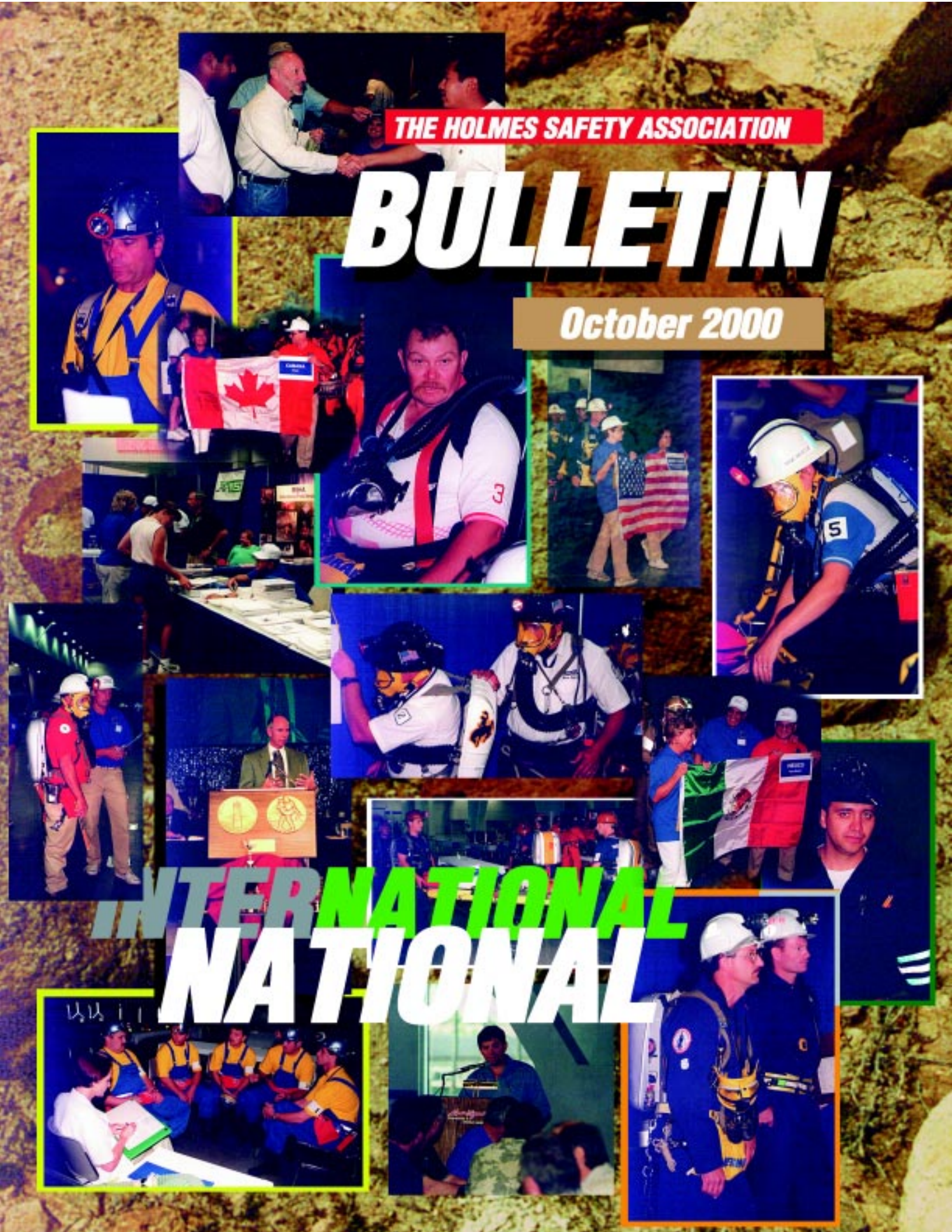

THE HOLMES SAFETY ASSOCIATION
BULLETIN
October 2000
INTERNATIONAL
NATIONAL

CONTENTS:

The Holmes Safety Association Bulletin contains safety articles on a variety of subjects: fatal accident abstracts, studies, posters, and other health and safety-related topics. This information is provided free of charge and is designed to assist in presentations of groups of mine and plant workers during on-the-job safety meetings. For more information visit the MSHA Home Page at www.msha.gov.

Please Note: The views and conclusions expressed in Bulletin articles are those of the **authors** and should not be interpreted as representing official policy or, in the case of a product, represent endorsement by the **Mine Safety and Health Administration.**

Cover: Cover design created by the AVMDB Graphic Design Shop. If you have a potential cover photo, please send an 8"x10" print or digital image on disk at 300 dpi resolution to Donald Starr, Holmes Safety Association Bulletin, National Mine Health and Safety Academy, 1301 Airport Road, Beaver, WV 25813-9426.

Keep Us in Circulation--Pass Us Along

Poland, Wyoming, Kentucky and New Mexico Are Big Winners in Las Vegas at the First National/ International Metal/Nonmetal Mine Rescue Competition

Thirty-one national mine rescue teams from eleven states and seven international mine rescue teams gathered in Las Vegas on July 18-19, 2000, to match their skills in the first National/International Metal/ Nonmetal Mine Rescue Competition. International competitors included mine rescue teams from Canada, Mexico, Peru, Poland, Ukraine, and the United States.

The first stage of the competition is designed to test the knowledge of these miners who might be called to respond in a real emergency. A hypothetical mine emergency problem - such as a cave-in, fire or explosion is designed and presented to the team. As they proceed through a maze designed to resemble the challenge of an actual underground mine, judges evaluate the team on their adherence to mine rescue procedures and the time in which they complete specific tasks.

