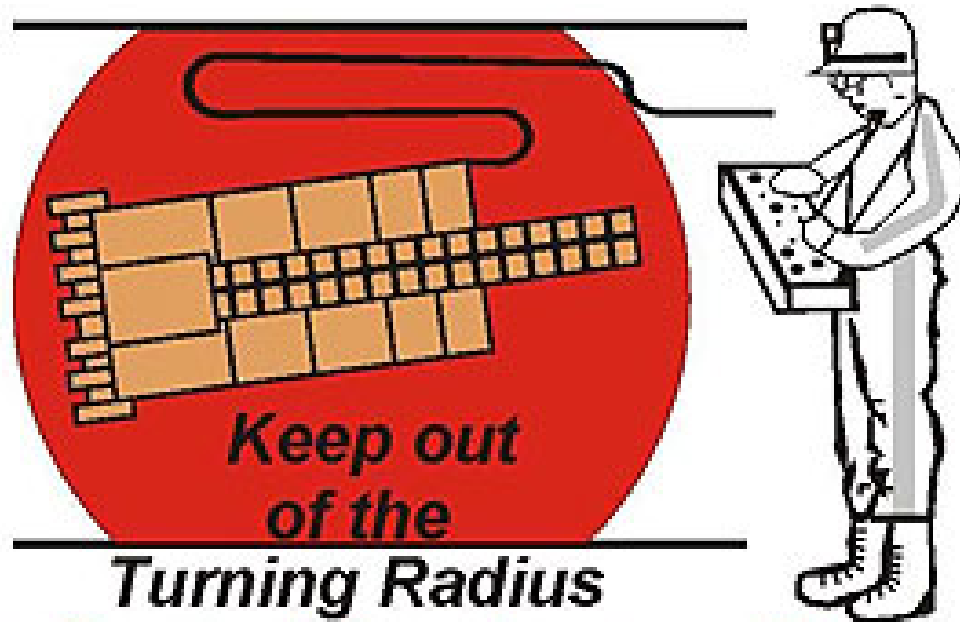


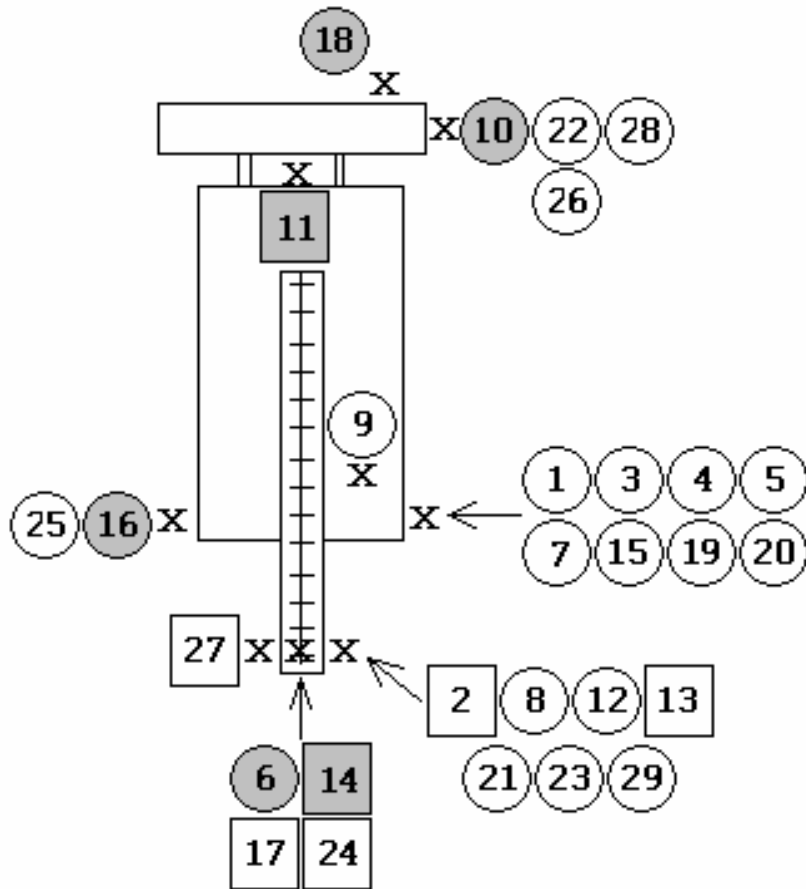
# Remote Control Hazard Awareness



***Remote Control Continuous Miners***

**U. S. Department of Labor - MSHA**

# Victim Location With Respect to the Machine

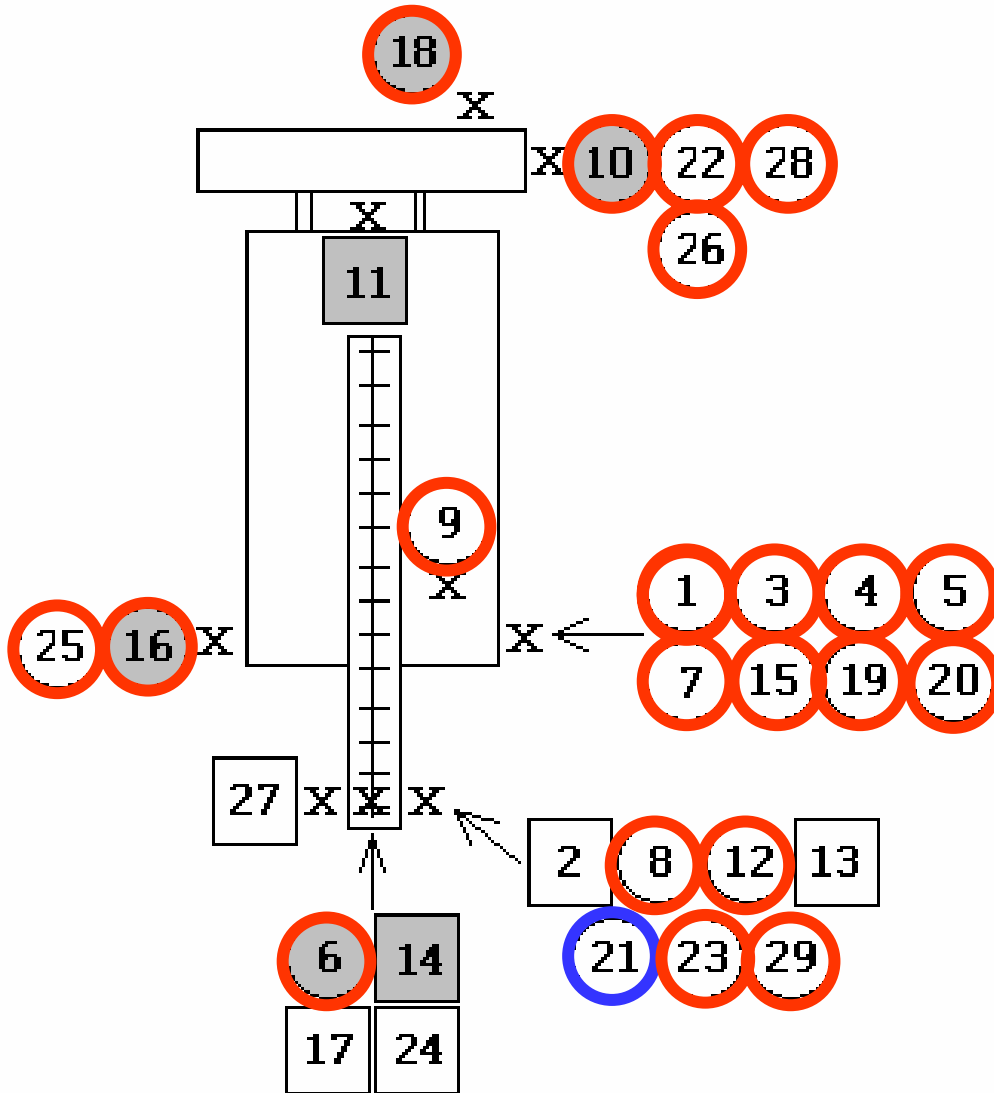


- 29 fatalities since 1984
- 12 fatalities since 2000 (41%)
- 3 fatalities in 2004

## Legend

- X Victim location
- Operating the remote
- Not operating the remote
- Maintenance activity
- Maintenance activity

# Victims Operating the Remote



Of the 29 fatalities, **72%** of victims were operating the remote at the time of the accident.

