

Ground Control In Open Pits

DMME

Division of Mineral Mining

AR Training

Updated 2012



Our Objective Is To Avoid This....



➤ Unsafe, uncontrolled banks/walls

➤ Issuing of closure orders

And This!

➤ As the shovel operator passed between his machine and an unstable wall, it collapsed, burying him.



Never place yourself between equipment and walls/banks!!

Pit Rims And Walls

- Mining method must ensure ground, wall, bench and bank stability, including benching and sloping at the “angle of repose” as necessary.
- Rims shall be stripped of loose, unconsolidated material and trees for at least 10 feet and material beyond 10 feet sloped to the “angle of repose”.



“Angle Of Repose”

➤ Means the maximum slope or angle at which material remains stable.





**Closure
Order**

When this is how we find
it....

....This is how we leave it!!



**What Do You See
Here?**



**Is This A Proper
Mining Method?**

Maintaining Proper Slope/Bank Stability



- Must be a part of the daily operation.
- Must be a part of operator task training.
- Must be recognized as a key safety issue.



What does this operator need to watch out for?



Angle of repose must be maintained,
especially under water, to ensure ground
stability.



This is what happens when you don't!!

Height Of Pit Banks/Walls

- The size of the equipment available for trimming and sloping is a key factor in height.



Was this considered in these examples?



Maintain Safe Roads And Berms

➤ Benches (with roads and berms) shall be wide enough to allow safe operation and passage of equipment. Rule of thumb for roads; at least 1.5 times the width of the largest vehicle (single lane, 2.5 times dual).

➤ Berms are used to keep people and equipment away from unstable/unsafe areas.

➤ All personnel shall examine their active workings for unsafe conditions prior to starting work and frequently thereafter.





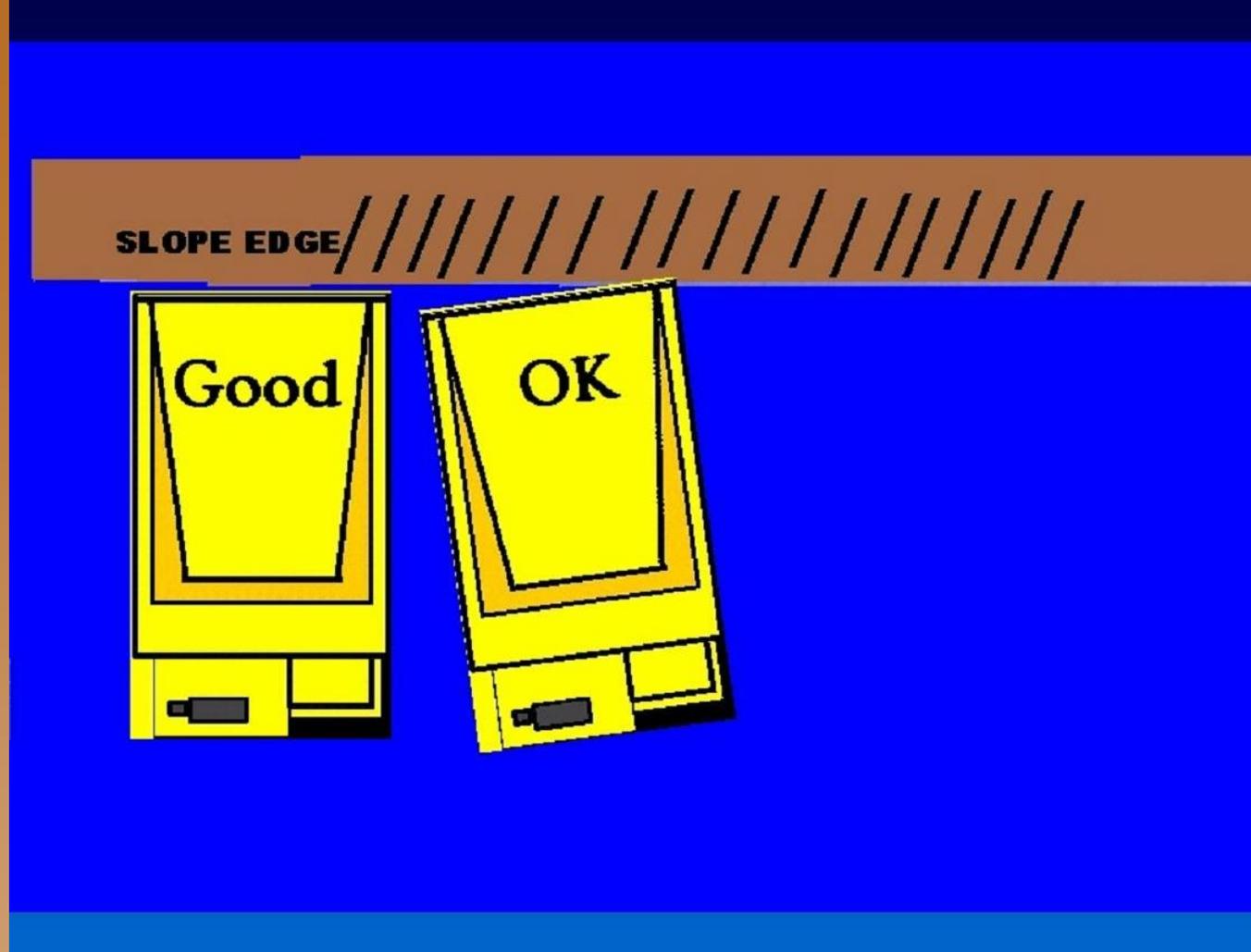
Are there any issues here?

