Fragmentation & Flyrock

The effects of Blasting both wanted & unwanted

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Factors affecting Fragmentation

- Size description
  - » Fines - too small to process further
  - » Mean Size - 50% of the muckpile passing
  - » Oversize – too large to process further without secondary breaking
- Factors affecting breaking
  - » Geology - jointing
  - » Explosives
    - charging of the hole
    - coupling in the hole

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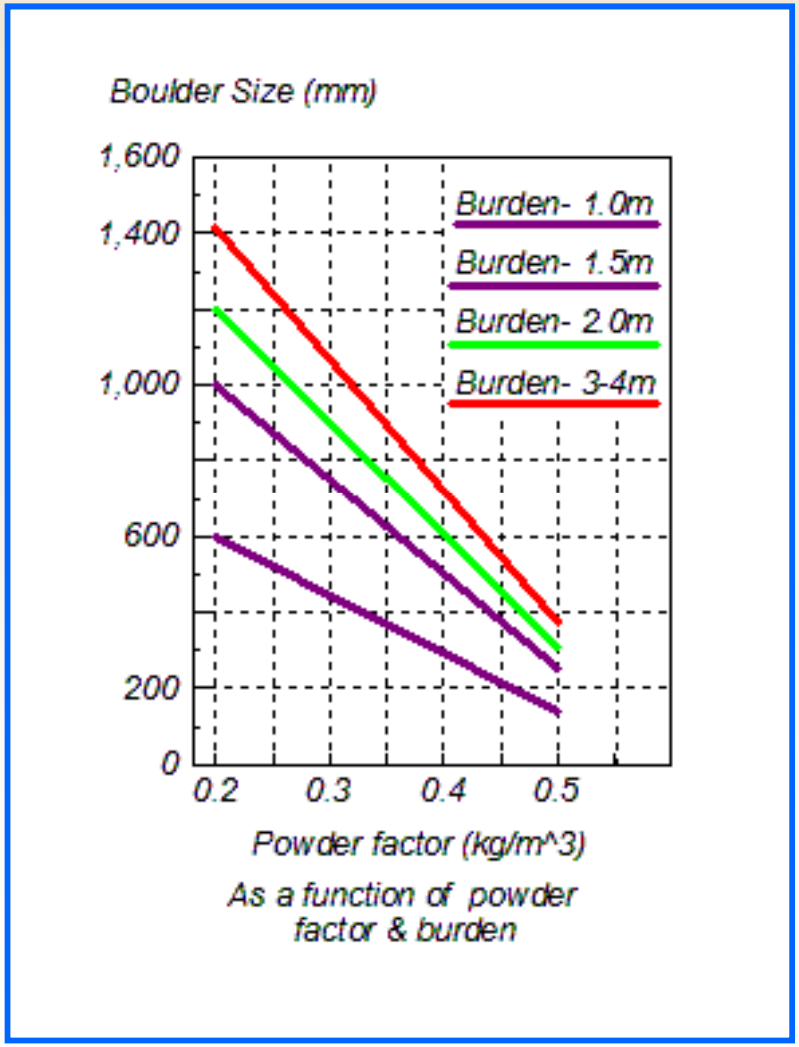
Factors affecting Fragmentation

