During an intense and accurate study of initiation systems used on an AngloGold mine, Mine A, poor drilling practices were revealed. Graphic results of all actual measurements taken are shown below.

**The Solution: Stope drill rigs and EDD initiation system**

**Stope drill rigs**

The face shape in this photograph indicates that a 100% accurate toe burden is beneficial to the face shape and therefore safety and production. Because standard hole angle, depth and burden (for any mine) can be set and locked on a drill rig, hole geometry will be the same for every hole.

Therefore:
- The advance per blast is increased and more m² produced
- Explosive usage and damage to the environment is reduced
- A friendlier working environment is created.

The rig is used for two primary reasons:

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*AngloGold Technical Development Services, P.O. Box 20, Welkom 9460.

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**How to leverage your bottom line with good drilling and blasting practice**

**Safety**
On-face man-hours are reduced due to in line thrust and remote operations.

**Drilling of accurate shot holes**
Control of stope widths and physical conditions are improved, therefore production is increased.

**EDDs**
The results of Mine A observations and those from other AngloGold mines are shown in Table I.
These are measured results. Initiation systems that have no out of sequence blasting translate into better face advance with less environmental damage.

**The bottom line**
Profits are greater as efficiencies increase and costs and safety payments are reduced. Greater advance per blast will have a positive impact on your bottom line.

As a result of assumptions applied to the average AngloGold shaft, we can calculate the bottom line impact of improvement in advance per blast for:

- **Drill Rig panels** - 23 cm / blast
- **EDD only panels** - 8 cm / blast
- **Current operating cost** - R62,219 m
- **Fixed cost remains the same** - R41,449 m

Table I

<table>
<thead>
<tr>
<th>Mine</th>
<th>FIC or shock tube base</th>
<th>EDD current</th>
<th>EDD improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0.78 m</td>
<td>0.89 m</td>
<td>12%</td>
</tr>
<tr>
<td>B</td>
<td>0.70 m</td>
<td>0.85 m</td>
<td>16%</td>
</tr>
<tr>
<td>C</td>
<td>0.86 m</td>
<td>1.0m</td>
<td>14%</td>
</tr>
<tr>
<td>D</td>
<td>0.70 m</td>
<td>0.78 m</td>
<td>11%</td>
</tr>
<tr>
<td>E</td>
<td>0.87 m</td>
<td>0.93 m</td>
<td>7%</td>
</tr>
<tr>
<td>F</td>
<td>0.87 m</td>
<td>0.93 m</td>
<td>7%</td>
</tr>
</tbody>
</table>

- But variable cost increases to - R25,110 m
- Therefore total cost - R66,559 m

However monthly:
- Improved gold production - 260.5 kg
- Gold price - R50 000/kg
- Therefore improved revenue - R13,029 m
- But increased variable cost - R4,340 m
- Therefore improved contribution - R8,689 m
- Capital cost of 92 TDS drill rigs - R11,776 m
- Therefore pay back period - 1.36 months

The above figures show to what extent the bottom line profit of a mining house can benefit from accurate drilling combined with the best initiation system.

Good drilling and blasting practices are worth implementing.

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**Please Note**

*The Institute is moving with effect from 3 April 2000*

The postal address and telephone numbers remain unchanged

The physical address will be

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