For the year 2000, the following teams captured the six top trophies for their performance:

National Champion

OCI Blue Team, OCI of Wyoming, L.P.

International Champion

Poland

(See next page)

National

Second Place Team

WIPP Blue; Westinghouse WIPP

Third Place Team

Raiders; Dravo Lime, Inc. - Maysville Operation

Fourth Place Team

FMC Red Team; FMC Corporation - FMC Mine

Fifth Place Team

Blue Team; General Chemical Corporation

Sixth Place Team

WIPP Silver; Westinghouse WIPP

International

Second Place Team

United States of America

Third Place Team

Peru

(See next page)

Bench

The event features competitions in other areas of mine rescue as well. Benchmen are those individuals who hold the responsibility of maintaining rescue equipment for the team. Requiring them to thoroughly inspect breathing devices for tampering, identify, and correct the problem in the shortest period of time tests the skills of the Benchmen.

National Champion

BG-4 Contest Benchman: Joe Baca, Westinghouse WIPP Blue

National Champion

BG-174
Benchman: Richard West
Westinghouse WIPP Silver

National Champion

Bench (Bio Pak)
Benchman: Rod Clement
Zinc Corporation of America-No. 4 Mine and Mill

First Aid

In the First Aid phase of the contest, teams compete while demonstrating the most effective and safest method for caring for an injured miner. First place honors in this division were captured by the Raiders of Dravo Lime Incorporated, Maysville Mine.

For a complete listing of the mine rescue teams and their standings in the 2000 National/ International Mine Rescue Competition, visit the MSHA website at www.msha.gov.

National Champion

First Aid
Raiders
Dravo Lime Inc. - Maysville Mine

Metal and Nonmetal Mine Rescue Hall of Fame 2000 Inductees

The Metal and Nonmetal Rescue Hall of Fame was established by the Mine Safety and Health Administration to honor individuals who through their accomplishments and commitment stand out as exceptional in the field of mine rescue.

Leaders in the field of mine rescue acknowledge that everyone in the mine rescue community deserves respect for their sacrifice and dedication. Nevertheless, some individuals stand out for their lifetime dedication and commitment to this unique and challenging field.

Inductees are nominated on the basis of three criteria:

Significant contribution to the establishment of M/NM National Mine Rescue Contest.

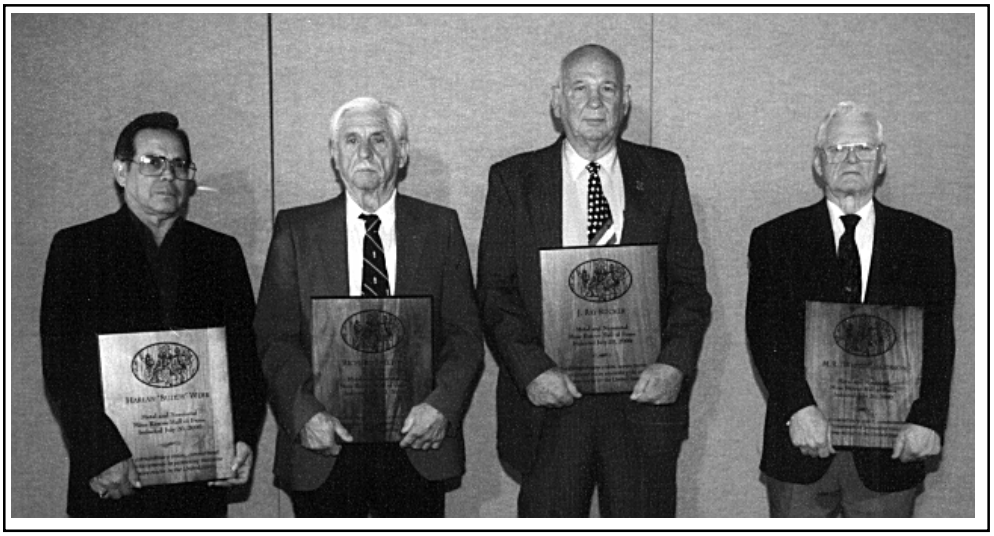
Active participation with mine rescue teams.

Major influence on mine rescue.

Individuals nominated are presented to the National Metal and Nonmetal Mine Rescue Advisory Committee for consideration. The selected individuals are honored locally for regional competitions and their names are inscribed on a trophy in recognition of this honor. The trophy is displayed prominently at the National Metal and Nonmetal Mine Rescue Contest and at the National Mine Health and Safety Academy between contests.

The following individuals were honored with induction into the Metal and Nonmetal Hall of Fame 2000:

M. R. "Whitey" Jacobson
R. J. Rucker
Richard Skelton
Harlan "Buddy" Webb



From Left to Right; Harlan "Buddy" Webb, Richard Skelton, J. Ray Rucker, and M. R."Whitey" Jacobson

Winter Alert Season is Here!

Remember the Four Lines of Defense:

- Ventilation
- Mine Examinations
- Control of Ignition Sources
- Rock Dusting

"Boats Are Equipment Too"

Article taken from the MSHA Post Accident Investigation Remedies

Since 1995, thirteen miners have drowned while working on dredges and boats. In a recent case, a miner drowned when his boat sank while he was trying to retrieve a broken cable from a river. The boat was being operated with the bow facing downstream. The boat sank when the cable came on top of the boat, caught on the motor (effectively "stern anchoring" the boat), and pulled the boat under. The victim was not wearing a life jacket.

The boat used was a relatively small "John" boat, less than 14 feet long, of the type commonly used for recreational fishing. It was equipped with a 6 h.p. engine.

