

UNITED STATES  
DEPARTMENT OF LABOR  
MINE SAFETY AND HEALTH ADMINISTRATION  
Metal and Nonmetal Mine Safety and Health

REPORT OF INVESTIGATION

Underground Metal Mine  
(Gold)

Fatal Fall of Ground Accident  
August 28, 2007

Getchell Mine  
Small Mines Development, LLC  
Golconda, Humboldt County, Nevada  
Mine ID No. 26-02233

Investigators

Bruce L. Allard  
Supervisory Mine Safety and Health Inspector

Kenneth C. Poulson  
Mine Safety and Health Inspector

Dennis Karst  
Mine Safety and Health Inspector

Raymond A. Mazzoni  
Mechanical Engineer

John Kathmann  
Mine Safety and Health Specialist

Originating Office  
Mine Safety and Health Administration  
Western District  
2060 Peabody Road, Suite 610  
Vacaville, California 95687  
Arthur L. Ellis, District Manager



## OVERVIEW

Curtis L. Johnson, bolter operator, age 36, was fatally injured on August 28, 2007, while working in a development drift. Johnson completed bolting the roof of the drift when the left rib and part of the roof fell covering him and the roof bolter.

The accident occurred because management procedures and controls were inadequate and failed to ensure that persons could safely install ground supports. The ground control plan was not followed when ground conditions requiring additional support were encountered. Persons were not trained to evaluate and support adverse ground conditions.

## **GENERAL INFORMATION**

Getchell Mine, an underground gold mine, operated by Small Mines Development, LLC, was located near Golconda, Humboldt County, Nevada. The principal operating official was Paul J. Joggerst, project superintendent. The mine normally operated two 10-hour shifts per day, 7 days a week. Total employment was 40 persons.

Gold ore was drilled, blasted, and transported by load-haul-dump (LHD) loaders and trucks to the surface where it was processed by a milling operation. The finished products were sold to commercial industries.

The last regular inspection at this operation was completed on August 22, 2007.

## **DESCRIPTION OF THE ACCIDENT**

On August 27, 2007, Curtis L. Johnson, (victim) and Shane R. Harding, lead miner, started work at 6:30 p.m. They worked in the 4745-160-3 drift that had been loaded and blasted at the end of the day shift. After Johnson and Harding loaded the shot rock out of the heading with an LHD and truck, they moved a roof bolter in to start the bolting cycle. Harding went to another area of the mine and Johnson set up to begin bolting.

About 9:30 p.m., Johnson left his work area and went to the surface. On his way back to the work area, Johnson met Harding and told him the feed cable came off the roof bolter. They also discussed that the drift could not be drilled and blasted again because it needed shotcreted before advancing. Johnson returned to the work area, repaired the cable feed, and resumed bolting.

On August 28, 2007, at about 12:30 a.m., Daniel J. Bailey, mechanic, came to the drift to perform maintenance on the roof bolter. He completed the repairs and left about 12:45 a.m.

At approximately 2:00 a.m., the crew assembled on the surface at the end of shift. Johnson was unaccounted for so Rodney Keller, miner, went back to the 4745-160-3 drift to look for him. Keller telephoned the surface saying the roof bolter was buried and he could not locate Johnson. Mine rescue crews were summoned and recovery efforts were started immediately.

The ground in front of the fall was re-bolted and material was removed from the left side of the roof bolter using a remote controlled LHD. The roof bolter was

pushed to the left and material was removed from the right side. Johnson was recovered and pronounced dead at 11:54 a.m. on August 29, 2007, by a local physician. The cause of death was blunt force trauma.

## **INVESTIGATION OF THE ACCIDENT**

The Mine Safety and Health Administration (MSHA) was notified of the accident at 3:02 a.m., on August 28, 2007, by a telephone call from Brad Wigglesworth, Turquoise Ridge mine safety coordinator, to the National Call Center.

Diane Watson, acting assistant district manager, was notified and recovery efforts began the same day. An order was issued under the provisions of section 103(k) of the Mine Act to ensure the safety of the miners.

MSHA's accident investigation team traveled to the mine, conducted a physical inspection of the accident scene, interviewed employees, and reviewed documents and work procedures relevant to the accident. MSHA conducted the investigation with the assistance of mine management, employees, and the county coroner's office.

## **DISCUSSION**

### **Location of the Accident**

The accident occurred in the 4745-160-3 development drift. The face of the drift was approximately 95 feet from the last intersection. Mining began in this heading on August 23, 2007.

### **Geology**

Gold ore was produced from the primary mineralization in the footwall of the Getchell Fault and followed both structure and replacement of favorable beds. The original host rocks were limestone and carbonate-rich mudstones which were highly sheared and metamorphosed prior to mineralization. The host rocks had bedding planes, joints and shears. Due to folding, these features were orientated at various angles to each other. Ground structures encountered were footwall splays of the Getchell Fault. This type of ground condition near the Getchell Fault had been difficult to control when it was previously encountered.

