



# **BULLETIN**

## *December 1995*

NATIONAL MINE HEALTH  
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**INSIDE:** *Flyrock; Target practice;  
Safety at sea; Motivation*

Is  
this  
your  
last issue?

▶ See page 24

# **Joseph A. Holmes Safety Association Awards Criteria**

## **Type "A" Award – For Acts of Heroism**

The award is a medal with a Medal of Honor Certificate.

## **Type "A" Award – For Acts of Heroic Assistance**

The award is a Certificate of Honor.

## **Type B-1 Award – For Individual Workers**

(40 years continuous work experience without injury that resulted in lost workdays)

The award is a Certificate of Honor, a Gold Pin, and a Gold Decal.

## **Type B-2 Award – For Individual Officials**

(For record of the group working under their supervision)

The award is a Certificate of Honor.

## **Type C Award – For Safety Records**

(For all segments of the mineral extractive industries meeting adopted criteria)

The award is a Certificate of Honor.

## **Other Awards – For Individual Workers**

(For 10, 20, or 30 years without injury resulting in lost workdays)

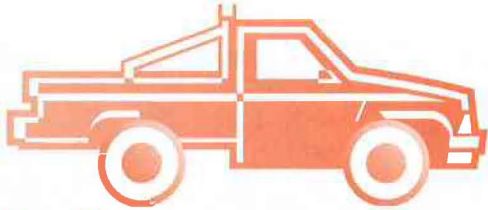
The awards are 30 years - Silver Pin and Decal, 20 years - Bronze Pin and Decal, 10 years - Decal bearing insignia.

## **Special Award – For Small Operators**

(Mine operators with 25 employees or less with outstanding safety records)

The award is a Certificate of Honor.

For information contact: Secretary-Treasurer, Joseph A. Holmes  
Safety Association (703) 235-8264



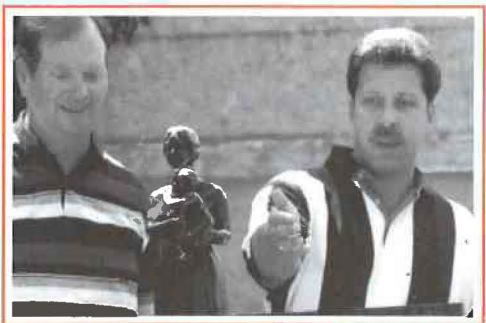
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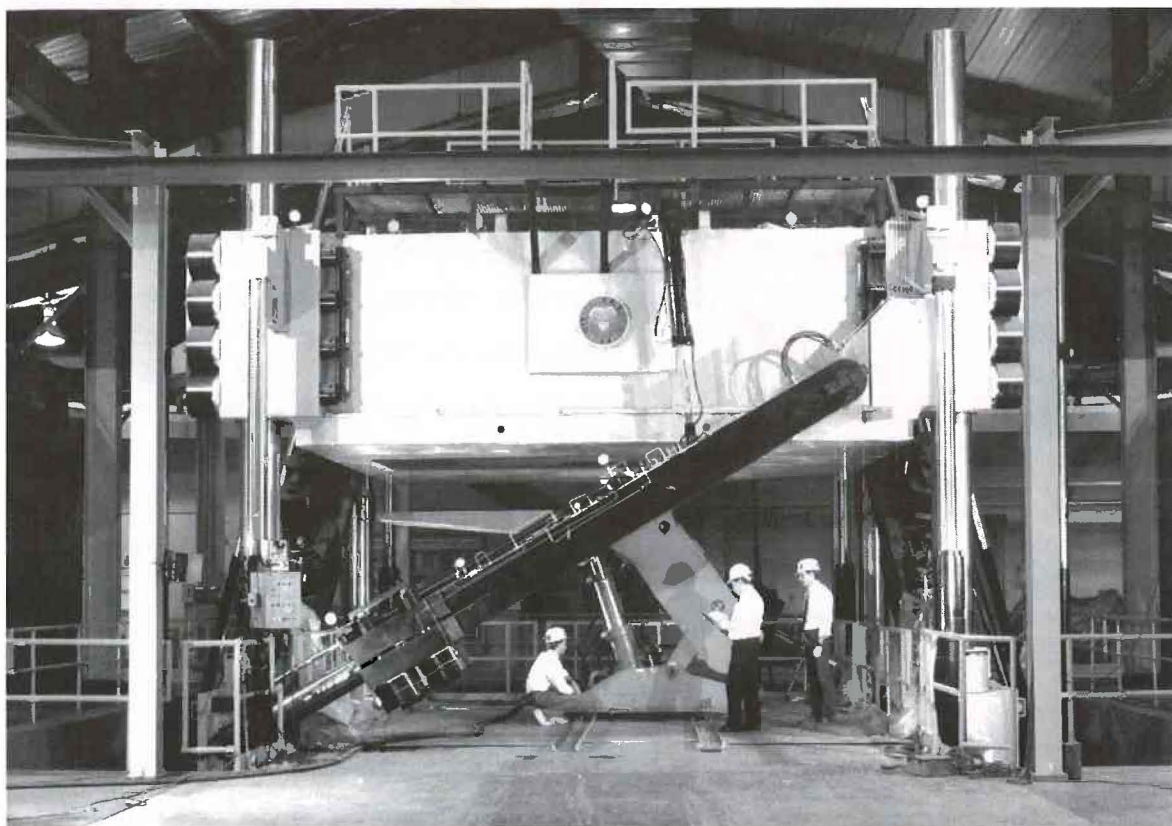
The *Holmes Safety Association Bulletin* contains safety articles on a variety of subjects: fatal accident abstracts, studies, posters, and other health and safety-related topics. This information is provided free of charge and is designed to assist in presentations to groups of mine and plant workers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