To prevent such accidents, mine operators should do the following:

1) Boats, like any other equipment, should be of adequate size and power to perform properly in the anticipated task. Remember that weight capacity includes persons, motor, gear, and any other load. If a retrieval operation is undertaken, the weight of the retrieved item must be considered.

2) As with any equipment, boats should be operated by qualified individuals who have adequate experience or training to perform the expected task. If personnel will be expected to operate a boat, they should, as a minimum, take a safety course such as those offered by the Red Cross or Coast Guard Auxiliary. Information on boat-safety training resources can be found at:

http://www.uscgboating.org / saf/saf_course.asp

3) Establish and enforce policies for wearing Personal Flotation Devices (PFDs). Like seat belts on equipment, PFDs are effective only when they are worn. Provide quality PFDs of the proper type, and appropriate for each employee's size and weight. Types I and V PFDs are the only types that should be considered for a working environment. Type I's are designed to turn an unconscious person face up in the water. This feature would be particularly desirable if there is any chance an employee might work alone, even for brief periods of time. Type V's (marine work vests) are available in designs that allow freedom of movement, while providing adequate flotation. Maintain the PFDs in serviceable condition, and replace them if they become worn or damaged.

To illustrate the importance of wearing a life jacket consider this statistic. In 1998 (latest year for which data are available), the U. S. Coast Guard reports that there were 574 drownings related to recreational boats. The Coast Guard believes that 509 of these, or nearly 90 percent, would have been prevented if the victims had been wearing life jackets.

The mining industry is strongly encouraged to consider and adopt these precautions. MSHA believes that unnecessary injuries and fatalities could be avoided in the future as a result.■

"John" boat, type commonly used for recreational fishing.

"Don't Lower the Boom on Yourself"

Article taken from the MSHA Post Accident Investigation Remedies

Recently, a miner was fatally injured when exiting a rough terrain forklift. The miner set the parking brake and with the engine running, attempted to exit out of the right side of the cab under the raised boom. As he was exiting the cab, he became entangled in one of the hydraulic control levers and the boom lowered onto him resulting in crushing injuries. MSHA suggests barricading the access into pinch point areas. One method to consider is bolting or welding a mesh across this opening on the boom side of the cab. This would not only prevent anyone from entering or exiting through a hazardous point, but would also prevent the operator from accidentally getting his arm or even his head in a pinch point during operation. This protective mesh also could be used on continuous mining machines, shuttle cars, crawler excavators and back-hoes, or any other equipment that has a boom on the side of the operator's compartment.

A Post Script. There is another safety concern with these types of machines. When the cabs are provided with windows, it is extremely risky, possibly fatal, to wash the boom side window while under the raised boom. Always lower the boom all the way down, or securely block it before performing any maintenance.

Chutes and Bins: Stop the Flow - Prevent Accidents

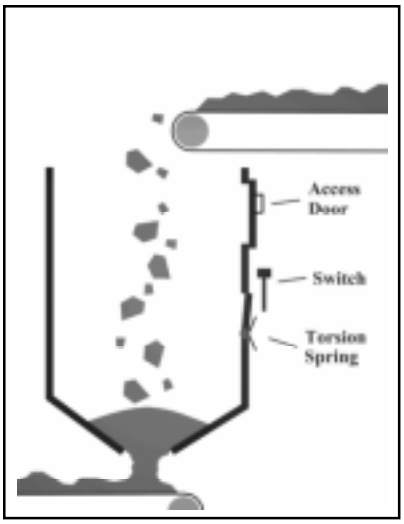
POST ACCIDENT INVESTIGATION REMEDIES

Recently a miner was seriously injured when he opened a rock chute access door and material unexpectedly poured out on him. The chute involved in the accident had several switches to shut off the flow of material to the chute, but none of them was effective in keeping the chute from over-filling.

Several methods are available to stop the flow of material to a chute or bin and prevent spillage. These include the use of sonic or optic sensors, tilt switches, and rotating-vane type indicators.

Aside from commercially available switches, you can fabricate and install a simple switch mechanism in the side of a bin or chute that will shut off the feed belt by sensing the pressure of material against the side of the enclosure. Switches of this type can be installed at any level and if placed right below an access door, will keep material from spilling when the access door is opened.

To install the switch, cut out a small panel, on the order of 8 by 8 inches, from the side of the bin at the level where you'd want to shut off the belt and limit any further material buildup. Cut this panel out carefully because the cut-out piece will be used as a hinged pressure plate. Attach the panel back in its original position using a hinge and a torsion spring mounted along the bottom of the panel. Position and wire an electrical switch such that when pressure on the side of the enclosure pushes the hinged panel outward, the switch will be activated and shut off the feed belt.



Whatever method you use, MSHA urges you to ensure that your bins and chutes are equipped to effectively prevent spillage. By stopping the flow of material before spillage occurs you not only eliminate manual clean-up work, but you prevent the type of accidents associated with such work.

"Bad Weather Box"

Article taken from the MSHA Post Accident Investigation Remedies

Since 1983, seven miners have died and over fifty were permanently disabled from slips or falls while climbing up on large surface mining equipment. Foul weather magnifies the hazards. It takes very little ice, rain, or mud to make the climb many times more hazardous. If the equipment operator has to carry a lunch box, water jug, tool kit, logbook, or other objects up the steps, the hazards increase. The Mine Safety and Health Administration would like to share a couple of easy, inexpensive safety remedies with you that could lead to a safer workplace.