- Explosives
  - performance
  - timing
- Initiation
  - point
  - side



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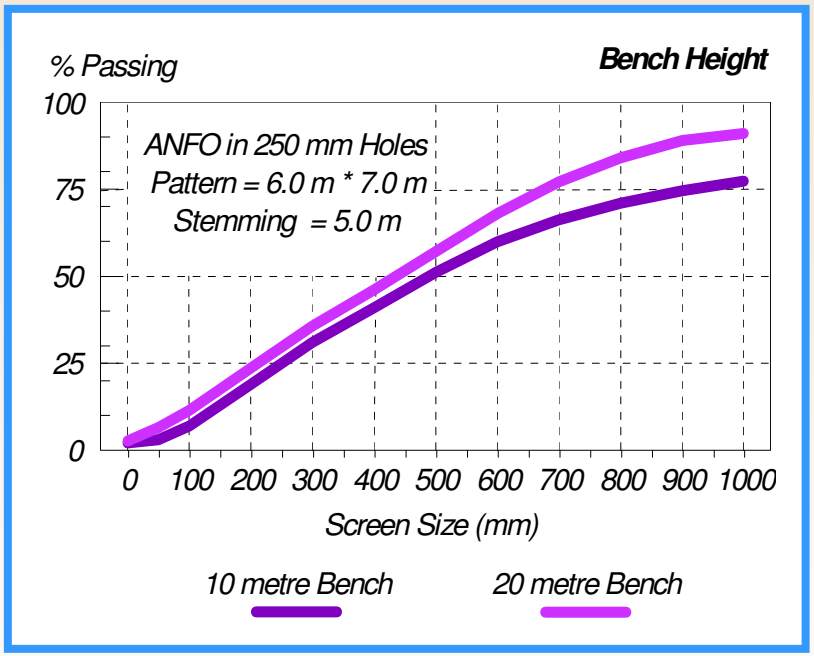
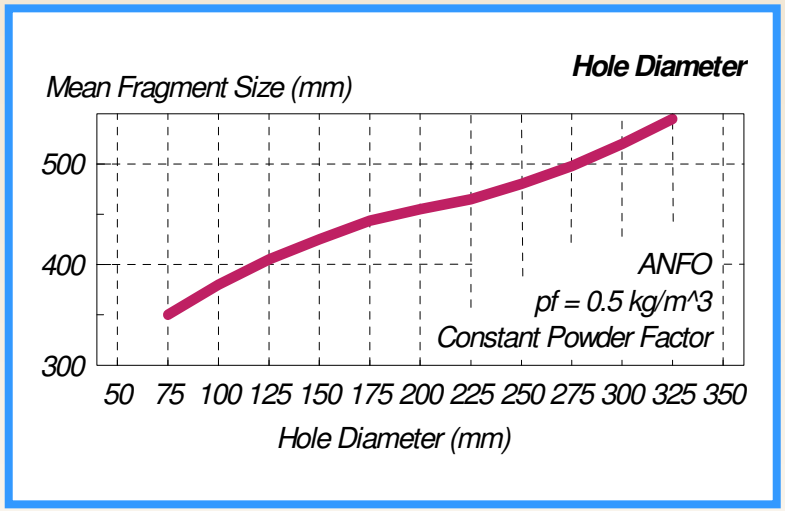
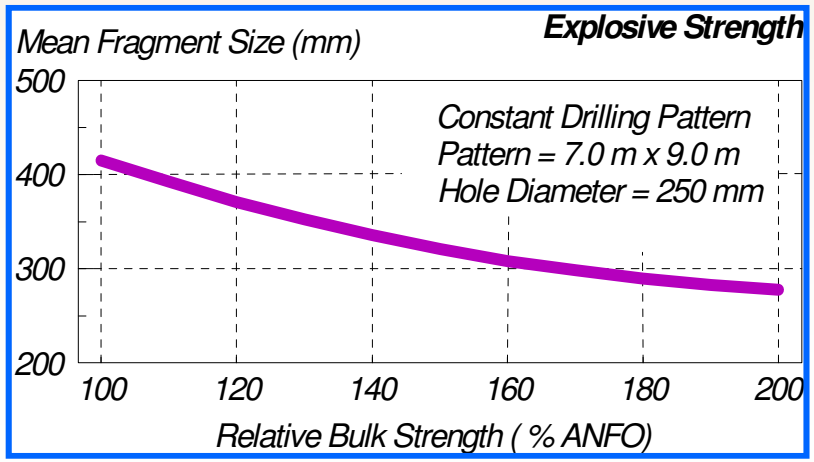
Effects