## Legend

- X Victim location
- 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
- Maintenance activity

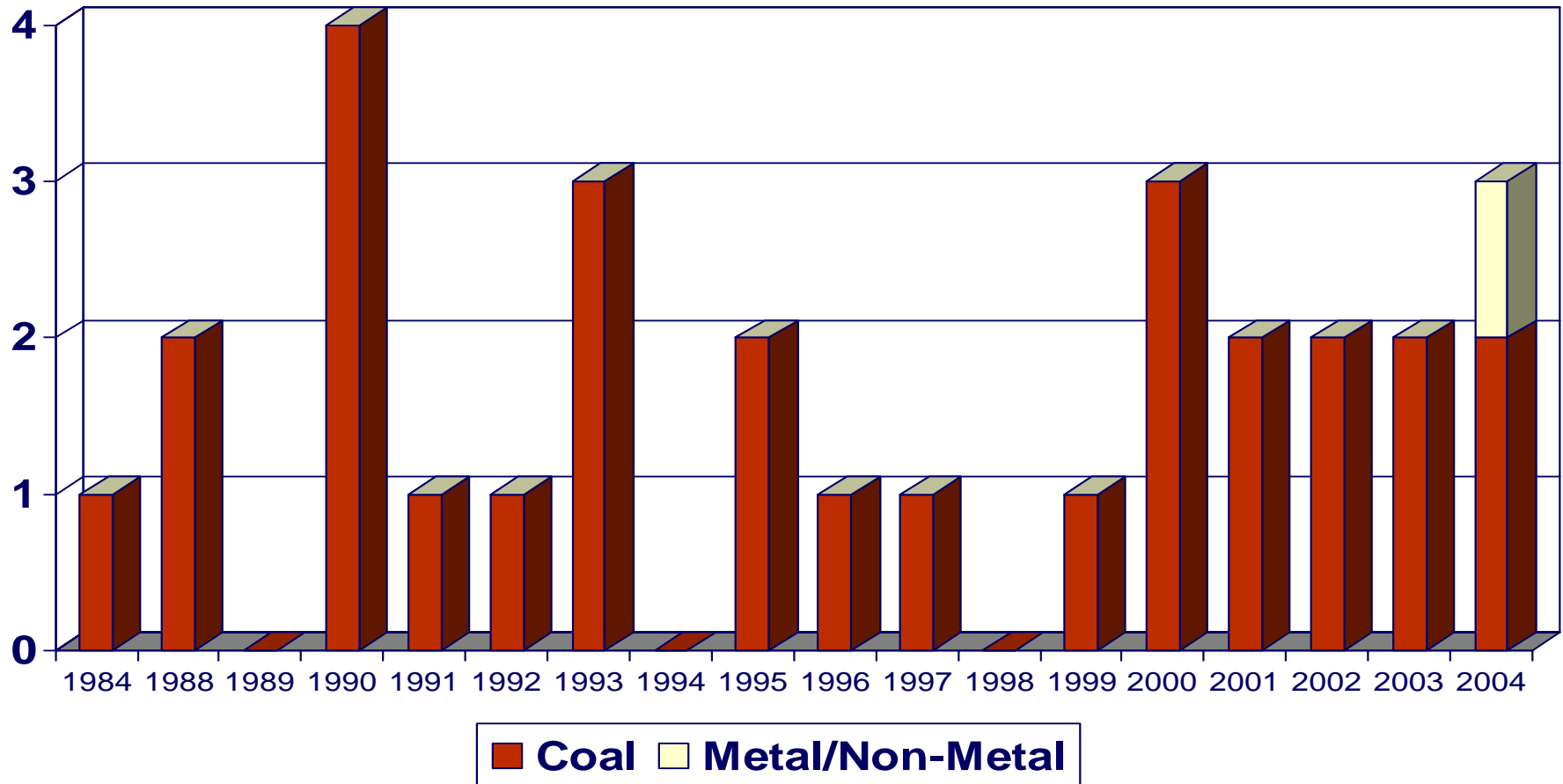
# *Equipment Involved in the Fatality*

<b>Miner Make</b>	<b>Miner Model</b>	<b>Qty</b>	<b>Total</b>
<b>Eimco</b> (one Marietta 2460-1)	<b>2810</b>	<b>1</b>	<b>3</b>
	<b>2460</b>	<b>2</b>	
<b>Jeffrey</b>	<b>1028HP</b>	<b>1</b>	<b>4</b>
	<b>101MC</b>	<b>1</b>	
	<b>1036</b>	<b>2</b>	
<b>Joy</b>	<b>12CM</b>	<b>9</b>	<b>19</b>
	<b>14CM</b>	<b>9</b>	
	<b>12HM</b>	<b>1</b>	
<b>Simmons-Rand</b>	<b>500</b>	<b>2</b>	<b>3</b>
	<b>525</b>	<b>1</b>	

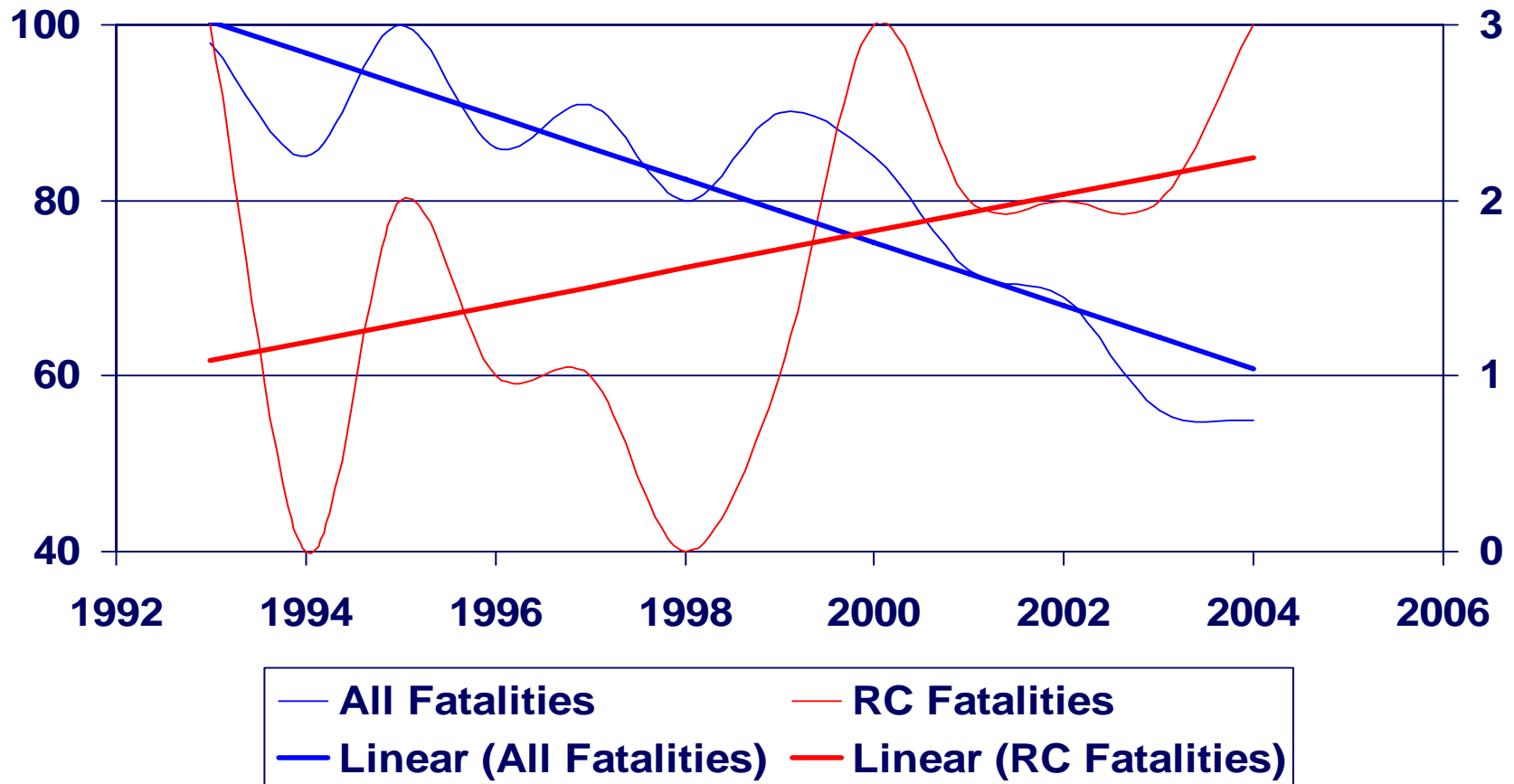
# *Equipment Involved in the Fatality*

<b>Remote Make</b>	<b>Remote Model</b>	<b>Qty</b>	<b>Total</b>
<b>Marietta</b>	<b>Pendant unit (umbilical) for drum miner</b>	<b>1</b>	<b>1</b>
<b>Matric</b>	<b>Plastic Station</b>	<b>7</b>	<b>13</b>
	<b>TX2</b>	<b>1</b>	
	<b>TX3</b>	<b>5</b>	
<b>Moog</b>	<b>129</b>	<b>3</b>	<b>4</b>
	<b>unknown</b>	<b>1</b>	
<b>Not Reported</b>	<b>Radio</b>	<b>9</b>	<b>11</b>
	<b>Umbilical</b>	<b>2</b>	