1. Mount a "Bad Weather Box" near the steps and accessible from the ground. The weather-proof box should contain at a minimum:

❒ A pair of cotton gloves for a better grip on wet or icy handrails

❒ A flashlight for the walk-around inspection at night or in gloomy weather

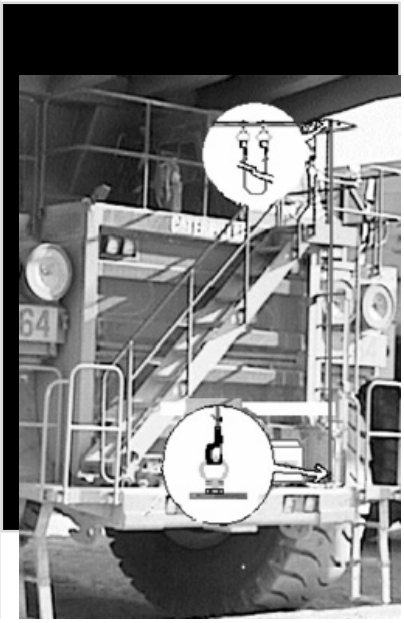
❒ Paper towels

If the space in the box permits, a can of de-icer, and even a bottle of glass cleaner for mirrors, windows, or camera lenses could be added.

2. Attach a "Dog Leash" to a rail for lifting lunch boxes, water jugs, tool kits, etc. Make the line long enough so that the end is also accessible from the ground. This will allow the operator to use both hands on the rails (maintain three points of contact) while climbing the steps, a good idea regardless of the weather. A plastic coated clothes line with a dog leash-type snap works well for this application. After the operator reaches the deck of the machine, the gear can be pulled up with the leash and connect the free end to the top eye-bolt. At the end of the shift the operator can lower the gear and reconnect the free end of the line to an eye-bolt anchor at the ground level, ready for the next operator. The mining industry is strongly encouraged to consider and adopt these precautions. MSHA believes that unnecessary injuries and fatalities could be avoided in the future as a result.

Mounted "Bad Weather Box"

"Dog Leash" Device



2000 TRAM/National Mine Intructors Conference Training Material Competition Winners

An important feature of the TRAM/National Mine Instructors Conference is the annual training materials competition. Materials were judged on the basis of their ability to address mine health and safety issues, their originality in content or techniques, and their usefulness to mine health and safety trainers. The winners were presented a plaque and certificate, and certificates of appreciation were given other entrants. There were ties in some categories. The Grand Prize Winner was given possession of a traveling trophy. The winners were:

ACADEMIA

Coal - Bevill State Community College for William the Welder, a hands-on demonstration

General - The Pennsylvania State University for Protect Your Respiratory Health, hard copy and computer disk

STATES

Coal - State of West Virginia for Jeopardy Board Game, Test Panel Substations CD, and Save Your Back video and

Pennsylvania Department of Environmental Protection for an Excel Based Mine Rescue Training program

MNM - Colorado Mine Safety and Training for Part 46 in English and Spanish, CD ROMs

General - Tennessee Department of Labor for Miner's Rights, PPT

INDUSTRY

Coal - American Electric Power for Electrical Safety in Underground Mining, a CD, a video, and a computer disk

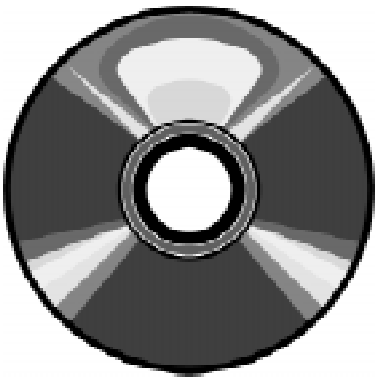
MNM - Hilltop Basic Resources, Inc., Part 46 Training Plans and Martin Stone Quarries for Stay Out and Stay Alive, workbook and video

General - Morton Salt for Lock-out, Tag-Out and Hoisting and Graymont Inc. for Task Training Tracking

GRAND PRIZE

Colorado Mine Safety and Training for Part 46 in English and Spanish, CD ROMs

In addition to the winners, one entry was clearly outstanding, as deemed by the participants. The Virginia Department of Mines, Minerals, and Energy's updated HALT series of books and CD's useful in training coal miners, was highly praised by many of the viewers. The Department filled many requests for their materials at their exhibit booth.■



U.S. Steel Mining Company, Pinnacle Team Takes Top Honors at 7th Annual Coal River/ Aracoma Mine Rescue Contest

Story submitted by Sharon Cook, Educational Field Services

This year's event was dedicated to Boone County mine rescue teams of the past 20 years.

It was the first time the contest had been held in conjunction with the annual West Virginia Coal Festival.

Five teams competed in the event: U.S. Steel Mining Company, LLC Pinnacle; Eastern Associated Coal Corp., Southern Appalachia Mine; Massey Coal Elk Run Team; Eastern Associated Coal Corp., Federal No. 2 Team; and the Mingo Logan Coal Company, Mountaineer Mine Team.

Taking first place honors this year was U.S. Steel's Pinnacle Team, under the direction of team captain Richard Crockett. Other team members are; Mike Plumley, Bob Perry, Paul Smith, Darrin Blankenship, and Larry Hager. Alternate team members are Larry Hedrick and Mike Vickers, and the team manager is Don King.

Eastern's Federal No. 2 took second place. Team members are John Sabo, captain, and member Kevin Kucish, Tim Fleeman, Rick Matheny, Robert Brown, Edger Huggins, Harry McGinnis, and team manager Gary McHenry.

Boone-based Southern Appalachia team finished third place. Team captain is Harvey Ferrell and the members are Clarence Dishmon, Jackie Repass, Wayne Stafford, Nick Reeves, Jeff Spratt, Danny Acord, and team manager is Danny Spratt. David Blankenship is an alternate on the team and he also took first place in the bench competition.

