2. Mechanism of Jora Hoist technique

Fig - Setup for Raising with the Jora Lift/Hoist



3. Salient features

Platforms:

- 1.6m x1.6m size
- Standard protection canopy

Safety equipment:

- Safety roof
- Breakers
- Rescue apparatus
- Telephone

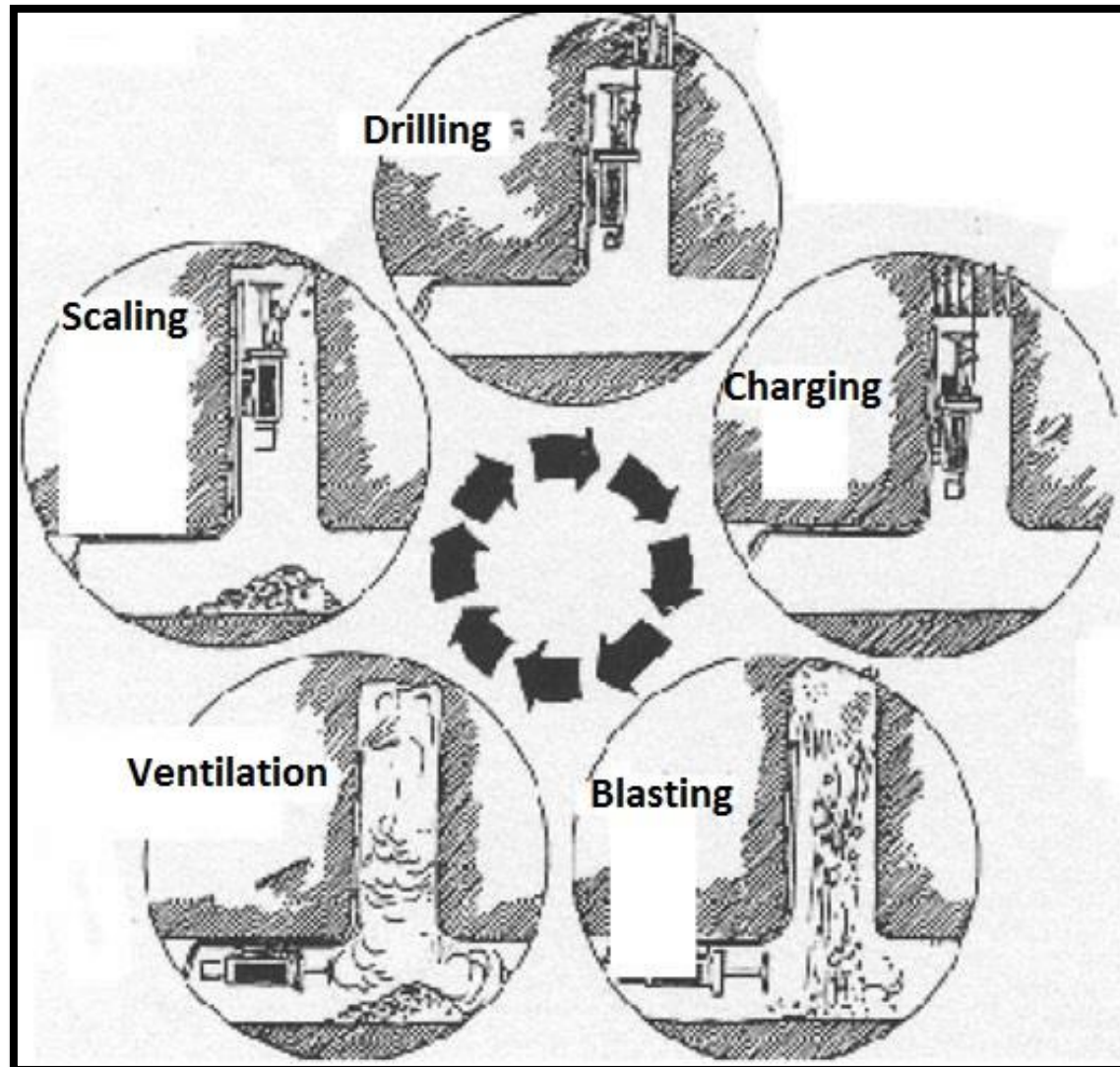
Required preparation work:

- Raise station

4. Stages

1. Drilling a large dia. hole at the center of the intended raise to get through into the lower level.
2. From the upper level a cage is suspended using a steel rope that can be hoisted up and down using a winch.
3. Flat surface at top of cage is used as the working platform to carry out drilling and blasting operations.
4. Telescopic stabilizers/jacks on the sides are activated to fix the cage against the raise sides.
5. Parallel holes are drilled around the central hole.
6. Before blasting, the hoist is lowered down to the lower access for its protection.
7. Blasting is carried out from a safe distance.
8. After mucking and ventilation, the cage is scaled up and the cycle of unit operations continue.

5. Sequence of unit operations



1. **Drilling:** Parallel holes are drilled around the central hole.
2. **Charging:** Drilled holes charged with explosive.
3. **Blasting:** Before blasting operation, cage is lowered under safe access prepared for it beforehand. The blast is then triggered from a safe location.
4. **Ventilation:** The face is cleaned with an air and water mixture sprayed through jets.
5. **Scaling:** The working platform is scaled upward and the cycle continues.

6. Driving Figures

****Typical driving figures by Jora Hoist raising technique:**

[figures based on a real mine practice]

- Dimension of raises : 2 X 2 m
- Advance : 2.2 m per cycle
- Output : 1.54 - 1.65 m per shift [4 shifts = 3 complete cycles]
- Explosives: 13.4 Kg/m

****Source :** *“Techniques in Underground Mining: Selections from Underground Mining Method” - by Richard E. Gertsch, Richard Lee Bullock, Page-297.*

6. Applicability

Conditions for applicability of Jora Hoist raising technique:

1. Two levels available as access to the intended raise site.
2. Suitable for vertical raises only.

7. Advantages

Advantages of Jora Hoist method of raising:

- Low cost.
- Simple technique. Easily understood.
- Less development work required prior to raising operation.
- Simple drilling & blasting used. Cheap & flexibility. Does not require expensive drilling consumable.
- Confirmation of ground conditions is not required.
- Can efficiently mine through the hardest of rock types.
- Easy installation.
- Minimal preparation time.
- No excessive power demands.
- No requirement for reinforced concrete foundations.

8. Limitations

Limitations/Disadvantages of Jora Hoist method of raising:

- Requirement of access at both ends of the intended raise.
- Necessity of a large capacity drill to drill the central large diameter hole.
- Damage to the rope during blasting.
- Tedious hoisting operation.
- Slow advance rate.
- Method limited to drivage of only vertical raises.
- Outdated method as compared to Alimak Raise Climber.