# Remote Control CM Fatal Accident History



# Remote Control Fatalities vs. All Fatalities



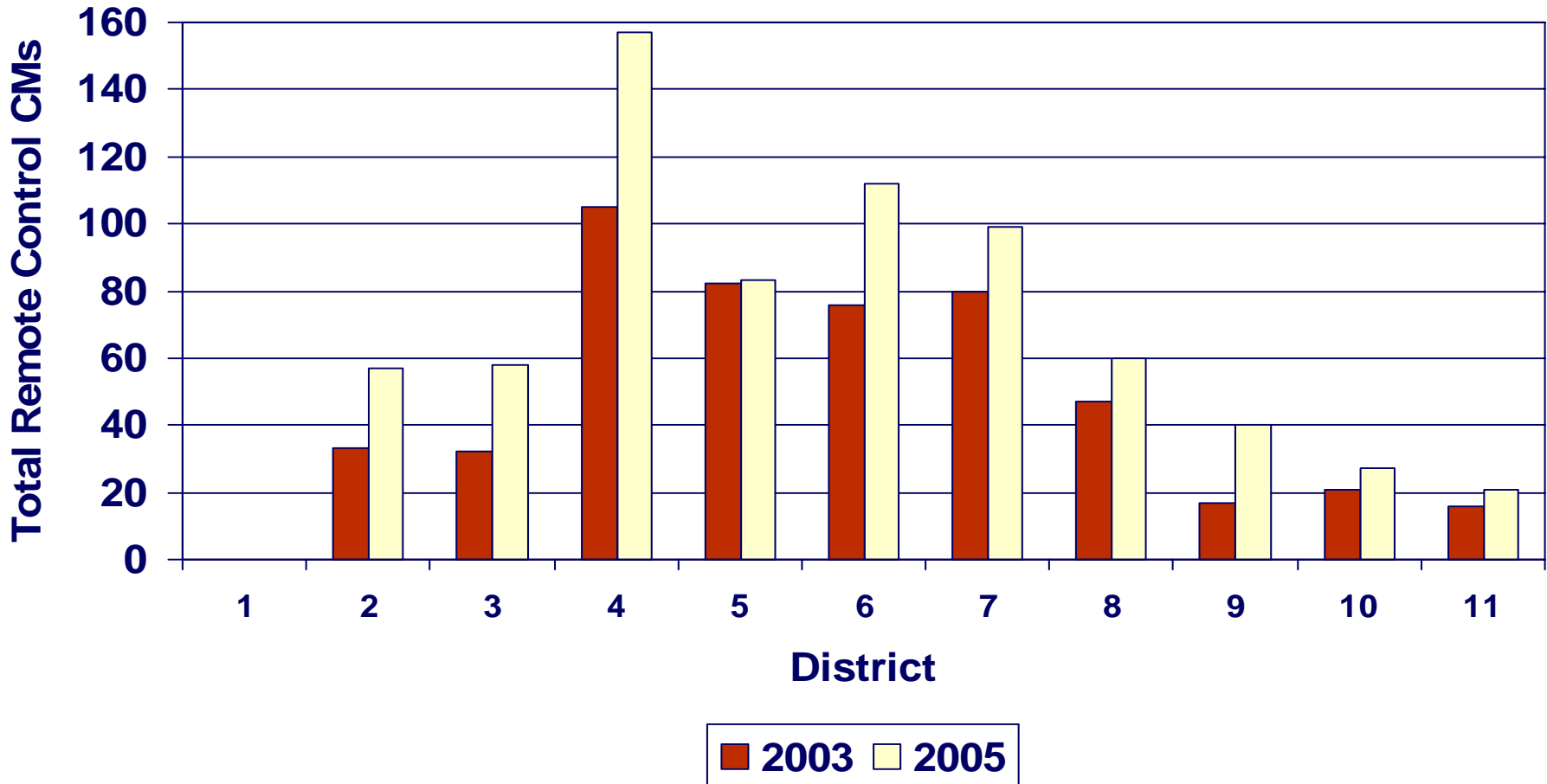
**The trend line for RC fatalities is upward which is contrary to the overall fatality trend**

# Remote Miner Population

	Continuous Miner MMUs					
	Without Remote Control		With Remote Control		Total	
District	2002	2005	2002	2005	2002	2005
1	2	2	0	0	2	2
2	4	1	33	57	37	58
3	10	2	32	58	42	60
4	13	22	105	157	118	179
5	13	2	82	83	95	85
6	8	6	76	112	84	118
7	3	3	80	99	83	102
8	0	0	47	60	47	60
9	0	0	17	40	17	40
10	0	4	21	27	21	31
11	0	0	16	21	16	21
<b>Total</b>	<b>53</b> <b>9.4%</b>	<b>42</b> <b>6%</b>	<b>509</b> <b>90.6%</b>	<b>714</b> <b>94%</b>	<b>562</b> <b>100%</b>	<b>756</b> <b>100%</b>