The second Boone-based team in the contest was Massey Coal's Elk Run team, which placed last in the competition. Wayne Persinger is the team captain and other members are John Litton, Nate Landy, Terreal Blankenship, Keith Amick, Mike Stone, Jim Aurednik, and John Click, team manager. Click and Blankenship also competed in the bench contest, placing fifth and third, respectively.

Finishing fourth in the competition was the Mountaineer Mine team, under captain Roosevelt Payne. Other team members are Brad Justice, Terry Shearer, George Gibson, Danny Fleenor, Randy Cross, Eddie Lawson and team manager Don Sparkman.

Sam Gray, President of the Coal River Council Holmes Safety Association, told the group the skills developed by the teams "are a valuable asset to the coal mining industry and your fellow miners."

Article taken from the Coal Valley News, Vol. 25, No. 25, dtd., June 21, 2000

Bowen Industrial Contractors Inc. Continue to Receive Mining Safety and Health Awards

By H.L. Boling CMSP
Executive Director
International Society Of Mine Safety Professionals

Some would call Bowen's last round of safety and health awards they received was like winning the Triple Crown. However, at Bowen's corporate headquarters in El Paso, Texas, the explanation to this outstanding, winning combination, is simply doing the right thing, for the right reason, because it's the right thing to do. "Our people are the single most important part of what we do. We can't do it without them. We personally feel that we are not only accountable but also have the responsibility to provide the safest, most productive atmosphere possible for our employees."

Because of Bowen's dedication to taking care of their people, this year the Bowen team received the Arizona State Mine Inspectors Safest Contractor Award for a contractor working on a mine site, The New Mexico State Mine Inspectors Safest Contractor Award for a contractor working on a mine site, and The International Society Professionals Safety Award for national and international mining properties. In addition to the mining awards, Bowen also received the Texas Contractor Safety Award for their work on properties involving utilities, gas refineries, municipalities, metal refining, and manufacturing companies. Bowen is known as a company that is versatile, innovative and caring, and the proof is in the results and the results are easy to understand when you talk to Bowen's management team. The International Society asked CEO Mike Bowen, President-Jody Newby, and Operations Manager Dave Newby "What do they contribute their success to?" Their collective answer was, "In a world of constant change, we know me must change with it to properly care for our people. It is very important we consistently keep a positive attitude toward our people, continuously improve our training process, build a relationship through positive reinforcement, set the example, never compromise the safe production process, and earn the trust of our people by using open and positive communication." It's this type of positive process that allows Bowen and their people to grow together as individuals and as a company.

Left to Right: Fred Ontiveros-Safety Director Bowen Industrial Contractors, Inc.; Pam Bingham-Safety Supervisor- New Mexico Division, Bowen Industral Contractors, Inc.; Rocky Umphres-Superintendent-New Mexico Operations, Bowen Industrial Contractors, Inc.; Gilbert Miera-New Mexico State Mine Inspector.

Left to Right: John Correl-Executive Chairman International Society of Mine Safety Professionals. Dave Newby-Operations Manager, Bowen Industrial Contractors, Inc.; H.L. Boling-Executive Director International Society of Mine Safety Professionals; Jodie Newby-President of Bowen Industrial Contractors, Inc.

Left to Right: Fred Otiveros Safety Director - Bowen Industrial Contractors Inc., Safety Director. Sharon Byram - Safety Supervisor, Arizona Division, Bowen Industrial Contractors, Inc.; Mke Bowen - CEO Bowen Industrial Contractors, Inc.; Douglas K. Martin - Arizona State MIne Inspector.

Status of Fatalities in Coal and Metal/ Nonmetal Mines

This article updates the status of fatalities occurring in both coal and metal/nonmetal mines from January 1, 2000, through June 30, 2000. Based on preliminary accident reports, as of June 30, 2000, forty-three fatalities have occurred at coal and metal/nonmetal mining operations. During this period, sixteen fatalities occurred at coal operations and twenty-seven fatalities occurred at metal/nonmetal operations. Powered haulage and machinery in coal and metal and nonmetal were the most frequent accident classifications that caused fatalities.

Illustration by Duran

The following charts give a breakdown of the fatalities for this period.

Metal and Nonmetal Fatalities by Primary Mineral Mined (1/1/2000 - 6/30/2000)

Accident Classification	Number of Accidents 1/1/2000-6/30/2000			
	Surface (Coal)	Underground (Coal)	Surface (M/NM)	Underground (M/NM)
Drowning			2	
Electrical		2		
Fall of Face, Ribs, Pillar, Highwall				1
Fall of Materials			1	
Fall of Rib		1		
Fall of Rib/Highwall	1			
Fall of Roof	1			
Ignition or Explosion of Gas or Dust	1			
Machinery	2	2	7	
Other		1		
Powered Haulage	3	1	10	2
Slip or Fall of Person		1	3	1
Totals	8	8	23	4

(See next Page)

Coal Mining Fatalities by State (1/1/2000 - 6/30/2000)

STATE	SURFACE	UNDERGROUND
Illinois	1	1
Kentucky	5	2
Utah		2
Virginia	1	1
West Virginia	1	2
TOTAL	8	8