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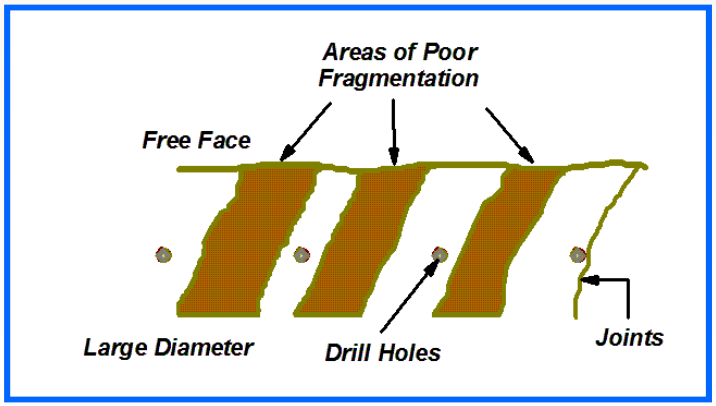
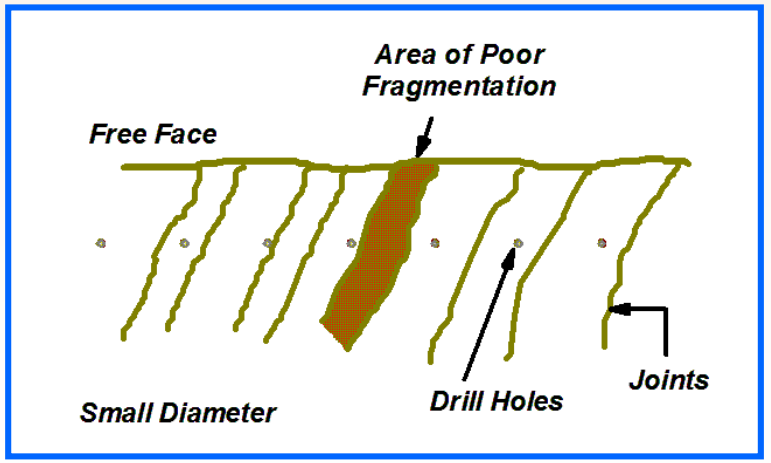
Effect - jointing 1

- Predictable Fragmentation
  - » Homogeneous rock mass
  - » Multi-row blasting
  - » Accurate drilling
  - » Control of loading of explosives
  - » Correct timing





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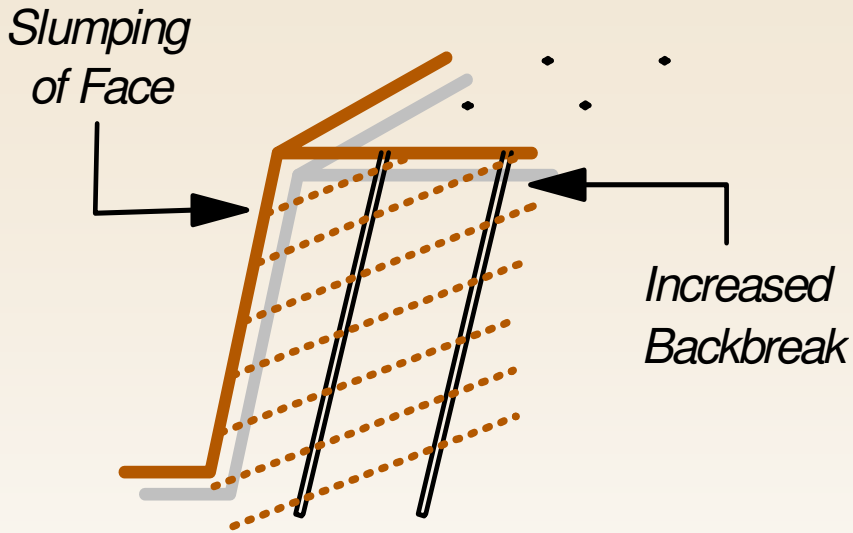
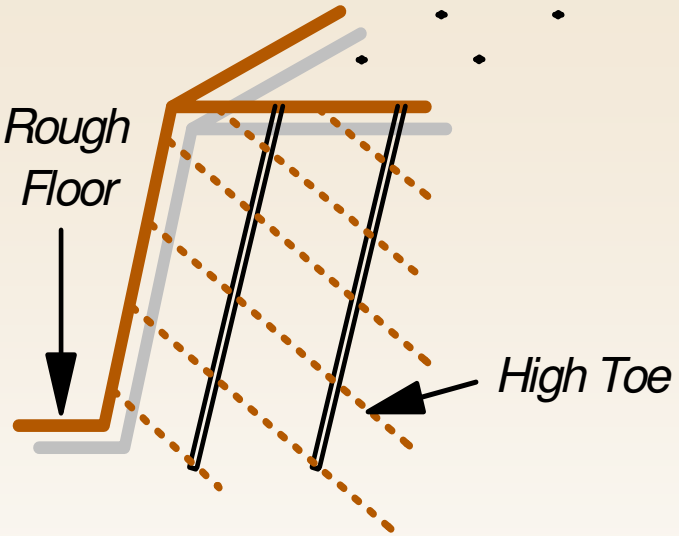
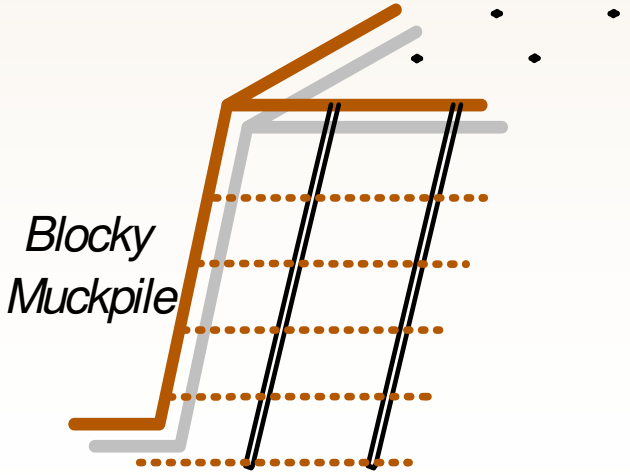
Effects - jointing 2