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 of the Mine Safety and Health Administration.

**KEEP US IN CIRCULATION—PASS US ALONG**

# 2

*Bureau of Mines' engineers preparing for a longwall test on the Mine Roof Simulator at the Pittsburgh Research Center.*



## *Mine roof simulator*

The Mine Roof Simulator (MRS) is a large hydraulic press located at the Pittsburgh Research Center of the U.S. Bureau of Mines (USBM) in Pittsburgh, PA. The MRS became operational in 1981. It is designed to simulate the load conditions imposed by underground mining and is used primarily to perform research on mine roof support structures.

The load frame has several distinctive characteristics. The size of the test space is the most noticeable characteristic. The load frame incorporates two 20-ft by 20-ft platens with a maximum vertical opening of 16 feet. The capability to provide controlled loading simultaneously in two directions is unique at this scale. Both vertical and horizontal loads can be applied by movement of the lower platen in the vertical

and one horizontal direction in reference to the fixed upper platen.

The capacity of the controlled vertical axis is 3 million pounds with a range of motion of 24 inches. The capacity of the controlled horizontal axis is 1.6 million pounds with a range of motion of 16 inches. The lateral horizontal axis has a reactive capacity of 1.6 million pounds with a range of  $\pm 0.5$  inches. Pitch, roll, and yaw are controlled to keep the platens parallel during load application. Rates of load application up to six million pounds per minute have been utilized. Controlled rates of displacement from 0.1 to 5.0 inches per minute are possible. Cyclic loading of a specimen to evaluate fatigue life can be provided with a maximum of two load and unload cycles per

minute for a stiff specimen such as a longwall shield.

Both stiff and soft specimens can be tested. Shock absorbers are incorporated into the load frame to absorb energy released during brittle specimen failure. The stiffness of the load frame is similar to that of laboratory rock testing machines.

Thirty-two channels of data are reserved for monitoring the performance of the load frame. Eighty-eight channels are available for specimen instrumentation. The specimen and machine data are stored on a computer disk. Data are normally recorded once each second, but higher rates up to 10 KHz can be attained if necessary. Video recording of test specimen failure is also available.