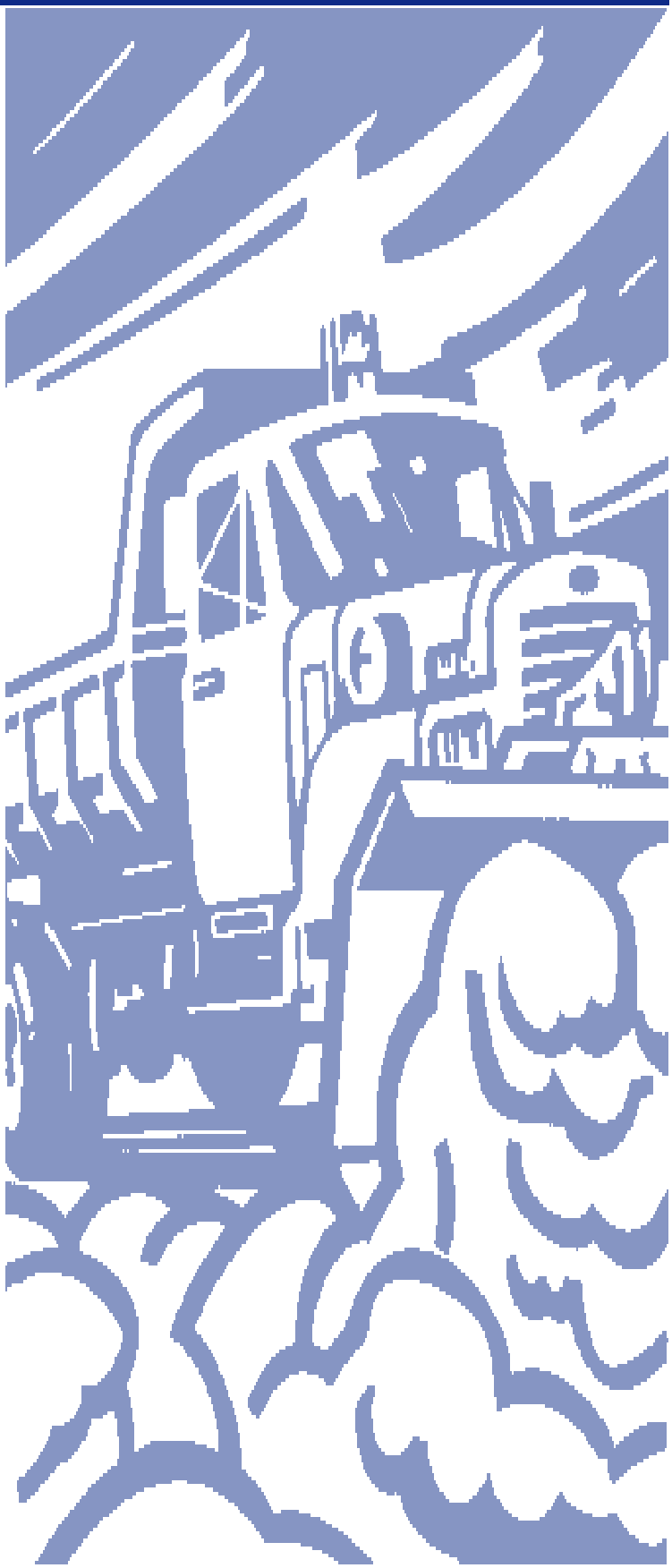
Fatalities - Coal and Metal/Nonmetal

Primary Mineral Mined	Surface	Underground
Alumina	1	
Amethyst	1	
Barite	1	
Cement	2	1
Copper		1
Dimension Stone	2	
Gold	1	1
Granite	1	
Graphite	1	
Lime	1	
Limestone	4	
Platinum		1
Sand and Gravel	8	
Total	23	4

Metal and Nonmetal Fatalities by State (1/1/2000 - 6/30/2000)

STATE	SURFACE	UNDERGROUND
Arkansas	1	
Arizona	1	
Colorado	1	
Georgia	1	
Indiana	1	
Louisiana	2	
Michigan	1	
Missouri		1
Montana		1
Nebraska	1	
Nevada	3	1
North Carolina	1	
Oklahoma	2	
Oregon	1	
Pennsylvania	1	
Tennessee	1	
Texas	3	
Utah	1	
Virginia	2	
TOTAL	24	3

Safe Snow Shoveling



Shoveling is a tough, calorie-burning workout that builds muscle with every lift—but if you don't do it the right way, you could hurt yourself. Here are 7 safety rules:

❄ 1. Start before the snow gets too deep or packed; fresh snow is lighter to lift.

❄ 2. Pace yourself. Go slowly and keep loads small and manageable.

❄ 3. Use a shovel designed for snow, not soil. A snow shovel is usually lighter, and has a broader, flatter, more efficient scoop.

❄ 4. Lift properly. Be sure to bend your knees, not your back.

❄ 5. Wear layers you can peel off, so you stay warm but don't get overheated.

❄ 6. Stop immediately if you are out of breath, light-headed, or feel chest discomfort.

(Vigorous exercise, coupled with exposure to cold, can trigger angina (chest pain) or even heart attacks in people with heart disease.)

❄ 7. *Warning:* If you are inactive, overweight, or have high blood pressure, a heart condition, or another medical problem, get your physician's okay for shoveling before you tackle the task.

Wellness

Physical Fitness

Physical fitness provides many benefits for mining personnel: reduced injuries and disease, improved performance on the job, weight control, better posture and appearance, increased energy and mental sharpness, and greater self-esteem. To get in shape and stay in shape, you need to conduct a regular program of vigorous exercise that addresses all four components of fitness:

- **Flexibility**
- **Cardiovascular fitness**
- **Muscular fitness**
- **Body composition**

Flexibility is the ability to move a body part through its full and normal range of motion. The stresses placed on the body during physical activity or exercise require adequate flexibility. If muscles are unable to lengthen to their maximum extent, people are more susceptible to sprains, strains, and other injuries.