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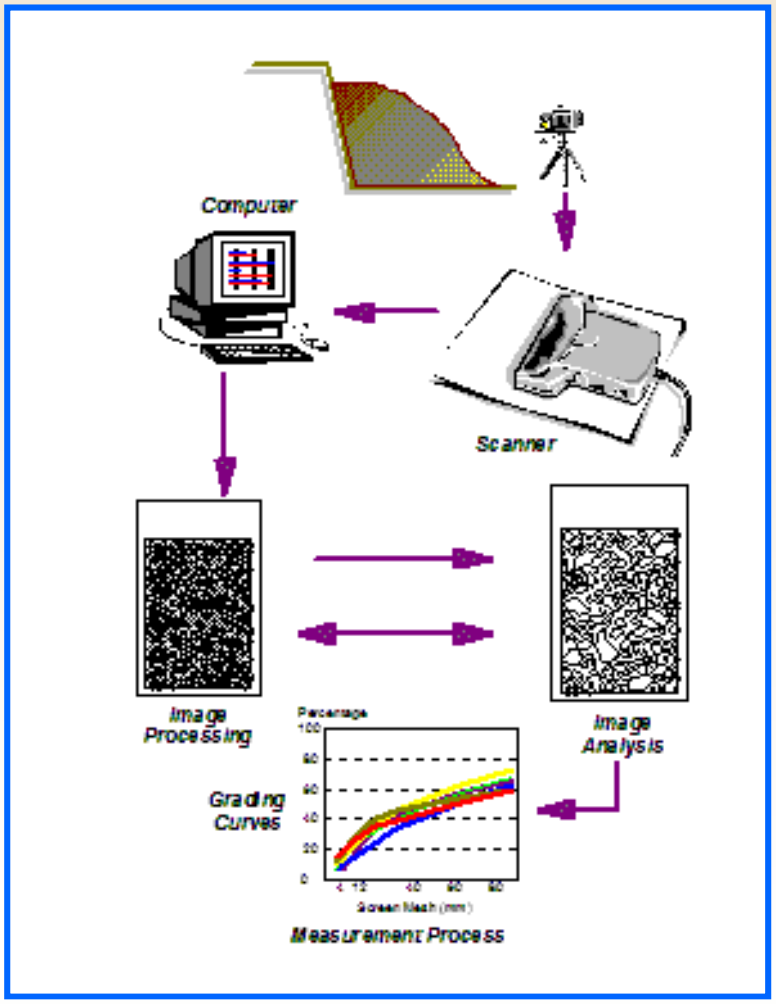
Measurement - photographs 1

- Use of photographs:
  - » Based on “standard muckpiles”.
- Subjective.
  - » Difficult to obtain representative picture.
  - » Better taken of sectionalised muckpile.