# Remote Miner Population

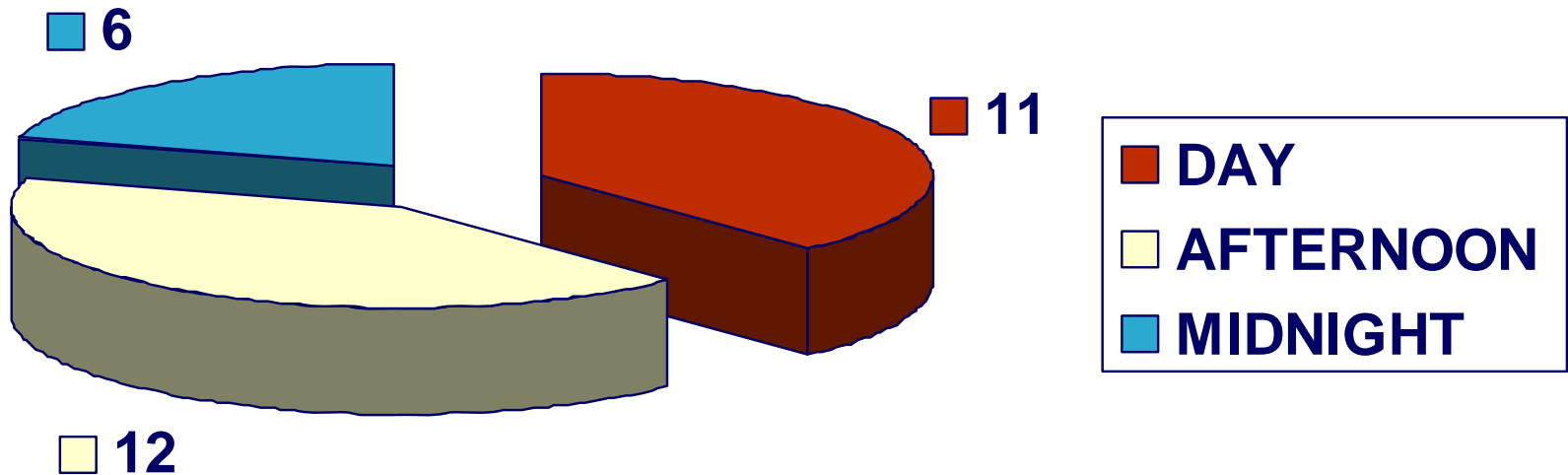


**Since 2003 there is an increase of 40%**

# *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.

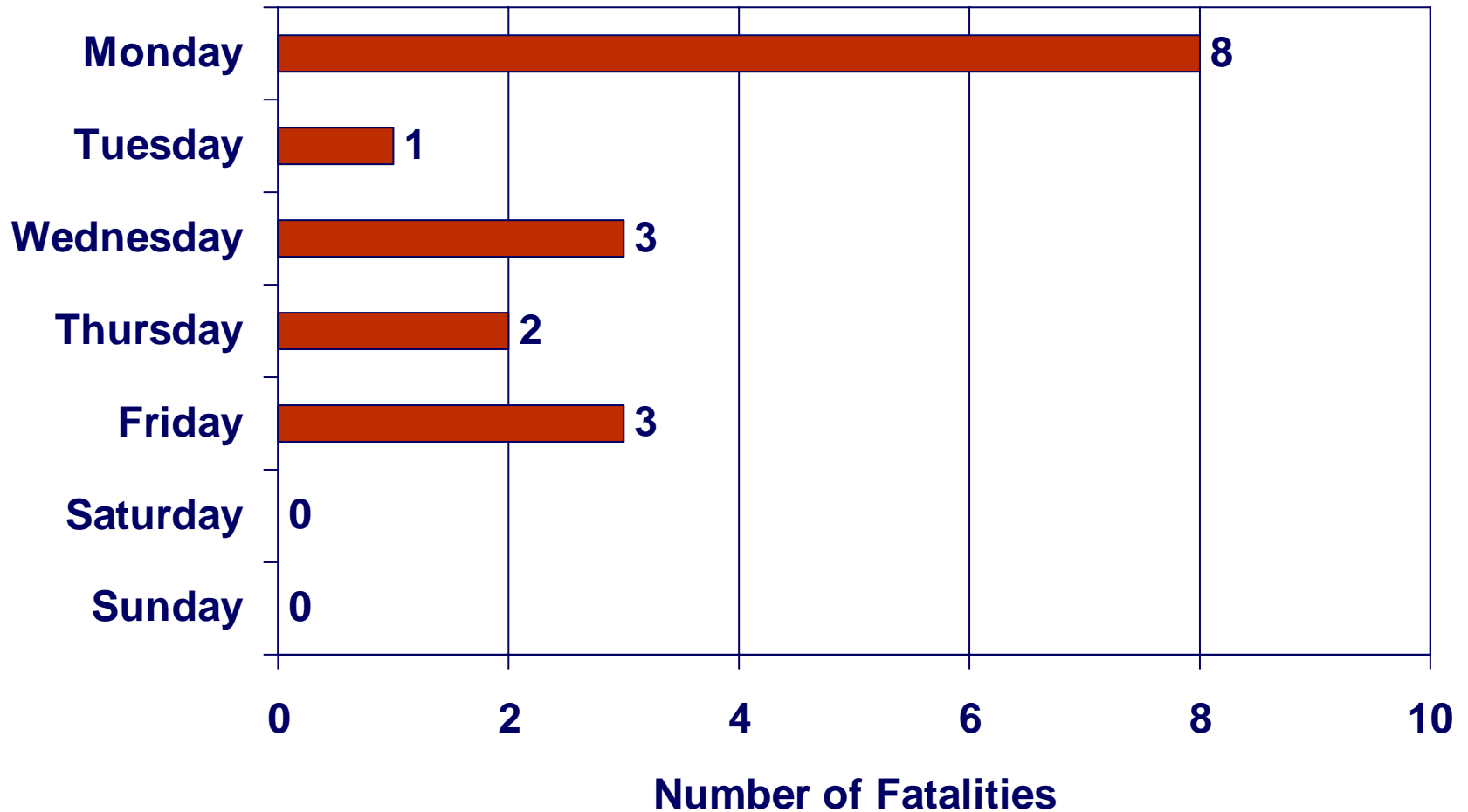
# *Fatalities by Shift*



**62%** occurred during an off-shift,  
contrary to a majority of workers on the Day Shift.

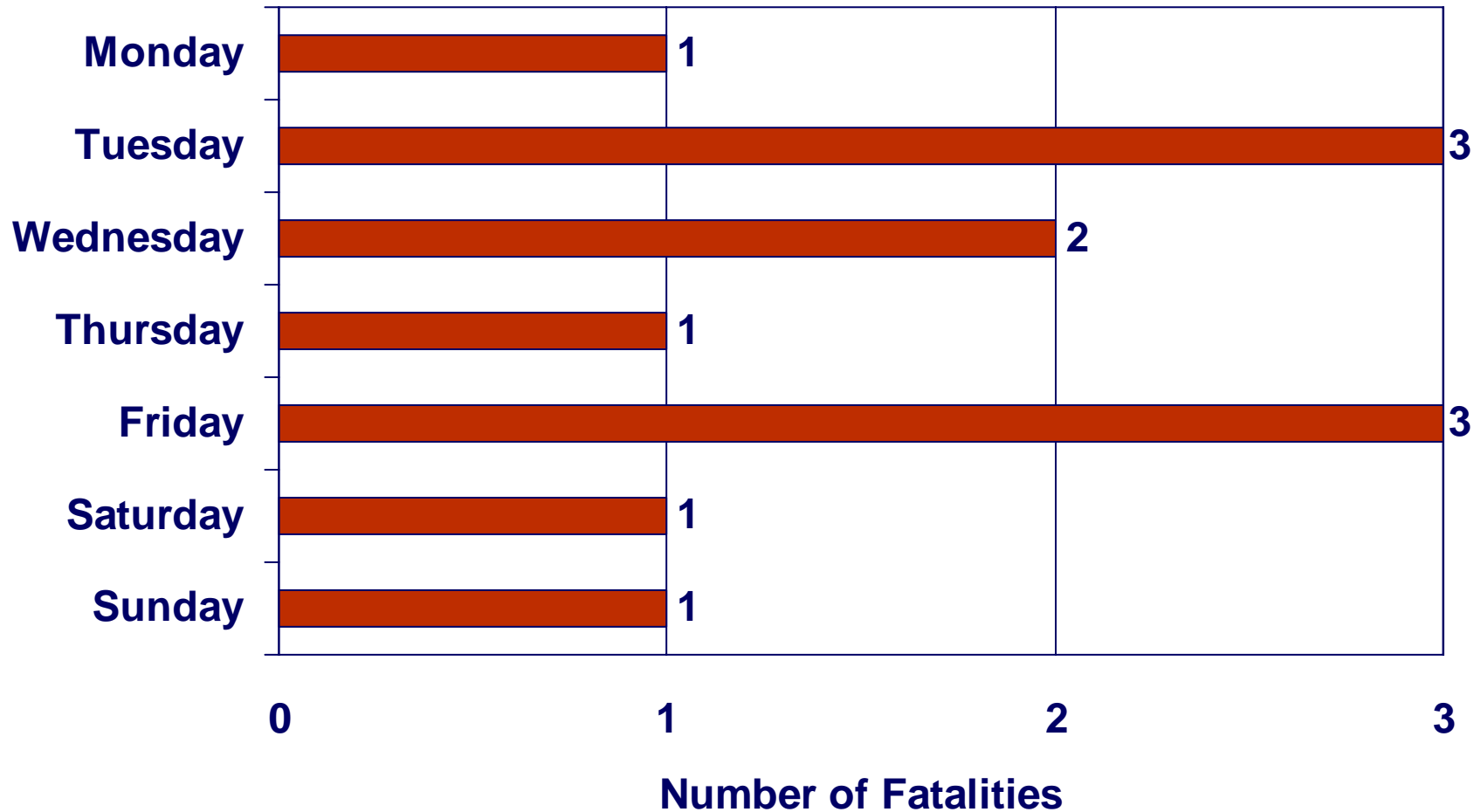
# *Fatalities by Day of the Week*

## *1984-1999*

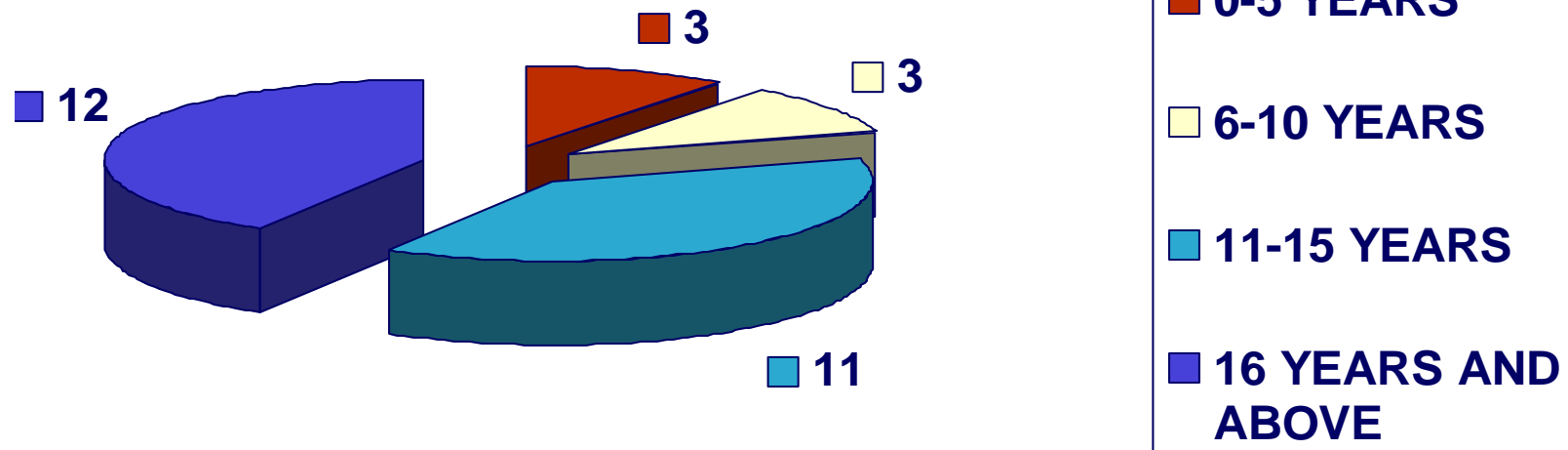


# *Fatalities by Day of the Week*

## *2000-2004*



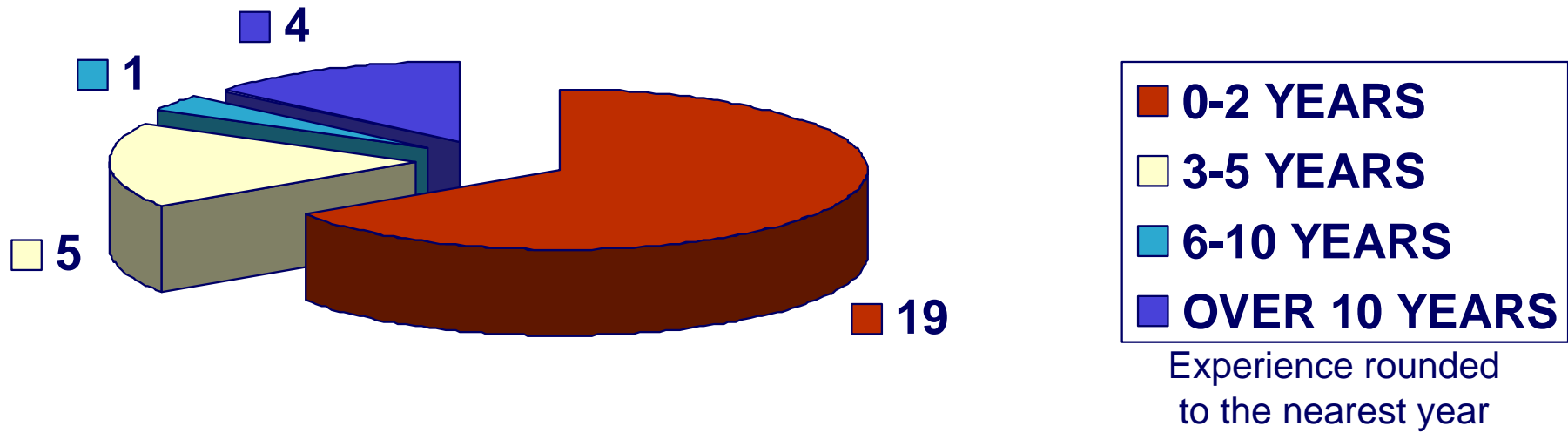
# Fatalities by Total Mining Experience



Experience rounded to the nearest year

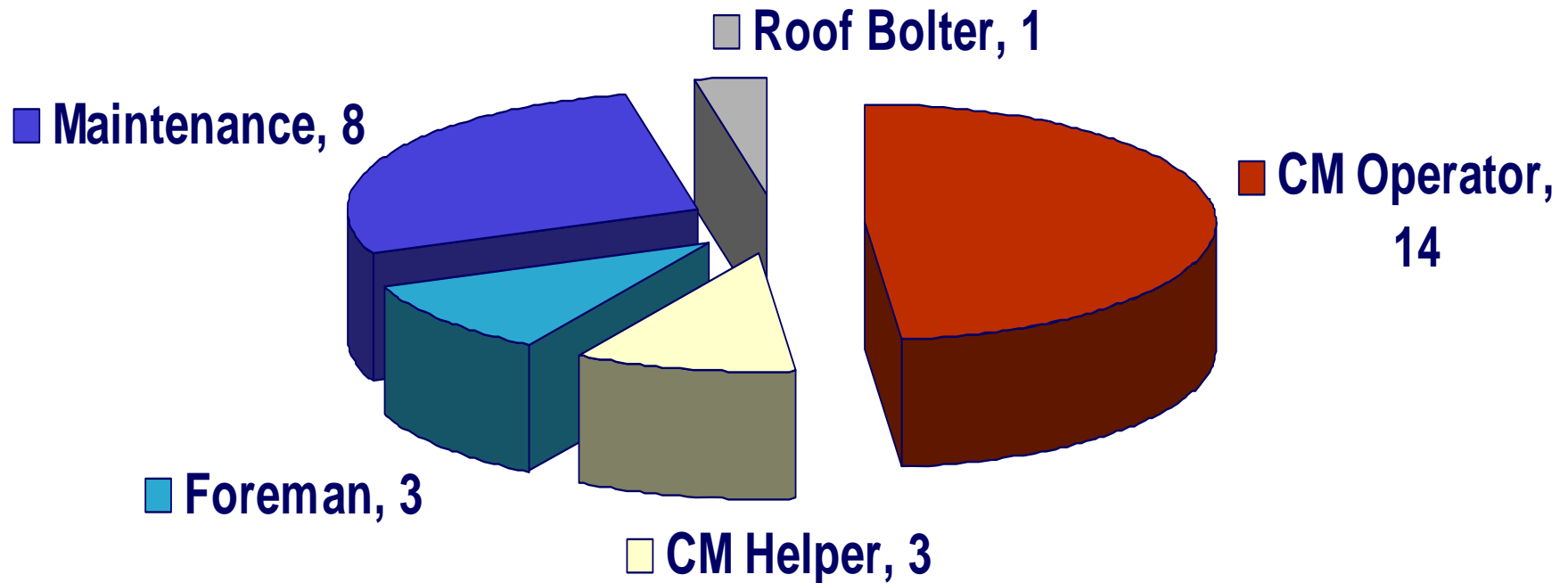
- Fatalities are happening to experienced miners.