**Shield performance testing at the USBM**

The USBM is making its Strategic Structures Testing (SST) Laboratory available to the mining industry for shield performance testing. The SST Laboratory features a unique MRS that is specifically designed to simulate the load conditions that occur in longwall mining.

**Features of the MRS**

- Active vertical and horizontal loading
- Force or displacement platen control
- Static or cyclic loading capabilities
- Computerized data acquisition and processing

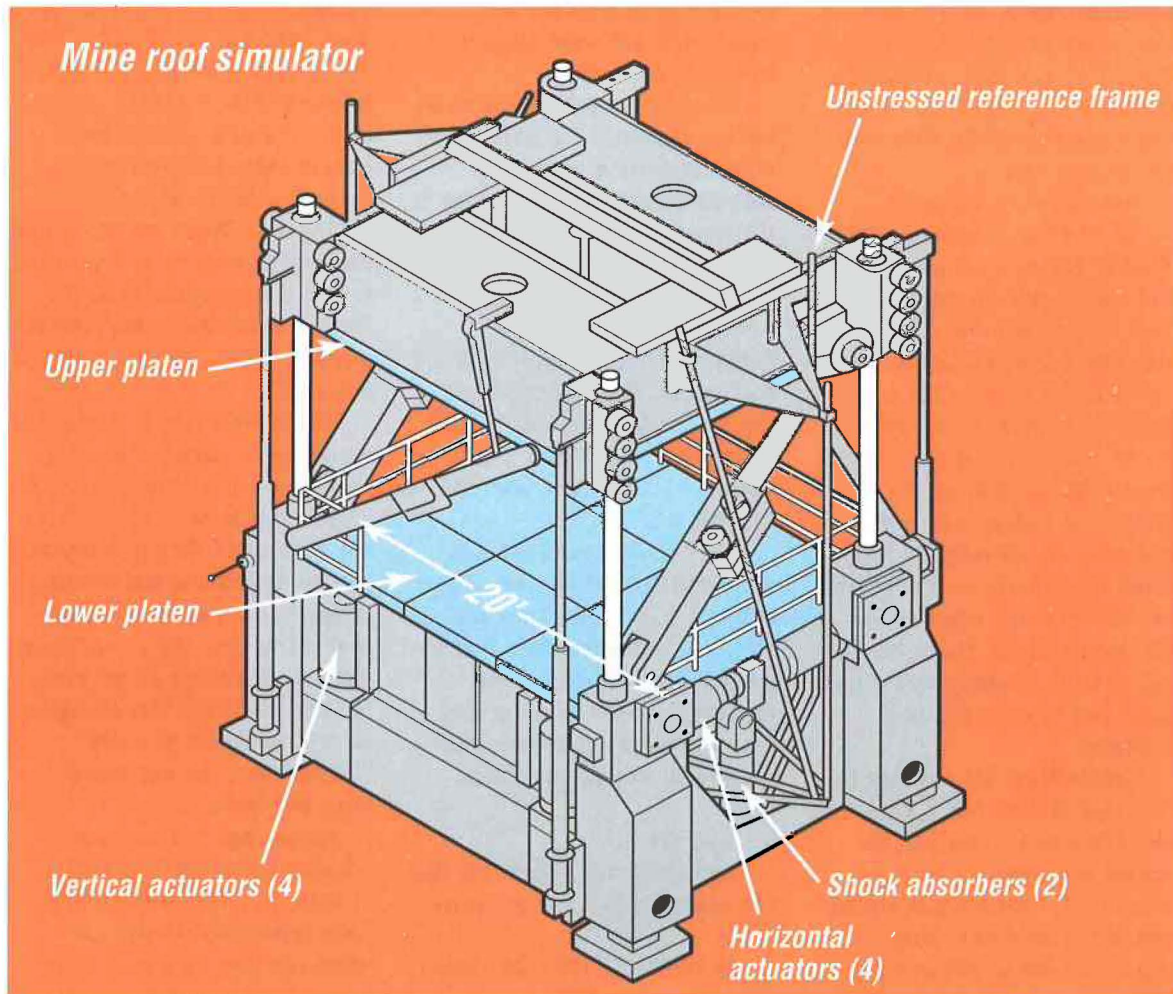
**Benefits of shield performance testing at the USBM**

