Atlantic Alliance Conference
September 25, 2008

Analyzing the USA Numbers
--Root Causes--Best Practices--
Preparation and submission of MSHA Report Form 7000-1--Mine Accident, Injury, and Illness Report.

Each operator shall maintain at the mine office a supply of MSHA Mine Accident, Injury, and Illness Report Form 7000-1. These may be obtained from the MSHA District Office. Each operator shall report each accident, occupational injury, or occupational illness at the mine. The principal officer in charge of health and safety at the mine or the supervisor of the mine area in which an accident or occupational injury occurs, or an occupational illness may have originated, shall complete or review the report in accordance with the instructions and criteria in §50.20-1 through 50.20-7. If an occupational illness is diagnosed as one of those listed in §50.20-6(b)(7), the operator must report it under this part. The operator shall mail completed forms to MSHA within ten working days after an accident or occupational injury occurs or an occupational illness is diagnosed. When an accident specified in §50.10 occurs, which does not involve an occupational injury, sections A, B, and items 5 through 12 of section C of Form 7000-1 shall be completed and mailed to MSHA in accordance with the instructions in §50.20-1 and criteria contained in §50.20-4 through 50.20-6.

Each operator shall report each occupational injury or occupational illness on one set of forms. If more than one miner is injured in the same accident or is affected simultaneously with the same occupational illness, an operator shall complete a separate set of forms for each miner affected. To the extent that the form is not self-explanatory, an operator shall complete the form in accordance with the instructions in §50.20-1 and criteria contained in §50.20-2 through 50.20-7.
Mine Accident, Injury and Illness Report
U.S. Department of Labor
Mine Safety and Health Administration

**Section A. Identification Data**
- Mine Name
- Company Name
- MSHA ID Number
- Contractor ID
- Report Category
  - Metal/Nondismetal Mining
  - Coal Mining
  - Check here if report pertains to contractor

**Section B. Correct the Name of Each Injured Person Immediately Reported to MSHA**
- Accident Date (circle applicable code - see instructions)
  - 01 - Death
  - 02 - Serious Injury
  - 03 - Entrapment
  - 04 - Inflammation
  - 05 - Gas or Dust Ignition
  - 06 - Mine Fire
  - 07 - Explosives
  - 08 - Roof Fall
  - 09 - Cutout
  - 10 - Impoundment
  - 11 - Holding
  - 12 - Office Injury

**Section C. Correct for Each Reported Accident, Injury or Illness**
- Circled Codes Which Best Describe Where Accident/Injury/Illness Occurred (see instructions)
  - (a) Surface Location
    - 01 Surface or Underground Mine
    - 02 Mill or Preparation Plant, etc.
    - 03 Blast/Dozer/Pit Mine
    - 04 Surface Area of Mine
  - (b) Underground Location
    - 01 Main Shaft
    - 02 Transfer Shaft
    - 03 Fan
    - 04 Interchange
    - 05 Underground Support Office
    - 06 Other
  - (c) Underground Mining Method
    - 01 Longwall
    - 02 Shortwall
    - 03经济社会性
    - 04 Continuous Mining
    - 05 Hand
    - 06 Other

**Section D. Correct for Each Occurrence**
- Date of Accident
- Time of Accident
- Time Shift Started
- Work Day
- Time

**Section E. Correct for Any Condition Contributing to the Accident/Injury/Illness, and Quantify the Damage or Impairment**

**Section F. Correct for the Equipment Involved**
- Type
- Manufacturer
- Model Number

**Section G. Correct for the Number of Injured Employees Resulting from This Occurrence**
- Name of Injured Employee
- Sex
- Age
- Social Security Number
- Regular Job Title
- Check if this injury/illness resulted in death
- Check if injury/illness resulted in permanent disability

**Section H. Correct for the Nature of Accident or Illness**
- Part of Body Affected
- Occupation and/or Affected

**Section I. Correct for Employee’s Work Activity When Injury or Illness Occurred**
- Experience
- Experience at This Job Title
- Experience at This Mine