- **79%** of the victims had greater than 10 years of mining experience.

# Fatalities by Experience at the Mine where the Fatality Occurred



**65%** of the victims had less than 2 years experience at the mine

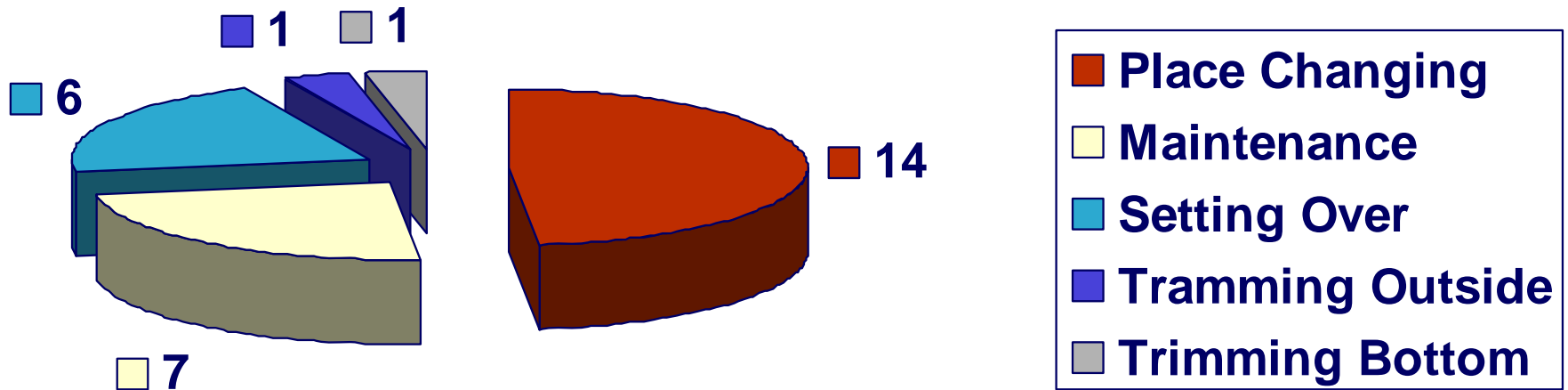
# Fatalities by Job Classification



- **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.

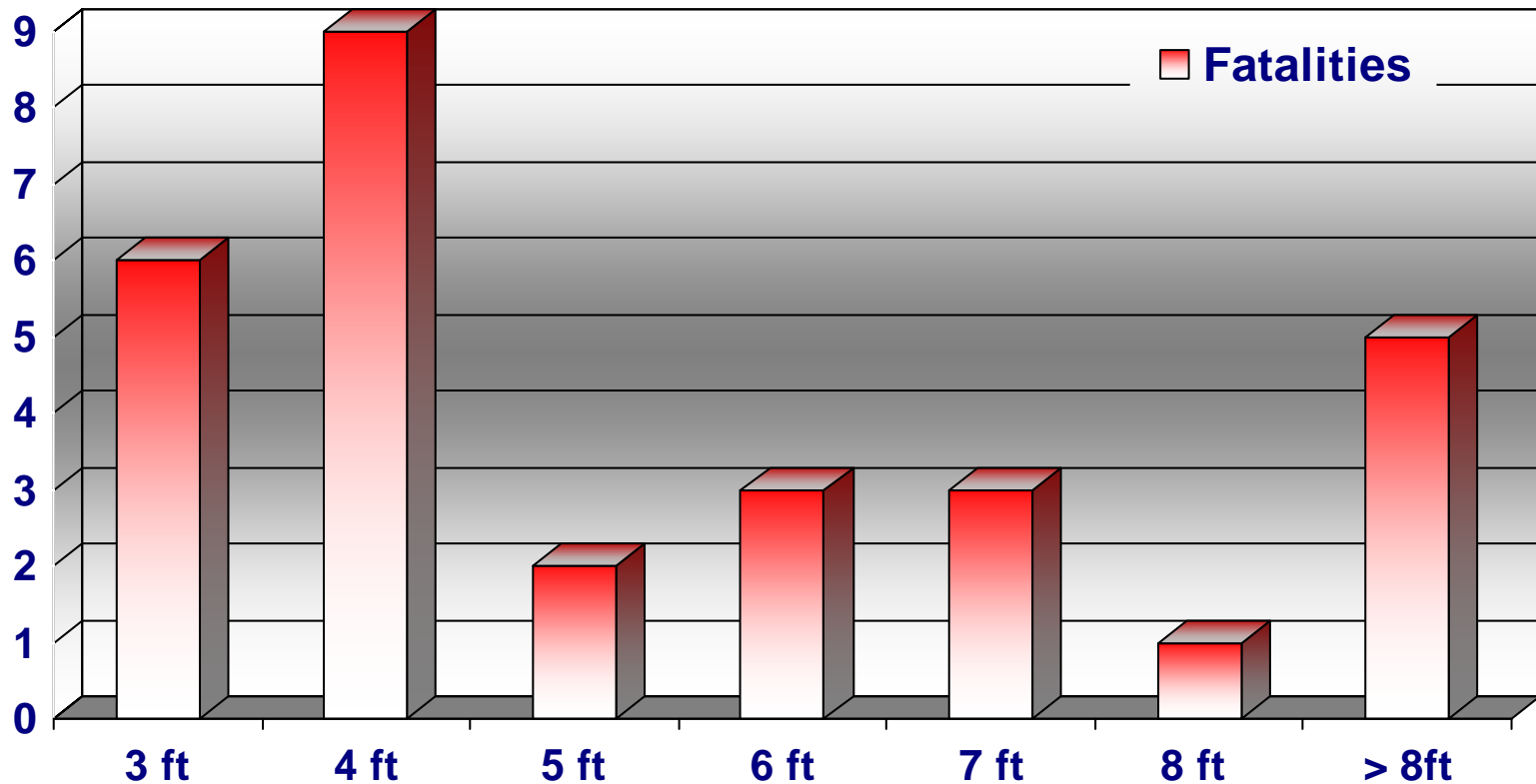


# Fatalities per Activity



**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**

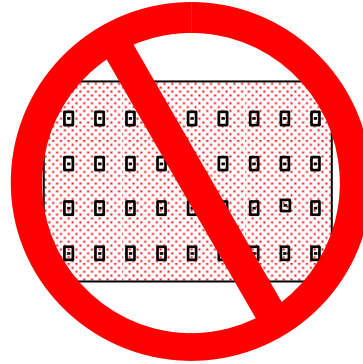
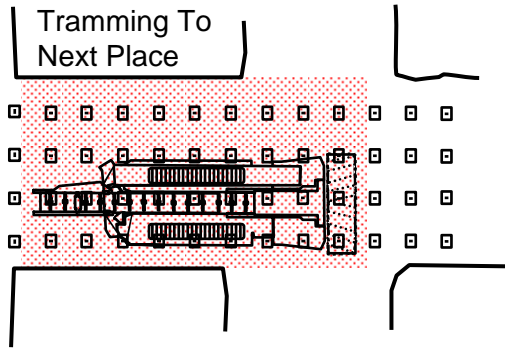
# *Remote Control Best Practices*

- Establish safe operating procedures for remote control continuous mining machine operations, which include:
  - Trimming
  - 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.