- Active loading as opposed to testing in a static frame
- Controlled loading of caving shield and lemniscate joints
- Independent evaluation of support performance
- Convenient for personnel to witness tests
- Freedom of control over the test program
- USBM knowledge of shield mechanics

The most critical element of shield testing is to be able to control the load transfer through each of the shield components. This is accomplished much more effectively in an active load frame where the vertical and horizontal

displacements of Wee shield canopy relative to the base can be controlled. Tests that require several configurations in a static load frame can be incorporated into one load cycle in the MRS Trough combinations of vertical and horizontal loading. Fixtures can be easily installed in Wee load frame to establish a variety of roof and floor contact configurations when necessary, but critical tests such as "face-to-waste racking" and "zero roof friction" can be accomplished without any fixtures by taking advantage of the load frame's multiple degrees of freedom.

*For more information on shield performance testing at the USBM's SST Laboratory, contact Tom Barczak at (412) 892-6557 or 6550 or by fax at (412) 892-6891.*



## Top continuous miner producer in the country?

### Mine blends safety and high productivity

by Gary D. Jessey

Unicorn Mining, Inc., located on the Harlan and Leslie County border, has to be one of the most—if not the most—productive continuous-miner underground mines in the country. Rarely do you see a peak of 3,588 tons mined in one shift with one continuous miner and three shuttle cars. What about averages? Looking at a typical week, for example, this past Labor Day week, in five days they averaged right at 2,000 tons per shift—and that included the breakdown of a butterhead near the beginning of the first shift on the last day!

How are they doing it?

To find out, *Acquire's* **COAL TODAY** visited Unicorn Mining and spoke with its president, Tom Lackey, and the mine superintendent, Bo Caldwell.

Lackey, who runs the contract mine for Cyprus/ Amax, started in the mining industry in Logan, West Virginia right after graduating from college with a B.A. in business. He literally did just about everything. In the late 80s he, like so many other miners in the Appalachians, found himself out of work. "Nobody would hire me. I had to start my own company!"

Cyprus/Amax let out bids to mine the Hazard No. 4 seam and Lackey's was the low bid. He started the company on a shoestring. Cyprus/Amax already owned the structure. With a leased Lee-Norse 265 and two 21

SC cars as well as a \$200 credit with a local mine supplier (they bought and paid for supplies on a daily basis), he began mining in June of 1987. Many of the men he had worked with earlier came to work for him and are still with him today. With a seam height of 6 feet and a 40-50% reject rate, a high production rate was a must. Lackey and his crew worked up to 1,200 raw tons per shift with the old equipment, but were plagued with roof problems.

Wanting to open a new mine, Lackey approached a number of different mining machinery manufacturers in 1987, asking if their equipment could produce up to 1,200 tons per shift per section. He was told there weren't any. Lackey knew better—he was doing it with old equipment. The Jeffery people decided to sell him a new 1036 miner and shuttle cars and he opened up Mine No.2 just around the hill from No.1.

After a few weeks the new mine was struggling to produce between 1,200-1,400 tons per shift. Lackey remembers that he jumped on the men for not running a whole lot more coal than the other mine with older equipment and poorer conditions.

That did it.

Lackey started something that continues today—a competitive spirit.

As recent as 1993, he visited

a mine in Illinois. With conditions better than his, he saw two miners and four cars peaking out at 1,800 tons per shift. Currently running two mines, three sections (each with one miner) and six production shifts, each shift consistently averages around 2,000 tons. Yearly, they mine 3 million raw tons. Coal is sent straight to a Cyprus/Amax prep plant and the yield is about 41-45% or 1.3 million clean tons. They have driven 4.5 miles into the Hazard seam and are about finished with it. Lackey plans to open up a new area in the Hazard seam before winter.