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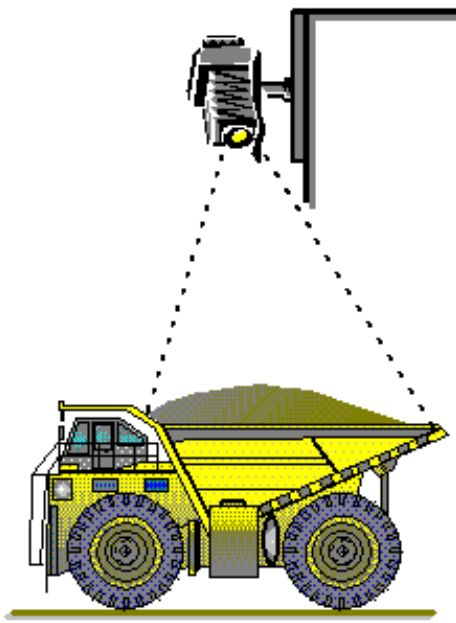
Measurement - photographs 2

- Use of truck a better “standard”.
  - » time consuming if measuring each truck.
  - » Depends on part of muckpile loaded.
  - » To be entirely representative every truck should be sampled.



Measurement Process with Trucks

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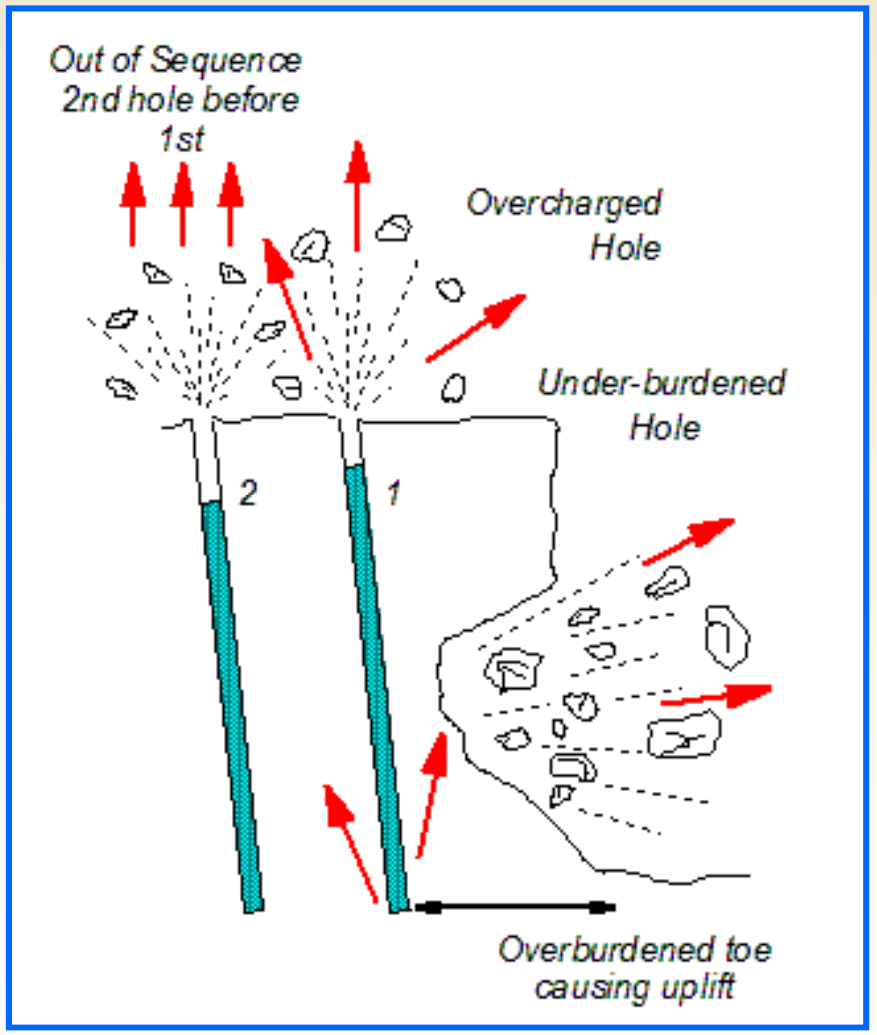
Flyrock - source

- Never can be eliminated entirely the possibility of flyrock.