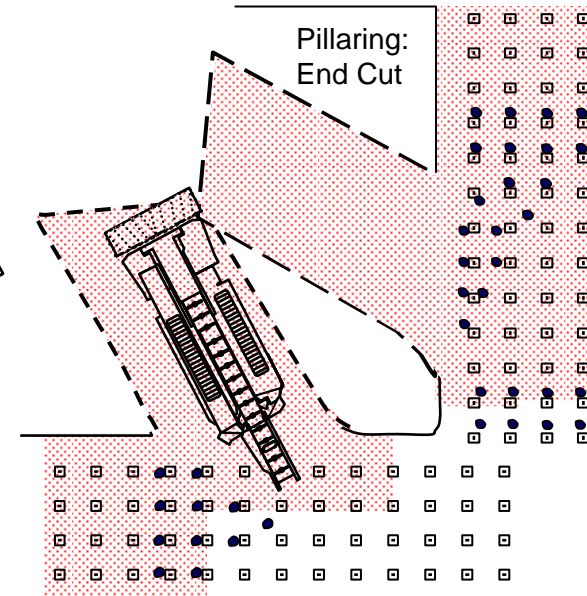
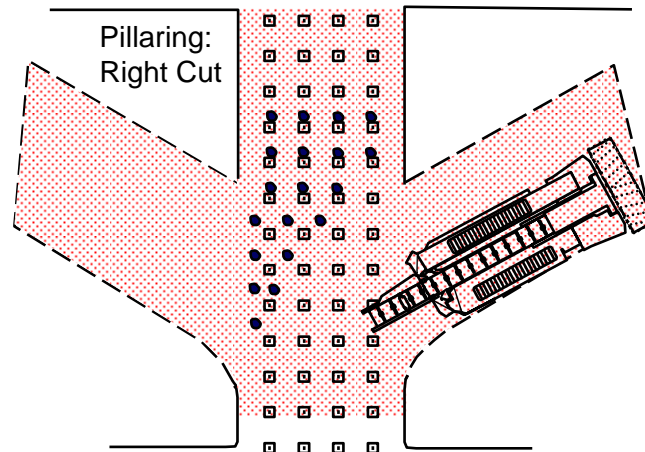
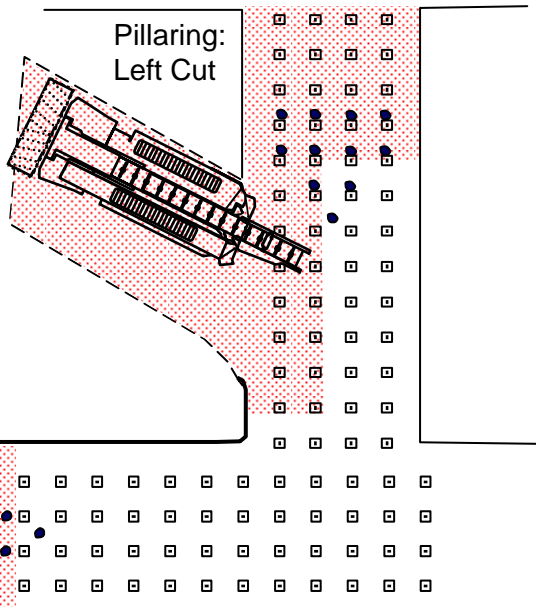
# RED ZONES ARE NO ZONES

## FOR

## MINING WITH REMOTE CONTROL CONTINUOUS MINERS



**NOTE:**  
THESE DRAWINGS DO NOT SUPERCEDE  
ANY STATE OR FEDERAL REQUIREMENT



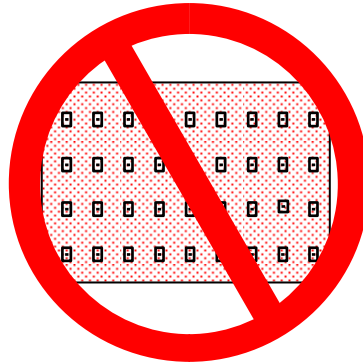
Developed through a cooperative effort between MSHA's District 5 Office, the Virginia DMME, and local mining companies

<http://www.msha.gov/Alerts/20040407REDZONE2.pdf>

# RED ZONES ARE NO ZONES

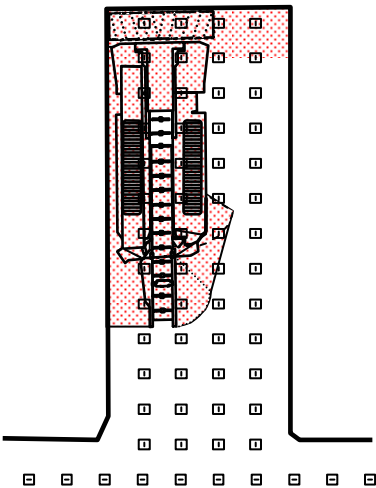
## FOR

## MINING WITH REMOTE CONTROL CONTINUOUS MINERS

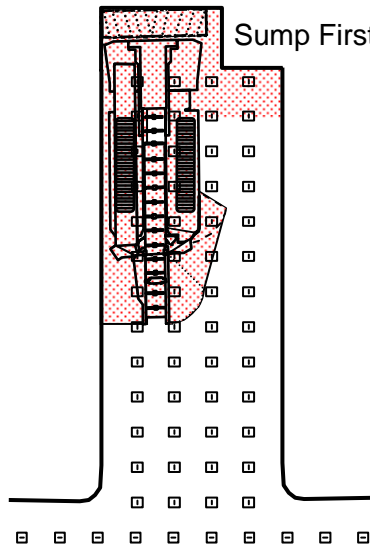


**NOTE:**  
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ANY STATE OR FEDERAL REQUIREMENT

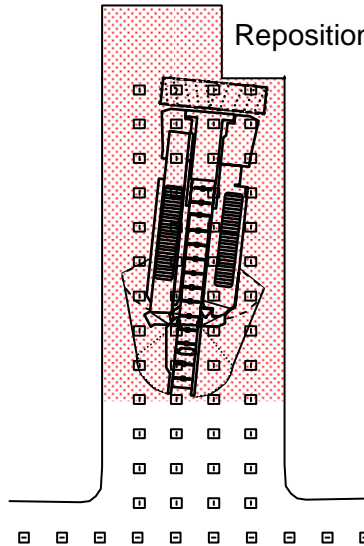
Beginning First Sump



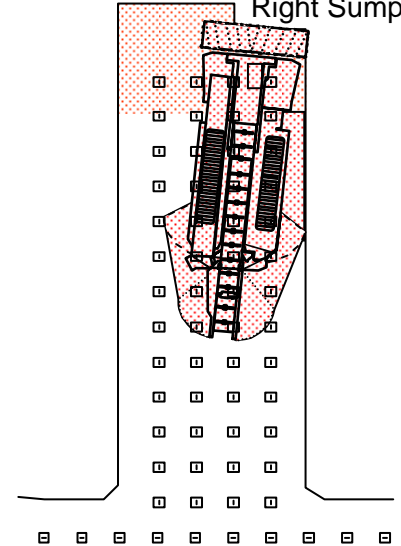
Sump First Side



Repositioning Miner



Right Sump



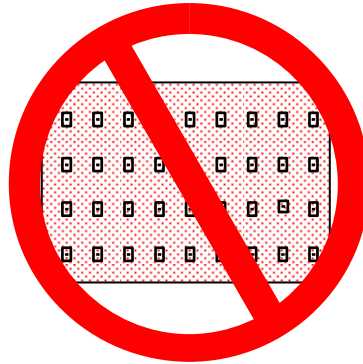
Developed through a cooperative effort between MSHA's District 5 Office, the Virginia DMME, and local mining companies