### **Roof Bolter**

The roof bolter used to install bolts on the day of the accident was an electro-hydraulic Tamrock Robot D05-126 XL. The roof bolter had a single boom which

incorporated an indexing mechanism. One position was used for drilling and another for bolt installation. The machine had a carousel for automatic bolt handling. The roof bolter was designed to install 6-foot split set roof bolts.

The operator's compartment was equipped with a falling object protective structure (FOPS) canopy.

### **Ground Support Plan**

Typical ground support consisted of 33 mm or 39 mm, 6-foot long split sets with 6-inch dome plates. When needed, 6-foot by 9-foot panels of 9 gauge welded wire mesh with a 4-inch grid and shotcrete were used. The ground control plan for the mine required additional supports for adverse conditions.

Twelve-foot rounds were being taken in the drift where the accident occurred. The ground was being supported with 6-foot long, 39mm split sets, 6-inch dome plates and 4-inch square, 9 gauge wire mesh. Split sets were installed on a 4-foot by 4-foot spacing. The 6-foot by 9-foot mesh panels were overlapped at least one foot when installed. With this configuration, the bolt spacing was not more than 4 feet.

### **Fall of Ground**

The fall of ground occurred in the 4745-160-3 drift that was driven 14-feet wide and 14-feet high.

The drift was approaching the Getchell fault and management was anticipating deteriorating ground conditions. When the previous round was mined, a fault was detected on the left rib and the bolter operator began to bolt and install mesh to approximately three feet from the bottom of the left side rib using 6-foot split sets and welded wire mesh for additional support. A joint was observed on the right side of the drift that paralleled the fault. This joint appeared to be affecting the shape of the arch that started to become more angular at the apex as mining progressed. A second joint was observed within a short distance from where the fall cavity began.

Investigators conducted a laser cavity survey of the fall area and estimated that 500 tons of material fell. The fall was approximately 30 feet high at its apex.

### **Training and Experience**

Curtis L. Johnson had seven years mining experience. He had 4 ½ years experience operating a roof bolter at this mine and had been trained in accordance with 30 CFR, Part 48.

## ROOT CAUSE ANALYSIS

A root cause analysis was conducted and the following causal factor was identified.

Causal Factor: Management policies and procedures were inadequate and failed to ensure that persons could safely install ground supports. The mine's ground control plan was not followed when ground conditions were encountered that required additional support. Persons were not trained to evaluate and support adverse ground conditions.

Corrective Action: Management should establish procedures to ensure that supervisors or other designated persons examine ground conditions in areas where work is to be performed, after blasting, and as ground conditions warrant during the shift. Persons should be trained to evaluate and support adverse ground conditions.

## CONCLUSION

The accident occurred because management procedures and controls were inadequate and failed to ensure that persons could safely install ground supports. The ground control plan was not followed when ground conditions were encountered that required additional support. Persons were not trained to evaluate and support adverse ground conditions.

## ENFORCEMENT ACTIONS

Order No. 6394603 was issued on August 28, 2007, under the provisions of Section 103(k) of the Mine Act:

A serious accident occurred at this operation on August 28, 2007, when portions of the back and rib fell in on top of a bolter in the 4745-160-3 drift. This order is issued to assure the safety of all persons at this operation. It prohibits all activity in the 4745-160-3 drift and the 4745-160 access until MSHA has determined that it is safe to resume normal mining operations in the area. The mine operator shall obtain prior approval from an authorized representative for all actions to recover and/or restore operations to the affected area.

This order was terminated on February 20, 2008. Management has barricaded the entrance and prohibited entry into the area.

**Citation No. 6370131** was issued on February 19, 2008, under the provisions of Section 104(a) of the Mine Act for a violation of 30 CFR 57.3360:

A fatal accident occurred at this mine on August 28, 2007, when a miner was struck by a fall of ground after he had completed bolting a drift. The ground support system was not designed, installed, and maintained to control the ground in places where persons work or travel in performing their assigned tasks.

This citation was terminated on February 19, 2008. Management has established policies and procedures to ensure that ground support systems are designed and installed to control the ground in places where persons work or travel.

**Citation No. 6370132** was issued on February 19, 2008, under the provisions of Section 104(a) of the Mine Act for a violation of 30 CFR 48.8(b)(4):

A fatal accident occurred at this mine on August 28, 2007, when a miner was struck by a fall of ground after he had completed bolting a drift. Revisions were made to the roof and ground control plan in effect at the mine, but these changes were not provided to the miners in any course of instruction.

This citation was terminated on February 19, 2008. Management has trained all miners to identify and support adverse ground conditions.