Lackey talked about his equipment. "When we buy a new continuous miner, we expect it to last three million tons. We finance it for two years then buy another. We're always paying for a miner."

The normal life of a miner is, according to Lackey, "About a million and a half tons. Then it usually has to be rebuilt." But due to state-of-the-art equipment and an aggressive maintenance program, such as flushing the gear oil in the cutter head *each week* and sending an oil sample for wear analysis plus changing all critical bushings every 500,000 tons, the equipment lasts and lasts.

Lackey has two new Joy 14CMs and two Jeffrey 1026 miners. The 1036 Jeffrey has been retired but is still used when opening up a new mine.

Both Joys are in operation and the older Jeffreys are rotated for repairs which are done at the mine site. Lackey likes the dependability of the Joy motors and the gearing of the Jeffreys.

After Lackey described the enormous equipment costs involved and other expenses such as a 90% workers' comp rate, COAL TODAY asked, "How do you stay in business?"

"Production," Lackey's replied. "The average continuous miner section in the eastern United States produces 575 raw tons per unit shift. We are producing about four times that (the average longwall shift produces 3,575 tons, just under Unicorn's highest mark of production for this year)."

When asked how he gets this high production, Lackey looked at his superintendent, Bo Caldwell and said, "Bo is a genius!"

Bo grinned.

He certainly deserves a lot of the credit. Not only is he familiar with every job in the mines—he also worked his way up from the beltline. He has a great outlook and has initiated a number of ideas that work.

"I've never had an argument with more than one guy at a time. If I have a disagreement with an employee or a man doesn't do his job, we go off to the side and we have a private discussion. I've learned over the years not to get too excited over equipment. You can fix a cutter head and repair a planetary. You can't do that with a man. One of the hardest things about being superintendent is getting a phone call in the middle of the night reporting an accident involving an injury."

Unicorn mining has 140 employees. If a miner has had some bad luck—sickness or

accident—his name will be posted on an information board and others will contribute to help him out.

At 7:00 am, on the day of my visit, a piece of drill steel found its way on the conveyor belt heading toward the stacker. It stuck and sliced the belt longitudinally. By the time I arrived, it was repaired, coal was running, and they were hauling off the ruined belt. When there's a job to be done, everyone pitches in. Although two hours were lost, their production figures were still impressive. The three sections of the first shift produced a total of 5,552 tons—an average of 1,850 tons. The three sections of the second shift, with a two-hour advantage, produced a total of 6,841 tons—an average of 2,280 tons.

Lackey took me into the Copeland seam—about 150 feet above the Hazard seam. Everywhere else the seam is normally about 15" thick, but at this point it is 5'-6"—an extremely unusual, yet useful anomaly. Both mines have slate tops and bottoms and very little water. The coal is low sulfur, high Btu and low ash. Two rail mantrips, an Eimco and a Fletcher, move men and supplies. Back at the face where one miner cuts two different headings, the roof and floor roll up and down as much as 7%, sometimes pitching to the side at odd angles. When they have low cover problems with the associated roof falls, they stagger their headings. Yet, they still maintain high productivity. I asked if the three shuttle car drivers ever jump ahead of one another.

"In a heartbeat!" Lackey said grinning broadly. More competition.

His employees have a great work ethic and a good attitude.

The mine is super efficient.

When Lackey and Bo decided to initiate testing for drugs—a major problem in all industries—they knew they would have to soften the blow. After explaining that a drugfree environment is a safe environment, they told their employees what they *wanted* to hear... safety bonuses.

The men themselves pick teams of five, not unlike choosing teams to play basketball. If everyone on a team had no lost time accidents for six months, they received a \$100 bonus each. If one member of a team had a lost-time accident, no one on the team got anything. Because of a better comp rate, once a year they pool the savings, put all names of the men in safe teams in a hat and draw out names. The winners receive cash and prizes. Even injury-free miners on teams that didn't qualify for this drawing have their names put into a lower pool and some of these are winners. Annually, between \$20,000 and \$30,000 will be awarded. What an incentive for safety!