**Section J. Return to Duty Information**
- Permanent Total Disability
- Temporary Partial Disability

**Section K. Correct for Official Use Only**
- Date This Report Prepared
- Area Code and Telephone Number

MSHA Form 7009-1, Feb. 03 (revised)
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## All MNM Reportable Injuries - CY 2003 - 2007

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<th>Fatalities</th>
<th>Percent of Fatalities</th>
<th>Reportable Injuries</th>
<th>Percent of Reportable Injuries</th>
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<td>Handtools (Nonpowered)</td>
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<td>Machinery</td>
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<td>Powered Haulage</td>
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<td>Fall of Roof or Back</td>
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<td>Falling/Sliding/Rolling Materials</td>
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<td><strong>Total MNM Fatalities and Reportable Injuries</strong></td>
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<td><strong>34,594</strong></td>
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MNM Operator & Contractor Injuries

Year | Injuries
--- | ---
2000 | 9600
2002 | 8449
2004 | 7374
2006 | 6882
2006 | 6976
2006 | 7260
2006 | 6808
2006 | 6583
MNM Operator - Contractor Injuries

- 2000: 941
- 2002: 694
- 2004: 527
- 2006: 724
- 2008: 835

Y-axis: Number of Injuries

X-axis: Years (2000 to 2008)
<table>
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<th>Classification</th>
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<td>All Others</td>
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<tr>
<td>% of MNM Total</td>
<td>9%</td>
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<tr>
<td>Classification</td>
<td>Count</td>
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<tr>
<td>-----------------------------</td>
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<tr>
<td>Fall of Person</td>
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<td>Powered Haulage</td>
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<td>Machinery</td>
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<td>Electrical</td>
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<td>All Others</td>
<td>5</td>
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<tr>
<td><strong>MNM Total</strong></td>
<td><strong>59 (22%)</strong></td>
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**Contractor Fatalities by Classification (2000-2007)**
SAFETY SLOGAN OF THE MONTH
"YOU CAN DO IT RIGHT
AS MANY TIMES AS YOU WANT,
BUT YOU MAY ONLY BE ABLE
TO DO IT WRONG ONCE!"
Fatality #25 - October 25, 2007
Fall of Person - California - Cement
Riverside Cement Company - Oro Grande Quarry

METAL/NONMETAL MINE FATALITY - On October 25, 2007, a 19 year-old contractor ironworker with 20 weeks of experience was fatally injured at a cement operation. The victim was standing on 2 x 10 x 72 inch planks that were nailed to cross members and placed across a 48-inch diameter hole where a duct was to be installed. Several of the planks dislodged and he fell approximately 75 feet.

Best Practices

- Ensure that floor openings are protected by railings, barriers, or covers that are properly constructed, installed securely, and maintained to control all hazards.
- Ensure that areas are barricaded or have warning signs posted at all approaches if hazards exist that are not immediately obvious.
- Examine your work places for all possible hazards and correct them before you perform work.
- Remember and use SLAM: Stop, Look, Analyze, and Manage.

This is the 29th fatality reported in calendar year 2007 in the metal and nonmetal mining industries. As of this date in 2006, there were 30 fatalities reported in these Industries. This is the 4th Fall of Person fatality in 2007. There were 3 Fall of Person fatalities in the same period in 2006.

The information provided in this notice is based on preliminary data ONLY and does not represent final determinations regarding the nature of the incident or conclusions regarding the cause of the fatality.
Root Causes

- Contractor management policies and procedures were inadequate and failed to ensure that persons could safely work on the deck of the fifth level of the coal mill tower. The wooden platform covering the opening was not substantially constructed and maintained in good condition.

- Contractor management policies and work procedures failed to ensure that fall protection was properly used by persons where there was a danger of falling.