Flexibility is important to everyone, but particularly miners whose work involves strenuous physical activity in restricted areas, slippery or otherwise unsafe conditions, awkward and/or heavy loads, requirements for rapid movement, etc. Studies have shown that greater flexibility reduces the likelihood of back injury.

This wellness article examines concepts and techniques for improving flexibility. It will discuss the major muscle groups and connective tissues in the body, and the elements of an effective workout. Then, it will consider factors that promote exercise adherence, the ability to stick with your plan and make exercise a regular part of your daily lifestyle.

THE MUSCULOSKELETAL SYSTEM

The musculoskeletal system's main function is to provide a means of support and locomotion. The word "musculoskeletal" clearly implies muscles and skeleton (or bones). Muscles that attach to bones provide a series of levers for the movement of body parts.

BONES AND JOINTS

Bones form the framework or scaffolding of the body. Despite its hard rigidity, bone is actually a living material that is constantly in a state of turnover as it breaks down old tissue and builds new bone.

If your skeleton was composed of one continuous piece of bone, you wouldn't be able to move. Thus, the skeleton is divided into many individual bones, and these bones meet each other at junctions known as joints or articulations. Common examples of joints are the ankles, knees, hips, vertebrae, shoulders, elbows, wrists, and jaw.

Some joints are known as "hinge" joints (such as the knee or elbow) which allow limited motion forward and backward, others are "pivot" joints that allow rotation, while still others are "ball and socket" joints (such as the hip and shoulder) which allow complex motion in many planes.

In general, joints that are capable of the most complex movements are also the most vulnerable to injury.

MUSCLES AND MUSCLE FIBERS

When you want to perform a certain movement, a message travels from your brain along a nerve to the muscle(s) that will accomplish the motion. Muscle fibers are thin strands of protein that contract and shorten in response to these signals from your nerves. After the contraction, the fibers relax and lengthen again.

Many thousands of these fibers are bound together within a sheath to form individual muscles. When a nerve signal is received, the thousands of muscle fibers shorten, latissimus dorsi pulls your upper arm backward and downward (the same motion

(See next page)

resulting in the contraction and shortening of the entire muscle.

Each end of a muscle attaches to a different bone on either side of a joint. Every muscle attaches across one side of a particular joint, while another ("opposing") muscle attaches across the opposite side of the same joint. In general, contracting one muscle "flexes" the joint (moves body parts closer together) while contracting the opposing muscle "extends" the joint (moves body parts further apart).

Every joint in your body (knee, hip, spine, shoulder, elbow, neck, etc.) is surrounded by a system of opposing muscles which exert their pull on the joint from opposite sides. Common examples include the biceps and triceps of the upper arm or the hamstrings and quadriceps of your thigh. (See the following section on "The Major Muscle Groups.") Good joint alignment is achieved by maintaining a balance in these opposing forces.

LIGAMENTS

Within any joint, the ends of the bones are held together by short, tough fibrous bands known as ligaments. In other words, ligaments function to keep bones in good alignment and in close proximity to each other, while preventing them from moving too far apart. If ligaments become torn or stretched (due to injury), this results in a "looser", less stable, and more vulnerable joint.

TENDONS

All muscles gather at each end into tough bands of tissue, known as tendons. These tendons attach the muscle firmly to bone. Tendons pull on bones at their attachment, effectively transmitting the contracting muscle's force.

Cartilage

A thin coating of material known as cartilage surrounds the ends of most bones. In some joints that support heavy loads (such as the knees and vertebrae), there are additional thick pads of cartilage situated between bones, acting as an extra protective cushion. The main function of this cartilage is to protect the ends of bones and prevent them from scraping against one another. Thus, cartilage permits smooth and pain-free motion in a joint.

THE MAJOR MUSCLE GROUPS

Trapezius (upper shoulder and neck)

The trapezius (or "traps") attaches along the upper spine and rear of the skull, and runs to the shoulder blade (scapula) and collar bone (clavicle). Contracting the trapezius causes a "shrugging" motion of the shoulder.

Deltoid (shoulders)

The deltoid (or "delts") attaches from the top of the shoulder blade (scapula) and collar bone (clavicle), runs over the shoulder, and attaches on the outside of the upper arm bone just below the shoulder. Contracting the deltoid raises the arm away from your torso.

Pectoralis (chest)

The pectoralis (or "pecs") attaches from the breast bone (sternum), runs across your chest and the front of your shoulder, and attaches to the outside of your upper arm bone just below the shoulder. Contracting the pectoralis pulls your upper arm forwards and across your chest.

Biceps (front of upper arm)

The biceps are two muscles that attach on the front of the shoulder, run across the front of the upper arm and elbow, and attach on the forearm bones just below the elbow. Contracting the biceps causes the arm to bend (flex) at the elbow.

Triceps (rear of upper arm)

The triceps are three muscles that attach at the back of the shoulder, run along the back of the upper arm and elbow, and attach on the forearm bones just below the elbow. Contracting the triceps causes the arm to straighten (extend) at the elbow.

Latissimus Dorsi (upper back)

The latissimus dorsi (or "lats") attaches to your spine, runs across your upper back and under your arm pit, and attaches on the outside of your

upper arm bone just below the shoulder. Contracting the latissimus dorsi pulls your upper arm backward and downward (the same motion that occurs during a pull-up or rowing).

Abdominals

The abdominals (or "abs") attach from the bottom of your rib cage, run across the front of your stomach, and attach to the top of your pelvis. Contracting the abdominals causes your torso to curl forward, bringing your ribs and pelvis closer together.

Buttocks

The buttock muscle is also known as the gluteus maximus (or "gluteals"). It attaches to the lower spine and back of the pelvis, and runs to the back of your thigh bone where it attaches. Contracting the gluteus maximus causes "extension" at the hip, just like when you stand up from a sitting or crouched (flexed hip) position.