Production and safety. What else can you ask for? How about a great, congenial management staff! One of the employees told me that if he was offered as much as \$5 or \$6 an hour more to work somewhere else, he *wouldn't* change jobs.

Unicorn Mining has high productivity—perhaps the highest continuous miner productivity in the United States. The reasons are obvious.

*Reprinted from the October 1995 issue of Acquire's Coal Today.*

# 6

## A reminder about flyrock

Several months ago in this bulletin, we reminded blasters of the dangers of flyrock. At that time we pointed out that flyrock constitutes the most dangerous threat to personal safety attributable to blasting.

Since that time, the Explosives and Blasting Division has had to investigate a fatal blasting accident due to flyrock, which occurred on a road construction project in Pulaski County and is described on the next page. It should also be noted that during 1994, there were several non-fatal flyrock accidents that resulted in injuries such as broken bones, bruises and lacerations. In addition, last year in southern Indiana, a blaster was killed when he was struck by flyrock at a surface coal mine.

To avoid these types of accidents, it is imperative that the blaster take all necessary steps to protect everyone on the job, including himself, by adequately clearing the area and finding a safe place to initiate the blast. The regulations specify that all employees including the blaster must be at a safe distance or under sufficient cover before the blast is fired.

In training classes the question is often asked: "What constitutes a safe distance? Is 500 feet safe? 1,000 feet? 2,000 feet?" The answer has to be that there is no single distance that can be deemed safe. A safe distance will differ for every operation depending on size of the blast, pattern used, the type

of material blasted, the powder factor, etc. Ultimately it is a judgment on the part of the blaster in charge as to what distance is appropriate. Before deciding on a distance, the blaster must make an estimate of the maximum possible distance flyrock could travel from the shot.

Furthermore, he should never assume that the shot he is about to fire will behave as all the shots have in the past, but rather he should anticipate the worst possible case. There is a strong tendency in human nature to take things for granted, especially when everything has gone well in the past. If a blaster makes the assumption that he has no problems and lets down his guard even once, he is asking for serious trouble. That is why we strongly urge the blaster to be extra cautious in choosing a location to fire the shot.

Likewise, the stipulation for blasting "under sufficient cover" means that the blaster must have some type of protective barricade between himself and the trajectory of any possible flyrock from the blast. This obstacle can be a natural feature such as a hill, or man-made, such as a spoil pile. Often blasters will use the heavy equipment located on site as their protective cover. A word of caution, pickup trucks provide very little protection. A blaster standing behind the truck, crawling under the truck, or sitting in the cab has a minimal

amount of protection. The fatality in Indiana and one of the serious injuries in Kentucky occurred to blasters attempting to use pickup trucks as shields.

Portable blasting shelters made of heavy steel plates are available and are being more widely used as safe refuge for the blaster. These structures are large enough to allow the blaster to get inside and sturdy enough to deflect most flyrock. Whatever is used as cover should provide an added degree of protection which, when combined with a safe distance, precludes the possibility of a rock striking the blaster.

Finally and most importantly, the blaster should always locate himself in the direction opposite the intended movement of the rock. He should be "behind the shot" never "out in front." The explosives and blasting inspectors are paying close attention to the location where the blasters are firing the shots. However, they are present at a very small fraction of the blasts detonated by licensed blasters in this state. They can advise the blasters when asked and enforce the regulations when they are present.

However, it is the blaster himself who must decide whether he blasts from a safe location or places himself at risk.