- Contractor management policies and work procedures failed to ensure that persons were aware of safety hazards not immediately obvious. No barricades or warning signs were posted at the approaches to the opening on the deck.
Fatality #19 - July 29, 2007
Fall of Person - Tennessee - Lead/Zinc Ore
East Tennessee Zinc Company, LLC - Immel Mine

METAL/NONMETAL MINE FATALITY - On July 29, 2007, a 39 year-old contractor miner with 3 years experience was fatally injured at an underground zinc mine. The victim and two other contractor miners were working on top of a service hoist located in the main mine service shaft. He was assisting another miner who was using a chipping hammer to remove concrete from around a steel shaft set. The miners had one foot on top of the service hoist and one foot on a cross section H-beam when one side of the beam collapsed. Both miners fell into the shaft. They were both wearing safety harnesses and lanyards but the victim's lanyard was not secured. The other miner was caught by his lanyard but the victim fell 1,000 feet to the shaft bottom.

Best Practices

- Ensure workers are trained and understand that safety lanyards are not permitted to be unfastened while working at elevated locations.
- Provide self retracting lanyard mechanisms when workers are required to reposition themselves to perform tasks.
- Ensure safety lanyards are securely fastened at all times when workers are positioned at elevated locations.

This is the 19th fatality reported in calendar year 2007 in the metal and nonmetal mining industries. As of this date in 2006, there were 16 fatalities reported in these industries. This is the 2nd Fall of Person fatality in 2007. There were 2 Fall of Person fatalities in the same period in 2006.

The information provided in this notice is based on preliminary data ONLY and does not represent final determinations regarding the nature of the incident or conclusions regarding the cause of the fatality.
Management policies and controls were inadequate and failed to ensure that persons could safely work at elevated positions where there was a danger of falling. Management failed to conduct an assessment of the risk when performing these tasks and had not identified procedures to ensure the work could be completed safely.

Management policies and work procedures failed to ensure that fall protection was properly used by persons working where there was a danger of falling.
Fatality #7 - April 5, 2007  
Falling Material - Texas - Dimension Sandstone  
1845 Texas Stone Products, Inc. - Texas Stone Products, Inc.

METAL/NONMETAL MINE FATALITY - On April 5, 2007, a 46 year-old tire contractor, with 8 years experience, was fatally injured at a dimension stone operation. The victim was replacing tires on the front-end loader. He was pinned under the loader when it fell off the supporting jacks.

Best Practices

- Stop, Look, Analyze, and Manage (SLAM) each task to identify all potential hazards before performing maintenance work. Practice safe work habits during the entire task.
- Train miners and persons hired to perform work on the mine site in safe work procedures before beginning repairs. Monitor work to ensure procedures are followed.
- Securely block equipment against all hazardous motion at all times while performing maintenance work.

This is the 7th fatality reported in calendar year 2007 in the metal and nonmetal mining industries. As of this date in 2006, there were five fatalities reported in these industries. This is the 1st Falling Material fatality in 2007. There was one Falling Material fatality in the same period in 2006.
Policies and procedures were inadequate. Potential hazards were not addressed before performing the task of changing tires on a wheel loader. Procedures were not established to ensure the wheel loader was blocked against hazardous motion.
METAL/NONMETAL MINE FATALITY - On July 27, 2006, a 25-year-old contractor laborer, with 2 years experience, was fatally injured at a crushed stone operation. The victim was using a gasoline-powered weed trimmer, equipped with a circular steel blade, to cut weeds and brush near a power pole when he struck the guy wire for the pole. The blade severed the guy wire, causing it to contact the energized supply conductors on the pole mounted transformer and electrocuted him.

Best Practices

- Ensure that guy wires from power poles are securely connected to the system ground or are provided with the proper number of insulators installed near the pole end.
- Examine the area for any potential hazards before trimming weeds and brush.