SLOPE EDGE

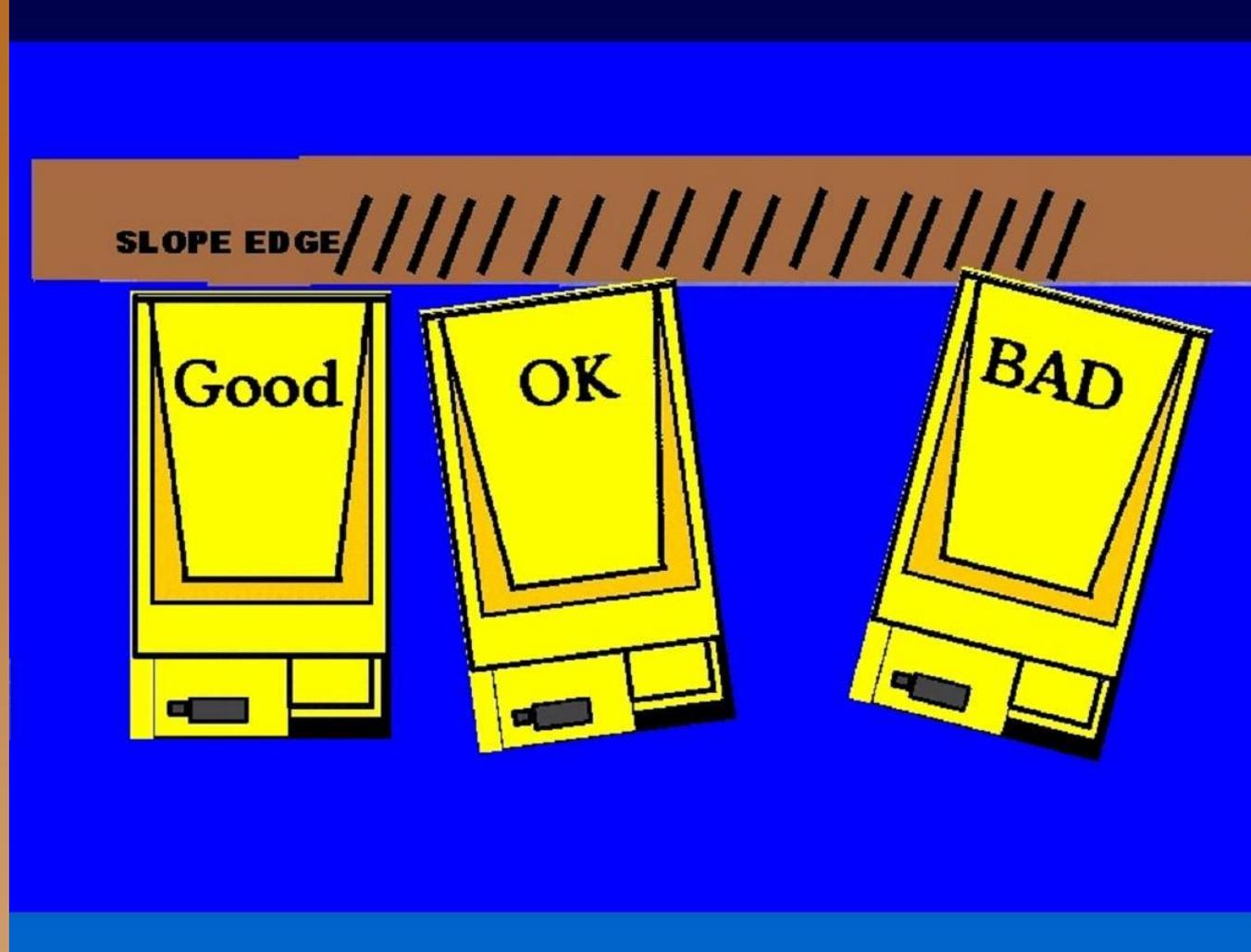


Dumping Procedures At Bank/Slope Edges

- Always back up “square” to the dump point.
- Back in and stop slowly.
- Do not back up into or onto the stop berm. Use it only as a guide.
- Dump well short of the edge if possible. Use a dozer.
- Watch for/report any cracks near the edge.



➤ “OK” shows the rear wheel on the driver’s side making contact first. The driver should have a good view of this and stop before hitting or over-traveling the berm.



- “Bad” shows the rear wheel opposite the driver’s side touching first. Drivers usually don’t watch the “off side” as carefully as their own. They could hit and over-travel the berm before realizing it.



What are the potential hazards?

How could this be done more safely?



Weather Conditions Must Always Be Considered



- Equipment operators must be able to maintain control of their equipment at all times.
- Unsafe conditions must be reported and corrected or barricaded and posted.

Does Anyone Want To Take This Miner's Place?



Ground control issues aren't just in the pit!

- Stockpile faces shall be trimmed to prevent hazards to personnel.