Quadriceps (front of thigh)

The quadriceps (or "quads") consist of four muscles that attach from the front of the thigh bone, run downward across the front of the thigh and pass over the knee cap (patella). They attach to the front of the lower leg bone just beneath the knee cap. Contracting the quadriceps causes the leg to straighten (extend) at the knee.

Hamstrings (rear of thigh)

The hamstrings (or "hams") can be thought of as "biceps in your thigh." They are composed of two parallel muscles that attach on the back of the pelvic bone, run downward across the back of the thigh, pass behind the knee, and attach to the back of the lower leg bone. Contracting the hamstrings causes the leg to bend (flex) at the knee.

Calves (rear of lower leg)

The calves are more formally known as the gastrocnemius (or "gastrocs"). This muscle attaches on the rear of the thigh bone just above the knee, runs down over the back of the lower leg, and attaches underneath your heel. Contracting the gastrocnemius causes you to raise up on your toes ("plantar flexion").■

Mining Our History...

An Overview of Disaster Anniversaries

Written by Melody Bragg, Bulletin Staff Writer

113 Years Ago
Explosion
Reinicke Mine
Madisonville, KY
October 7, 1887

Three men were killed in this mine when a mixture of methane and coal dust was ignited. A shot firer loaded two holes in a breakthrough not quite connected. He lit one and retreated. The shot blew out, and the flame swept back through the mine to the shaft.

99 Years Ago
Explosion
Diamondville Mine
Diamondville, WY
October 26, 1901

Twenty-two miners lost their lives in this mine when gas was ignited while fighting a fire. Efforts were made to rescue the men trapped in the mine but they failed and the mine was sealed.

94 Years Ago
Explosion
Pocahontas Mine
Pocahontas, VA
October 3, 1906

An explosion in the St. Paul entry of this mine entombed 60 to 100 men. The cause of the blast was believed to be a blown-out shot of black blasting powder, fired on the solid, which ignited gas and dust. Rescue work was slowed by an immense amount of debris in the workings and a number of men in the south mine were almost suffocated before being rescued.

Thirty-four bodies were removed by October 6, and two rescue workers died from exposure to afterdamp.

90 Years Ago
Explosion
Starkville Mine
Starkville, CO
October 8, 1910

Fifty-six miners lost their lives in an explosion at this mine. A derailment of loaded cars displaced timbers and set in motion a shower of fine dust that had accumulated on the timbers. The trolley wire came into contact with the iron bar of the cars, creating an arc which ignited the dust.

89 Years Ago
Inundation
Wharton Mine
Hibernia, NJ
October 19, 1911

A new shaft had been sunk and had reached a depth of about 1,500 feet. At the same time, a drift several levels above the shaft bottom was being driven to tap some old workings. These workings had been abandoned and had filled with water so their exact extent could not be determined. On this date, blasting of a round in the face broke through, allowing water to enter and flood the drift and the shaft below its level. Miners working in the drift and adjacent levels escaped, but 12 men in and near the bottom of the shaft were drowned.

85 Years Ago
Explosives
Granite Mountain Mine
Butte, MT
October 19, 1915

Thirteen boxes of 40-percent gelatin dynamite exploded at the collar of the shaft. Fourteen miners were killed instantly and two others were fatally injured. The dynamite was loaded in a steel mine car preparatory to being lowered into the mine. The cause of the detonation of explosives is unknown but one supposition is that it was caused by a rifle bullet.

The Holmes Safety Association

presents

"Historic Review of Metal and Nonmetal Mine Disasters"

This is a special video produced by the AVMDB of the National Mine Health and Safety Academy, for the Holmes Safety Association. This video is a historical list of Metal Nonmetal Mining Disasters from 1869 to 1979. This video features a vintage collection of moving and still images from the time of the disasters, along with information such as the name of the mine, location, number of miners killed, date, and cause of the disaster. Cost for this video is a $3.00 donation to the Holmes Safety Association.

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Words to think about…

October is the fallen leaf, but it is also a wider horizon more clearly seen. It is the distant hills once more in sight and the enduring constellations above them once again.
Hal Borland - 1964

There is no season when such pleasant and sunny spots may be lighted on, and produce so pleasant an effect on the feelings, as now in October.
Nathaniel Hawthorne - 1841

To make democracy work, we must be nation of participants, not simply observers. One who does not vote has no right to complain.
Louis L'Amour - 1989

A man's maturity consists of having found again the seriousness that one had as a child, at play.
Nietzshce - 1886

NOTICE: We welcome any materials that you submit to the Holmes Safety Association Bulletin. For more information visit the MSHA Home Page at www.msha.gov. If you have any color and black/white photographs that you feel are suitable for use on the front cover of the Bulletin, please submit them to the editor. We cannot guarantee that they will be published, but if they are, we will list the contributor(s). Please let us know what you would like to see more of, or less of, in the ***Bulletin.***

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Fax us at 304/256-3524

Reminder: The District Council Safety Competition for 2000 is underway - please remember that if you are participating this year, you need to mail your quarterly report to:

Mine Safety & Health Administration
Educational Policy and Development
Holmes Safety Association Bulletin
P.O. Box 4187
Falls Church, Virginia 22044-0187

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1999-2001

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■ *North Carolina Department of Labor's Mine and Quarry Bureau will be hosting two Part 46 Instructor Fundamentals Institutes. These will be held:*

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Comfort Inn
Sylva, N.C.

January 8-11, 2001
Richmond Community College
Rockingham, N.C.