This is the 18th fatality reported in calendar year 2005 in the metal and nonmetal mining industries. As of this date in 2005, there were 18 fatalities reported in these industries. This is the 3rd Electrical fatality in 2005. There were three Electrical fatalities in the same period in 2005.

The information provided in this notice is based on preliminary data ONLY and does not represent final determinations regarding the nature of the incident or conclusions regarding the cause of the fatality.
Root Causes

- Standards and controls were inadequate. Management failed to inspect and verify that the guy wire was installed properly.

- The provided guy wire on the power pole was not installed in accordance with the National Electrical Safety Code. The guy wire was not provided with two insulators installed to include the exposed section of the guy wire between them. The slackened guy wire contacted the energized transformer supply conductor below the provided insulator, thus energizing the wire.
Fatalgrams and Fatal Reports
“Safety and Health are Values”

Fatality #38 - May 4, 2006
Jurisdiction determined 09/05/06
Electrical - Surface - Virginia
Consolidation Coal Company - Buchanan Mine #1

COAL MINE FATALITY - On Thursday, May 4, 2006, a 40 year old contractor with 2 1/2 years of experience was electrocuted while clearing brush from the right-of-way of a 12,470 VAC transmission line. The miner touched a loose guy wire causing it to contact an energized conductor on the pole. There was no insulator, ground, or proper anchor at ground level preventing the guy wire from becoming energized.

Best Practices

- Connect guy wires securely to the system ground, and/or properly install insulators to protect miners in the event of a breakage.
- Anchor guy wires where they will not be contacted by vehicles and equipment or be disturbed by maintenance personnel.
- Examine areas surrounding electrical installations for potential hazards before beginning any work, including trimming weeds and brush.
- Mark guy wire anchor points for easy identification.

This is the 38th fatality reported during calendar year 2006 in the coal mining industry. As of May 4th in 2005, there were four fatalities reported in coal mining. This is the first fatality classified as Electrical in 2006. There were no electrical fatalities at this time in 2005.

The information provided in this notice is based on preliminary data ONLY and does not represent final determinations regarding the nature of the incident or conclusions regarding the cause of the fatality.
ISSUE DATE: 03/27/07
PROGRAM INFORMATION BULLETIN
NO. P07-06
FROM: KEVIN G. STRICKLIN
Acting Administrator for
Coal Mine Safety and Health
FELIX A. QUINTANA
Administrator for
Metal and Nonmetal Mine Safety and
Health
SUBJECT: Guy Wires of Poles
Supporting High-Voltage Electric
Power Lines
Background

There have been several fatalities attributed to energized guy wires. The most recent fatality occurred on July 27, 2006, at a crushed stone operation. The accident occurred when a laborer, with two years experience, struck the guy wire of a power pole while using a weed trimmer equipped with a circular steel blade to cut weeds and brush near the pole. The blade severed the guy wire, causing it to contact the 23,000-volt energized conductors of the pole mounted transformer and electrocuting the laborer. An illustration of the hazards leading to this fatality is attached. On May 4, 2006, an independent contractor at a coal mine was electrocuted while clearing brush and timber from the right-of-way of a 12,470-volt transmission line. The victim contacted an energized guy wire that was used to support a pole-mounted transformer bank installed in the right-of-way. On September 19, 1990, a fatality occurred at a coal mine while the victim was moving a loosened guy wire and contacted one phase of the energized high-voltage electric power line. These fatalities could have been prevented if the guy wires had been properly grounded or insulated in accordance with the above referenced standards.
MSHA inspectors and mine operators should:

- Ensure that each guy wire extending from power poles supporting energized high-voltage power lines are securely connected to the system ground or are provided with properly rated insulators installed near the pole end of each guy wire. Generally, the insulators are installed at least eight feet from the guy wire anchor point and/or in such manner that if the guy wire becomes loose it would not contact the energized conductors.

- Examine the area around guy wire installations for potential electrical hazards before trimming weeds and brush or otherwise working in the vicinity of guy wires.