Approved By:

\_\_\_\_\_  
Arthur L. Ellis  
District Manager

\_\_\_\_\_  
Date

## **APPENDICES**

- A. Persons Participating in the Investigation**
- B. Map**
- C. Victim Information**

## APPENDIX A

### **Small Mines Development, LLC**

Michael Drussell	director of safety
Paul J. Joggerst	project superintendent
Shane R. Harding	lead miner
Jason J. Wiest	bolter operator

### **Humboldt County Sheriff's Office**

Will Bourland	deputy sheriff
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### **Mine Safety and Health Administration**

Bruce L. Allard	supervisory mine safety and health inspector
Raymond A. Mazzoni	mechanical engineer
Dennis Karst	mine safety and health inspector
Kenneth C. Poulson	mine safety and health inspector
John Kathmann	mine safety and health specialist



# APPENDIX C

Accident Investigation Data - Victim Information				U.S. Department of Labor	
Event Number: 1 1 4 1 0 0 3				Mine Safety and Health Administration	
<b>Victim Information: 1</b>					
1. Name of Injured/Ill Employee: <i>Curtis L. Johnson</i>		2. Sex: <i>M</i>	3. Victim's Age: <i>36</i>	4. Last Four Digits of SSN:	5. Degree of Injury: <i>01 Fatal</i>
6. Date(MM/DD/YY) and Time(24 Hr.) Of Death: a. Date: <i>08/29/2007</i> b. Time: <i>11:54</i>			7. Date and Time Started: a. Date: <i>08/27/2007</i> b. Time: <i>16:00</i>		
8. Regular Job Title: <i>046 Roof bolter/miner</i>		9. Work Activity when Injured: <i>080 Preparing to leave heading after bolting</i>		10. Was this work activity part of regular job? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
11. Experience a. This		b. Regular		c. This	
Years Weeks Days		Years Weeks Days		Years Weeks Days	
Work Activity: <i>4 12 0</i>		Job Title: <i>4 7 6</i>		Mining: <i>4 7 6</i>	
12. What Directly Inflicted Injury or Illness? <i>089 roof and rib fall buried victim</i>			13. Nature of Injury or Illness: <i>110 Suffocation</i>		
14. Training Deficiencies: Hazard: _____ New/Newly-Employed Experienced Miner: _____ Annual: _____ Task: _____					
15. Company of Employment: (If different from production operator) <i>Operator</i> Independent Contractor ID: (if applicable) _____					
16. On-site Emergency Medical Treatment: Not Applicable: _____ First-Aid: _____ CPR: _____ EMT: _____ Medical Professional: _____ None: <input checked="" type="checkbox"/>					
17. Part 50 Document Control Number: (form 7000-1)			18. Union Affiliation of Victim: <i>9999 None (No Union Affiliation)</i>		
<b>Victim Information:</b>					
1. Name of Injured/Ill Employee:		2. Sex:	3. Victim's Age:	4. Last Four Digits of SSN:	5. Degree of Injury:
6. Date(MM/DD/YY) and Time(24 Hr.) Of Death:			7. Date and Time Started:		
8. Regular Job Title:		9. Work Activity when Injured:		10. Was this work activity part of regular job? Yes <input type="checkbox"/> No <input type="checkbox"/>	
11. Experience a. This		b. Regular		c. This	
Years Weeks Days		Years Weeks Days		Years Week Days	
Work Activity:		Job Title:		Mining:	
12. What Directly Inflicted Injury or Illness?			13. Nature of Injury or Illness:		
14. Training Deficiencies: Hazard: _____ New/Newly-Employed Experienced Miner: _____ Annual: _____ Task: _____					
15. Company of Employment: (If different from production operator) Independent Contractor ID: (if applicable) _____					
16. On-site Emergency Medical Treatment: Not Applicable: _____ First-Aid: _____ CPR: _____ EMT: _____ Medical Professional: _____ None: _____					
17. Part 50 Document Control Number: (form 7000-1)			18. Union Affiliation of Victim:		
<b>Victim Information:</b>					
1. Name of Injured/Ill Employee:		2. Sex:	3. Victim's Age:	4. Last Four Digits of SSN:	5. Degree of Injury:
6. Date(MM/DD/YY) and Time(24 Hr.) Of Death:			7. Date and Time Started:		
8. Regular Job Title:		9. Work Activity when Injured:		10. Was this work activity part of regular job? Yes <input type="checkbox"/> No <input type="checkbox"/>	
11. Experience a. This		b. Regular		c. This	
Years Weeks Days		Years Weeks Days		Years Week Days	
Work Activity:		Job Title:		Mining:	
12. What Directly Inflicted Injury or Illness?			13. Nature of Injury or Illness:		
14. Training Deficiencies: Hazard: _____ New/Newly-Employed Experienced Miner: _____ Annual: _____ Task: _____					
15. Company of Employment: (If different from production operator) Independent Contractor ID: (if applicable) _____					
16. On-site Emergency Medical Treatment: Not Applicable: _____ First-Aid: _____ CPR: _____ EMT: _____ Medical Professional: _____ None: _____					
17. Part 50 Document Control Number: (form 7000-1)			18. Union Affiliation of Victim:		