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Flyrock - distances

- Safe distances depend upon
  - hole diameter
  - mass of explosive per hole
  - stemming length
  - quality of stemming material
  - initiation system
  - timing

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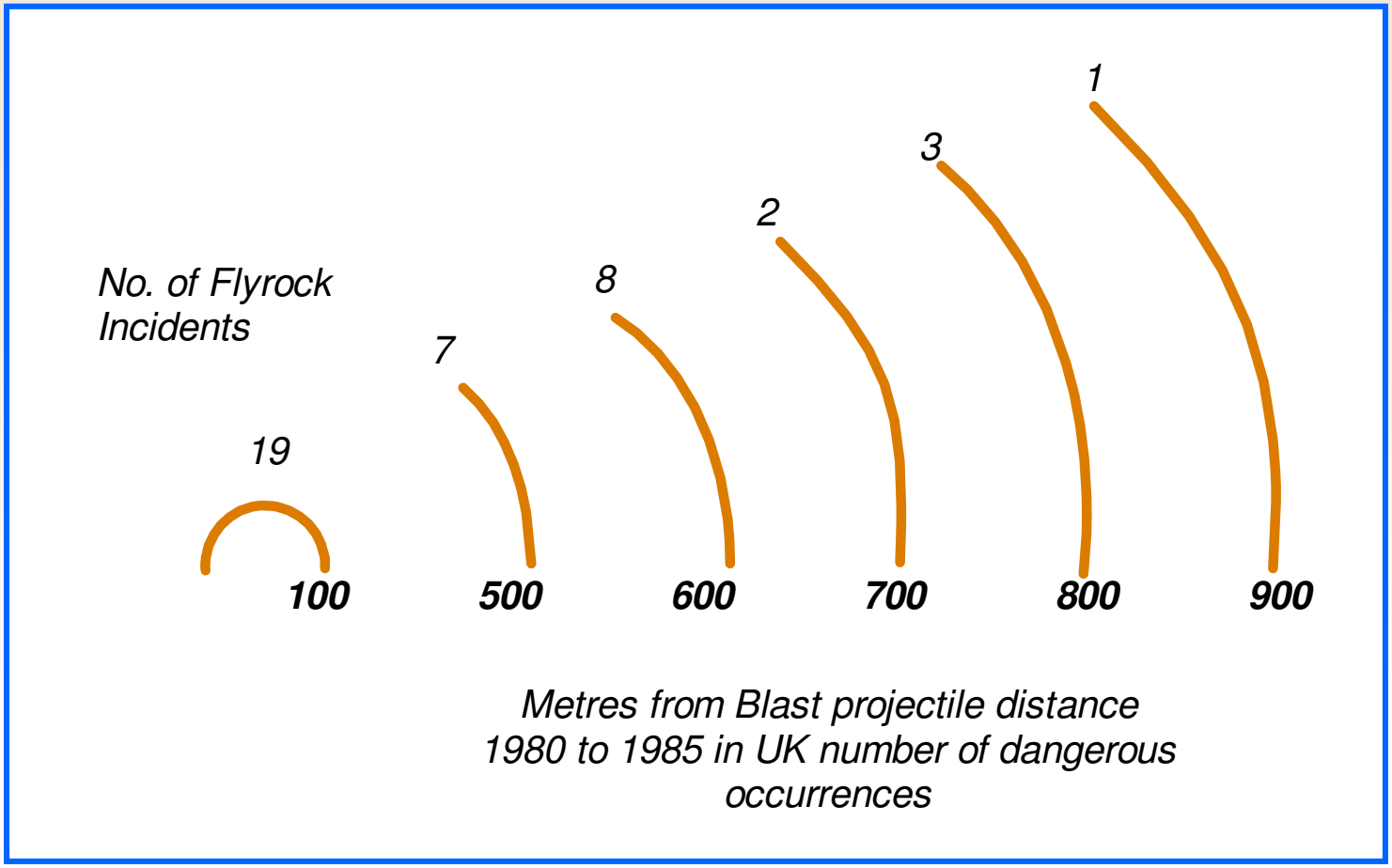
Flyrock - occurrences



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