- Ensure that the guy wires are properly anchored to ground and that anchor points are marked for identification.
HAZARD ALERT BULLETIN

ENERGIZED GUY WIRES HAVE ELECTROCUTED TWO MINERS IN 2006

BEST PRACTICES FOR THE MINING INDUSTRY

1) Connect guy wires securely to the system ground, and/or properly install insulators to protect miners in the event of a breakage.

2) Adequately anchor guy wires where they will not be contacted by vehicles/equipment or disturbed by maintenance personnel.

3) Examine areas surrounding electrical installations for potential hazards before beginning any work, including trimming weeds and brush.

4) Mark guy wire anchor points for easy identification.

METAL/NONMETAL MINE FATALITY - On July 27, 2006, a miner was fatally injured using a weed trimmer to cut weeds near a power pole when he struck the guy wire for the pole. The blade severed the guy wire, causing it to contact the energized supply conductors on the pole mounted transformer and electrocuted him.

COAL MINE FATALITY - On May 4, 2006, a miner was fatally injured while clearing brush from the right-of-way of a 12,470 VAC transmission line. The miner touched a loose guy wire causing it to contact the energized supply conductors on the pole to which it was attached. There was no insulator, ground, or proper anchor at ground level preventing the guy wire from becoming energized.
Aggregate mining requires screening to separate material into various sizes. The abrasiveness of the material results in extreme wear to these screens, which require frequent replacement and maintenance. Generally, replacing the screens requires miners to work in elevated, potentially precarious work areas.

**Best Practices:**

**Task Hazard Analysis**
- Plan
- Identify Safety & Health Hazards
- Communicate

**Use Proper Fall Protection Equipment**
- Full body harness / double lanyard
- Approved ladders
- Certified man-lifts
- Cat walk or walkways
- Proper tie-offs
- Safe access to tie-offs
- Work platforms
The mining industry uses various pieces of mobile equipment in their day to day operations. Safe access onto and off this equipment is essential. The failure of equipment operators to use three points of contact, while climbing onto these machines, has resulted in numerous injuries. Three points of contact is when a miner uses two hands and one foot or one hand and two feet. Safely accessing mobile equipment using this procedure is an important STEP in reducing injuries.

Best Practices:

- Hands need to be free to make three points of contact.
- Footwear needs to be free of grease, oil, dirt, and have good traction.
- Handrails and steps need to be properly maintained and are:
  - Free from debris
  - Free of defects
  - Properly secured
- Visually inspect landing areas for trip or slip hazards.
- Face the equipment when mounting or dismounting.
- Utilize access provided by manufacturer.
- Landing areas need adequate illumination.
- Provide means to hoist materials (i.e., tools, lunch buckets, etc.)

Developed in cooperation with the following Quarry & Open Pit Group Members:

- PCS Phosphate; Swift Creek Mine, White Springs, Florida; (Team Leader)
- Quarries Inc.; Everlasting Pink; Elberton, Georgia
- Lafarge North America; Lithonia Plant, Lithonia, Georgia
- Lafarge North America; Newton County Mine; Newton, Georgia
Contractor safety is ultimately the responsibility of the mine operator. Whether the contractor is a overnight delivery truck driver, a contract maintenance worker, or a driller working on a highwall, it is the mine operator who needs to ensure that he is ready to fulfill the contract… safely.

**Best Practices:**

- Know your contractor(s).
- Verify that contractor has a training plan when required
- Ensure contractor understands minimum requirements of MSHA, State, and company rules, regulations, and policies
- Verify that all contractor employees have completed their new miner training, annual refresher, etc.
- Include contractors in weekly tailgate safety meetings.
- Provide adequate site specific training to contractors, tailored to the work they are to perform.
- Establish a direct contact person to interact with contractors

Developed in cooperation with:
5 R Constructors Quarry, 5R Constructors, LLC, Atlanta, Georgia (Team Leader)
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