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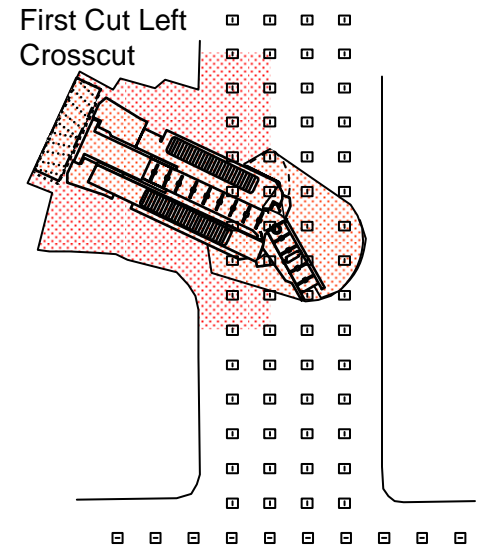
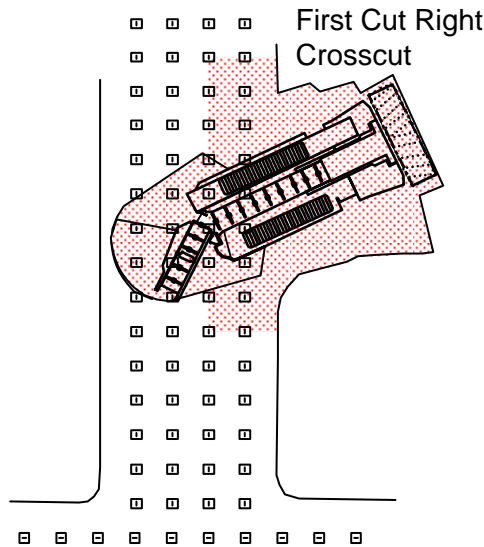
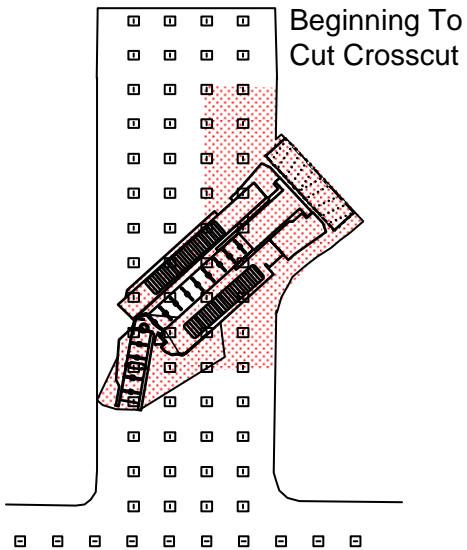
# RED ZONES ARE NO ZONES

## FOR

## MINING WITH REMOTE CONTROL CONTINUOUS MINERS



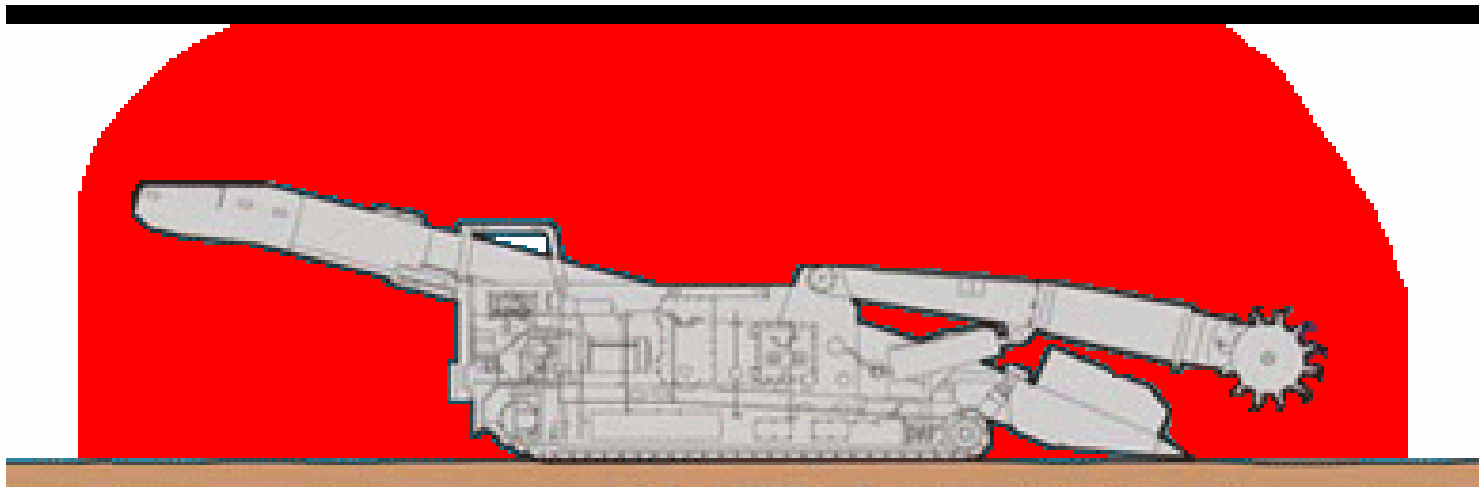
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Developed through a cooperative effort between MSHA's District 5 Office, the Virginia DMME, and local mining companies

<http://www.msha.gov/Alerts/20040407REDZONE2.pdf>

# *RED ZONES ARE NO ZONES*



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

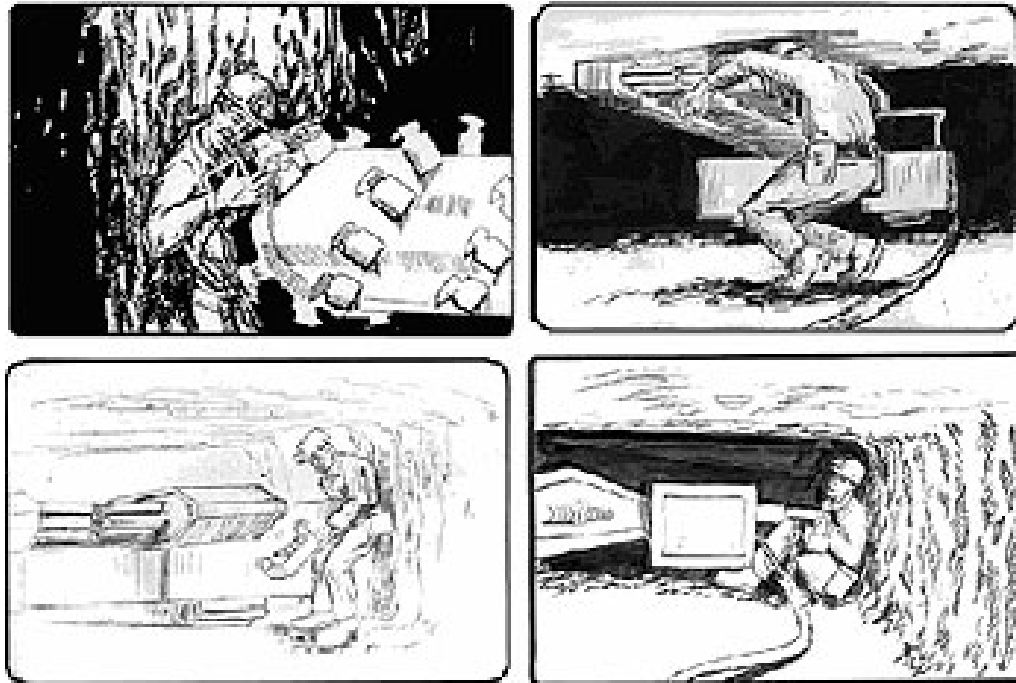
Use this online tool to develop adaptable training that will improve your mines' production, safety, communication, and maintenance.

**[www.msha.gov/interactivetraining/tasktraining/index.html](http://www.msha.gov/interactivetraining/tasktraining/index.html)**



# *Remote Control Best Practices*

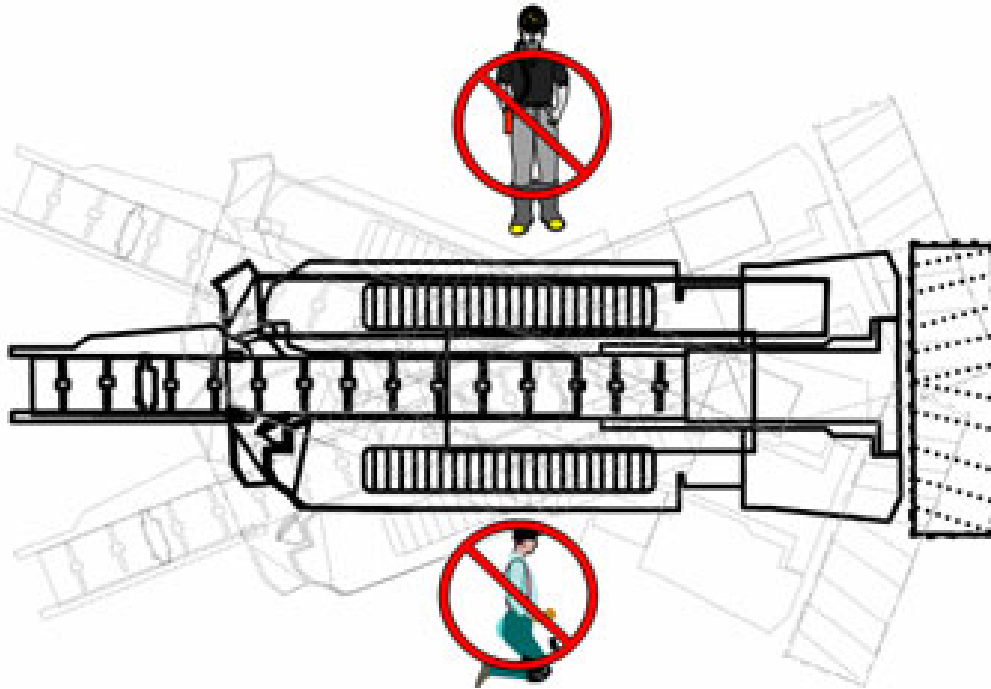
**Tramming While Positioned Within The Turning Radius Of The Remote Control Continuous Miner Can Be Fatal**



