Remote Control Outreach

Remote Control Hazard Awareness

Keep out of the Turning Radius

Remote Control Continuous Miners

U.S. Department of Labor - MSHA
Victim Location With Respect to the Machine

- 29 fatalities since 1984
- 12 fatalities since 2000 (41%)
- 3 fatalities in 2004

Legend
- X Victim location
- Operating the remote
- Not operating the remote
- Maintenance activity
Of the 29 fatalities, 72% of victims were operating the remote at the time of the accident.

Legend

- **X** Victim location
- **O** Operating the remote
- **□** Not operating the remote
- **◎** A moving RCCM collided with another at an intersection, causing the stationary RCCM to pivot and crush the other Op
- **□** Maintenance activity
## Equipment Involved in the Fatality

<table>
<thead>
<tr>
<th>Miner Make</th>
<th>Miner Model</th>
<th>Qty</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Eimco</strong>&lt;br&gt; (one Marietta 2460-1)</td>
<td>2810</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>2460</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td><strong>Jeffrey</strong></td>
<td>1028HP</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>101MC</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>1036</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td><strong>Joy</strong></td>
<td>12CM</td>
<td>9</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>14CM</td>
<td>9</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>12HM</td>
<td>1</td>
<td>19</td>
</tr>
<tr>
<td><strong>Simmons-Rand</strong></td>
<td>500</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>525</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>
# Equipment Involved in the Fatality

<table>
<thead>
<tr>
<th>Remote Make</th>
<th>Remote Model</th>
<th>Qty</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marietta</td>
<td>Pendant unit (umbilical) for drum miner</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Matric</td>
<td>Plastic Station</td>
<td>7</td>
<td>13</td>
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<tr>
<td></td>
<td>TX2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TX3</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Moog</td>
<td>129</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>unknown</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Not Reported</td>
<td>Radio</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Umbilical</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>
Remote Control Fatalities vs. All Fatalities

The trend line for RC fatalities is upward which is contrary to the overall fatality trend.
## Remote Miner Population

<table>
<thead>
<tr>
<th></th>
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<td>0</td>
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<td>2</td>
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<td>33</td>
<td>57</td>
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<td>3</td>
<td>10</td>
<td>2</td>
<td>32</td>
<td>58</td>
<td>42</td>
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<tr>
<td>4</td>
<td>13</td>
<td>22</td>
<td>105</td>
<td>157</td>
<td>118</td>
<td>179</td>
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<tr>
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<td>83</td>
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<td>6</td>
<td>8</td>
<td>6</td>
<td>76</td>
<td>112</td>
<td>84</td>
<td>118</td>
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<tr>
<td>7</td>
<td>3</td>
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<td>80</td>
<td>99</td>
<td>83</td>
<td>102</td>
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<tr>
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<td>47</td>
<td>60</td>
<td>47</td>
<td>60</td>
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<td>9</td>
<td>0</td>
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<td>17</td>
<td>40</td>
<td>17</td>
<td>40</td>
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<td>10</td>
<td>0</td>
<td>4</td>
<td>21</td>
<td>27</td>
<td>21</td>
<td>31</td>
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<tr>
<td>11</td>
<td>0</td>
<td>0</td>
<td>16</td>
<td>21</td>
<td>16</td>
<td>21</td>
</tr>
<tr>
<td>Total</td>
<td>53</td>
<td>42</td>
<td>509</td>
<td>714</td>
<td>562</td>
<td>756</td>
</tr>
</tbody>
</table>

- **District 1**
  - Without Remote Control: 2, 2
  - With Remote Control: 0, 0
  - Total: 2, 2
- **District 2**
  - Without Remote Control: 4, 1
  - With Remote Control: 33, 57
  - Total: 37, 58
- **District 3**
  - Without Remote Control: 10, 2
  - With Remote Control: 32, 58
  - Total: 42, 60
- **District 4**
  - Without Remote Control: 13, 22
  - With Remote Control: 105, 157
  - Total: 118, 179
- **District 5**
  - Without Remote Control: 13, 2
  - With Remote Control: 82, 83
  - Total: 95, 85
- **District 6**
  - Without Remote Control: 8, 6
  - With Remote Control: 76, 112
  - Total: 84, 118
- **District 7**
  - Without Remote Control: 3, 3
  - With Remote Control: 80, 99
  - Total: 83, 102
- **District 8**
  - Without Remote Control: 0, 0
  - With Remote Control: 47, 60
  - Total: 47, 60
- **District 9**
  - Without Remote Control: 0, 0
  - With Remote Control: 17, 40
  - Total: 17, 40
- **District 10**
  - Without Remote Control: 0, 4
  - With Remote Control: 21, 27
  - Total: 21, 31
- **District 11**
  - Without Remote Control: 0, 0
  - With Remote Control: 16, 21
  - Total: 16, 21

**Total**
- Without Remote Control: 53, 42
- With Remote Control: 509, 714
- Total: 562, 756

- **9.4%**
- **90.6%**
- **94%**
- **100%**
Remote Miner Population

Since 2003 there is an increase of 40%
Remote Control CM Facts

- The use of remote control continuous miners is expected to rise in the future.
- 72% of the victims were operating the remote at the time of the fatality.
- Remote fatalities are on an upward trend.
- We must work together to reverse this trend.
Fatalities by Shift

62% occurred during an off-shift, contrary to a majority of workers on the Day Shift.
Fatalities by Day of the Week
1984-1999