*Larry Schneider  
Reprinted from the Kentucky Department  
of Mines and Minerals' Bulletin,  
Volume 2, 1995.*



## Blasting accident in Pulaski County, Kentucky

On April 13, 1995, at approximately 4:50 p.m., George A. Arthur, was struck and killed by flyrock from a surface blast he detonated. Mr. Arthur was a licensed blaster with sixteen years experience, initially on a surface coal mine and for the past three years for Hinkle Construction Company of Paris, Kentucky. At the time of the accident he was working on a road construction project in the Pulaski County Industrial Park near Somerset, Kentucky.

The victim was working alone on the day of the accident. He had drilled blast holes for most of his shift on the previous day, and continued drilling on the morning of the accident, Thursday, April 13, 1995. After he completed drilling, he proceeded to load the blast holes with explosives. Just before 5:00 pm he hooked up the nonelectric lead line and unrolled it to the location where he would detonate the blast. This placed him approximately 150 feet from the nearest loaded hole and behind a metal explosive

magazine about 4 feet square. He sounded warnings several times using a siren, then connected the lead line to a nonelectric blasting machine, shouted "fire in the hole," and detonated the blast.

The detonation threw clay and rock into the air. A single rock weighing approximately 51 pounds traveled to where Mr. Arthur was standing. This rock apparently struck a glancing blow on the edge of the magazine before striking Mr. Arthur on the back of the head. Mr. Arthur was wearing a hard hat at the time but it was no protection against the force of a rock as large as the one that struck him. Mr. Arthur, 34 years old, was pronounced dead at the site of the accident by the Pulaski County Coroner.

It was estimated that Mr. Arthur had loaded a total of 900 pounds of ANFO into 123 holes, each hole also contained a single nonelectric detonator and a pound cast primer. The boreholes were drilled in an

irregularly shaped pattern with approximately 6' burden and 6' spacing. The holes were approximately 10' deep with two to three feet of rock in the bottom of the holes. There was an average of 7.6 pounds of explosives loaded per hole.

The blast was delayed using a nonelectric shock tube system of surface delays and in-hole delay detonators and was designed to initiate in the area of the shot furthest from the victim first, and proceed down the shot toward the victim. It appears that the flyrock came from the lower end of the blast pattern which was the part nearest Mr. Arthur.

The direct cause of this accident was the failure to make certain that all persons were at a safe distance or under sufficient cover during the firing of this blast.

*Larry Schneider  
Reprinted from the Kentucky Department  
of Mines and Minerals' Bulletin,  
Volume 2, 1995.*

## Mining data by disc

Washington, D.C.—Digging up data about minerals and mining can be as simple as turning on your computer. A CD-ROM series produced by the U.S. Bureau of Mines (USBM) provides easy access to a motherlode of minerals information.

The latest edition of U.S. *Bureau of Mines Minerals and Materials Information* (August 1995) includes 1994 summary statistics on U.S. production and consumption of more than 90 nonfuel minerals; historical data on 34 key commodities; recent annual statistical reports on 45 different minerals; and selected mineral industry survey reports.

Publication of information on mineral production and consumption in the Middle East marks the first appearance of USBM international data on disc.

The new CD-ROM contains a collection of short technical bulletins that describe USBM research in such areas as mine health and safety, environmental remediation, pollution prevention, and materials conservation. A special report on improving safety at small underground coal mines and a 2-year bibliography of USBM publications and staff articles are also included.

The USBM updates this CD-ROM each quarter; the next disc should be

issued in October. Future editions will include a general introduction to the Bureau and its programs; an overview of the agency's successful technology transfer efforts; and a dictionary of mineral and mining terms.

The latest CD-ROM is available for sale from the Superintendent of Documents, Government Printing Office, for \$14.00 (\$17.50 foreign). The stock number is 02400402408-9. Fax orders to 202/512-2250 or call 202/512-1800.

*Reprinted from the August 1995 Bureau of Mines TIPSHEET.*

## ***Control risk first (read hazards), then think about insurance (read liability)***

Buying insurance is not the first step that an operation should take to protect against financial risk. The first step is to reduce the risks internally and then plan coverage needs to prevent financial disaster.