**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



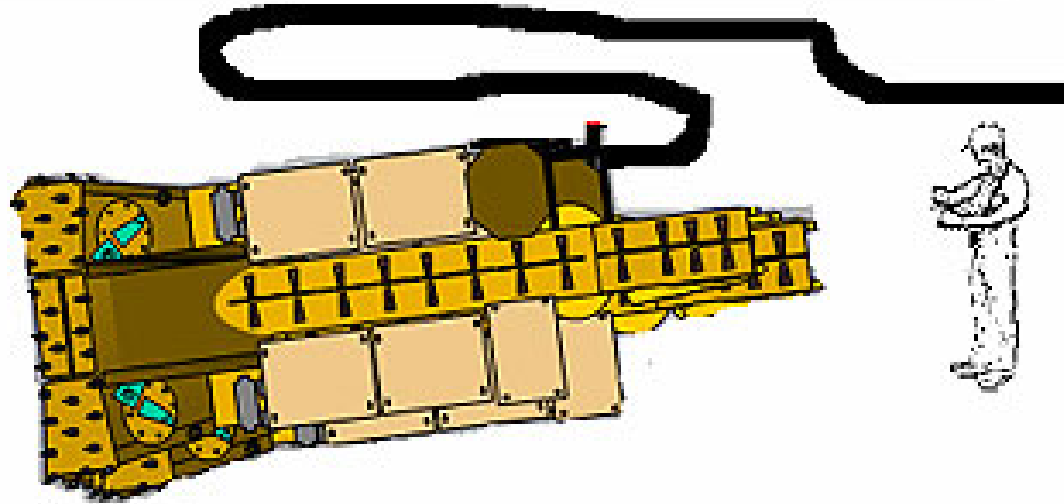
- The middle of the remote control continuous miner (pivot point) is not a safe place from which to reposition or tram the machine during a place change.
- The pivot point moves as the machine moves and may cause you to be in a position to be crushed if the miner suddenly turns.



**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

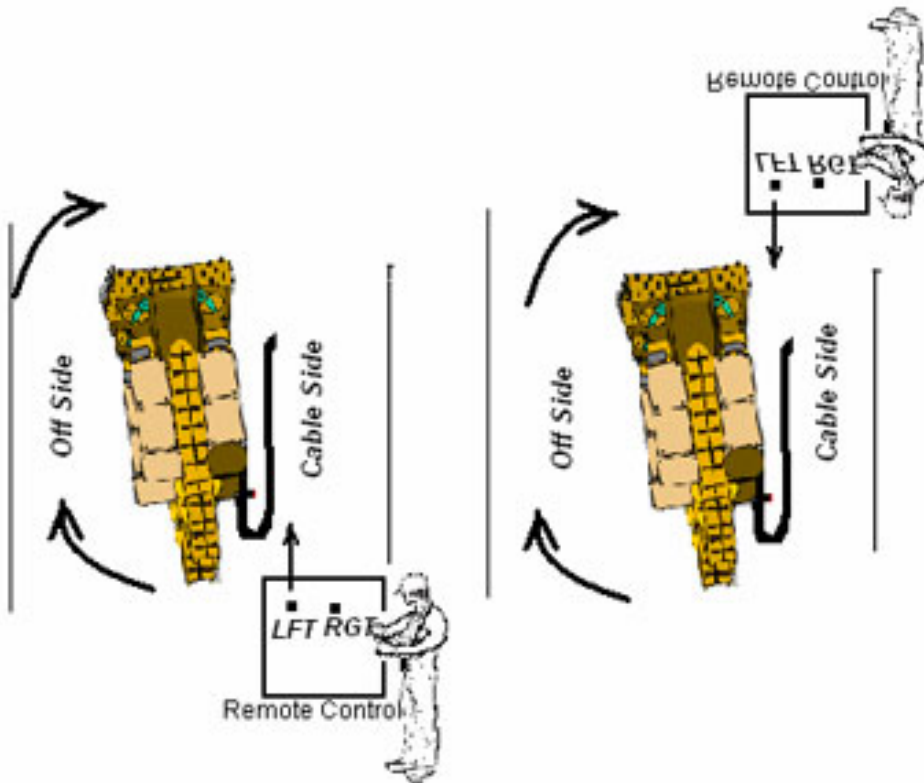
**Tramming While Positioned Within The Turning Radius Of The Remote Control Continuous Miner Can Be Fatal**



**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

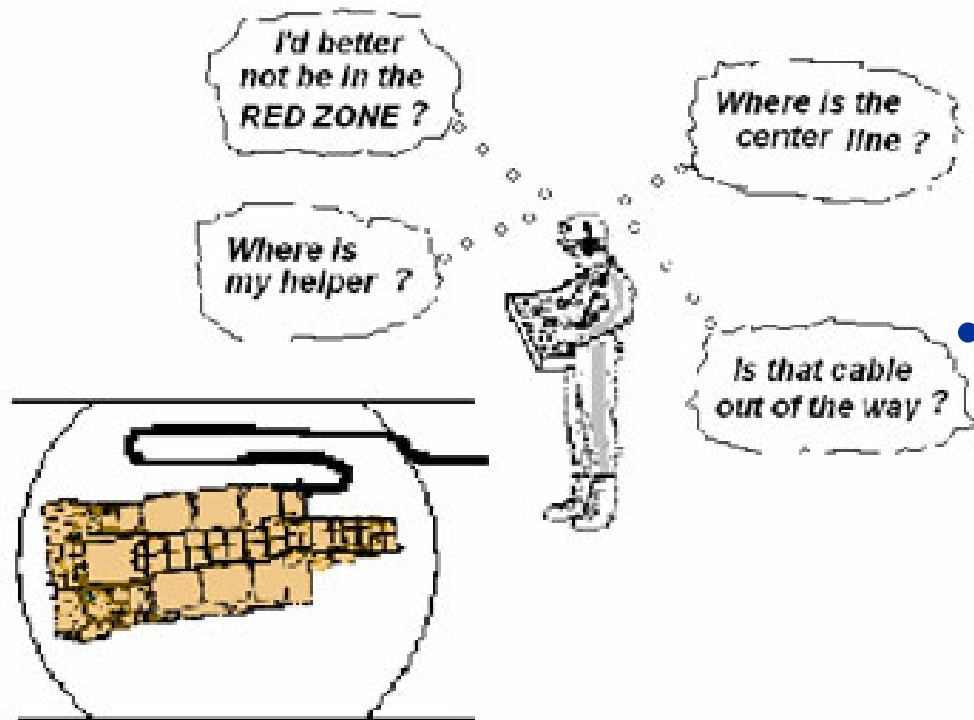
## Turning a Remote Control Continuous Miner



- 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

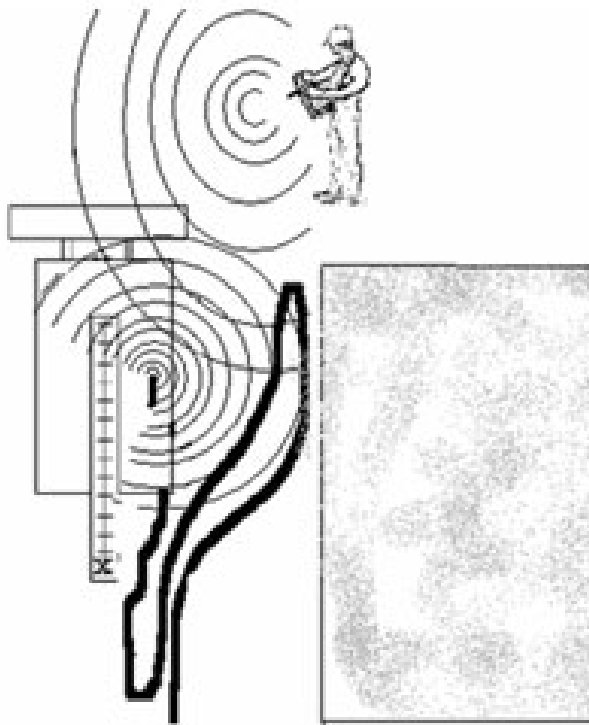


- Communicate with co-workers and maintain clear visibility with all personnel in the vicinity of moving equipment.
- De-energize the machine and remote control unit according to established safe work practices before entering the **"RED ZONE"**.

# 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.



Safety and  
Health are  
Values!

Safety and  
Health are  
Values!

# Triangle of Success



# *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>
- Remote control fatal accident analysis report of victim's physical location with respect to the mining machine  
[http://www.msha.gov/webcasts/Coal2005/  
Fatal Accident Summary.pdf](http://www.msha.gov/webcasts/Coal2005/Fatal%20Accident%20Summary.pdf)
- 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](mailto:thomas.charles@dol.gov)

or

[chirdon.david@dol.gov](mailto:chirdon.david@dol.gov)