- Monday: 8 fatalities
- Tuesday: 1 fatality
- Wednesday: 3 fatalities
- Thursday: 2 fatalities
- Friday: 3 fatalities
- Saturday: 0 fatalities
- Sunday: 0 fatalities

Number of Fatalities
Fatalities by Day of the Week 2000-2004

- Monday: 1
- Tuesday: 3
- Wednesday: 2
- Thursday: 1
- Friday: 3
- Saturday: 1
- Sunday: 1
Fatalities by Total Mining Experience

- Fatalities are happening to experienced miners.
- 79% of the victims had greater than 10 years of mining experience.
Fatalities by Experience at the Mine where the Fatality Occurred

65% of the victims had less than 2 years experience at the mine
Fatalities by Job Classification

- 76% of victims were Miner Operators or Maintenance
- Foremen should lead by example: Stay out of the "Red Zone" and do not become a fatality statistic.
Fatalities per Activity

Fatalities are occurring during the regular mining cycle. These activities must be managed with good safety practices.
Fatalities per Mining Seam Height

Fatalities are occurring regardless of the seam or bed height.
Remote Control Best Practices

- Establish safe operating procedures for remote control continuous mining machine operations, which include:
  - Tramming
  - Cable handling
  - Maintenance
  - Setting over

- These procedures must be practical and useful.
  - Consult with the equipment operator when establishing the procedures.
  - All miners, regardless of experience or job classification, must be trained in these procedures.
  - All miners must enforce these procedures.
NOTE: THESE DRAWINGS DO NOT SUPERCEDE ANY STATE OR FEDERAL REQUIREMENT

Developed through a cooperative effort between MSHA’s District 5 Office, the Virginia DMME, and local mining companies

http://www.msha.gov/Alerts/20040407REDZONE2.pdf
RED ZONES ARE NO ZONES
FOR
MINING WITH REMOTE CONTROL CONTINUOUS MINERS

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RED ZONES ARE NO ZONES

Remember that the “Red Zone” extends above the Machine.
DO NOT get crushed between the machine and the roof.
KEEP OUT of this Red Zone!
Remote Control Task Training

Adequate task training should be performed to assure safe operation of equipment

MSHA is working with companies to develop Job Task Analysis related to the operation of remote control continuous miners

Training Improves Safety

Use this online tool to develop adaptable training that will improve your mines’ production, safety, communication, and maintenance.

www.msha.gov/interactivetraining/tasktraining/index.html
Remote Control Best Practices

Tramming While Positioned Within The Turning Radius Of The Remote Control Continuous Miner Can Be Fatal

Tram the continuous mining machine from a safe location to avoid pinch points
Remote Control Best Practices

The Middle of the Remote Control Continuous Miner Is Not A Safe Place to Tram

- The middle of the remote control continuous miner (pivot point) is not a safe place from which to reposition or tram the machine during a place change.

- The pivot point moves as the machine moves and may cause you to be in a position to be crushed if the miner suddenly turns.

MSHA challenges you to look closely at the operation of the remote control continuous miner the next time you are on the section.
Remote Control Best Practices

Tramming While Positioned Within The Turning Radius Of The Remote Control Continuous Miner Can Be Fatal

The pump motor should be de-energized, and all machine motion stopped, when the trailing cable or water line has to be repositioned in close proximity to the machine.
Remote Control Best Practices

Turning a Remote Control Continuous Miner

• ALWAYS expect the remote control to move the crawlers (CATS) in the same direction regardless of the direction you are facing.

• DO NOT become disoriented because your position changes. The operation of the remote control does not change if you are at the rear, facing forward or in the front, backing out.
Remote Control Best Practices

Keep Your Mind On Your Work

• Communicate with co-workers and maintain clear visibility with all personnel in the vicinity of moving equipment.

• De-energize the machine and remote control unit according to established safe work practices before entering the "RED ZONE".
Remote Control Best Practices

When Radio Signal is Lost
Don't Approach Remote Control Continuous Miners

• If the remote control continuous miner is not following the commands of the radio remote control, DO NOT get within the machine's turning radius to get closer to the machine's antenna.

• Assume the machine or remote control unit has malfunctioned and proceed according to established company policies for maintenance and trouble shooting of the radio remote control equipment.
Remote Control Best Practices

- Follow the established Standard Operating Procedure while tramming the remote controlled continuous miner.

- When moving continuous mining machines around corners, or in other instances where the left and right traction drives are operated independently, low tram speed should be used.

- Ensure that continuous mining machine operators lower the conveyor boom and ripper head, as far as possible, prior to moving the machine.
Remote Control Best Practices

• All personnel should verify their proposed route of travel is clear when tramming continuous miners into position.

• All power circuits and electrical equipment shall be de-energized before any work is done on such circuits and equipment.

• All areas where persons are required to work or travel should be kept free of tripping and stumbling hazards.
Triangle of Success

EDUCATION & TRAINING

TECHNICAL SUPPORT

Compliance Assistance

Enforcement

Safety and Health are Values!
Our Ultimate Measure of Success

Every Day .......... Every Shift
Data Sources

Data presented in this presentation was gathered from:

- The MSHA fatal accident reports [http://www.msha.gov/fatals/fab.htm](http://www.msha.gov/fatals/fab.htm)


- The 7000-1 accident forms submitted by operators
What do you need from MSHA?

Share your recommendations and ideas with the rest of the mining industry…

E-mail MSHA at:

thomas.charles@dol.gov

or

chirdon.david@dol.gov