More insurance companies are seeing their role as essentially selling advice and information on controlling risk. Many agents jobs include acting as safety counselors to help companies reduce the chance of claims for injured workers by giving advice on making workplaces and job procedures that are safe.

Companies will continue to face financial risks, regardless of proposed legislation that would restrict the size of court judgments or reduce government's regulatory power. Legislation is not going to reduce risk. In fact, there will be more risk and insurance is not going to take care of it.

The way to control risk is through the implementadon of a complete safety program that is proactive in identifying and dealing with the hazards and potential for accidents in the workplace.

A complete safety program

must include an audit (complete inspection) of the workplace, evaluation of the data, remedial action through participation of the safety committee with management, effective task training and safety training for supervisors and employees, and be an ongoing process. Only then can risk be controlled.

**Once you control risk internally, then you think about insurance—and it will be much less costly.**

*Reprinted from the Summer 1995 issue of the Nebraska Mine Safety Training Newsletter, Kearney, NE.*

## ***Motivating workplace safety in small and medium operations***

The Insurance Research Council and the National Federation of Independent Business released the results of a national survey of approximately 3,200 small and medium business owners on preventing injuries and promoting safety in the workplace. The survey addressed owner attitudes and perceptions on important workplace safety. The researchers found that business owners in industries with a high risk of injury and in larger size categories were more concerned about workplace accidents and took more actions to prevent them than other business owners.

Forty-five percent of the

sampled firms considered workplace safety a significant problem or one of the most serious problems facing management. Thirty percent reported offering incentives to employees in the last five years for implementing safe work practices. Fifty-seven percent said they had fired or disciplined an employee for safety violations.

The six most common actions taken by sampled firms to increase workplace safety were providing personal protective equipment, conducting safety-related training, installing safety controls on equipment, conducting in-depth hazard inspections, adopting written safety rules, and

purchasing safer equipment. The most effective actions were safety-related training, providing protective equipment, and establishing a safety committee. Sixty percent of the companies sampled reported that they had designated one or more employees to work on workplace safety issues, and 79% had written safety rules. In the last five years, 61% to of the sample had requested and received a safety inspection from an outside source.

*Reprinted from the Summer 1995 issue of the Nebraska Mine Safety Training Newsletter, Kearney, NE.*

## Unique design for gas cylinder protection on welding cart

Like many mining operations, Holnam's Trident plant had some difficulty in satisfying the requirement to safeguard compressed gas cylinders on portable welding carts. The welders of the plant maintenance department considered the problem and came up with an inspector pleasing design that provides excellent protection. The carts were all built in-plant and have greatly improved the safety and ease of transportation.

The expanded metal cover provides protection from overhead falling objects as well as from objects that could be knocked into the cart from the same level. A

door on the front makes access to the valves easy and a metal bar, curved to fit the cylinders, secures the tanks in the cart. Large wheels and a wide handle on the back of the cart allows for easy movement when the cart is needed in a new location.



Arlene Weber, CSP, Personnel/Safety Manager, Holnam Trident Plant, 4070 Trident Road, Three Forks, MT 59752 (406) 285-3241

### **It takes one**

- ...minute to build a safety thought**
- ...hour to make a guard**
- ...week to study plant conditions**
- ...month to develop a safety program**
- ...year to make it operate**
- ...lifetime to make a good safe workman**
- ...second to destroy it with one accident**

Anonymous

## New catalogs available

The National Mine Health and Safety Academy has recently released complete catalogs of their courses and training materials.

**Courses for MSHA and the Mining Industry** is a 71-page booklet that lists and describes all of the health and safety training courses offered at the Academy. The course listings include offerings in subjects related to coal mine inspection, metal/nonmetal mine inspection, computer training, and general courses for MSHA and industry. Another section of the course catalog covers Certification and Qualification courses in subjects such as Impoundment Qualification, Coal Mine Noise Sampling, and Coal Mine Dust Sampling. The booklet also has a complete index to help users find what they need, a class schedule, and student enrollment forms.

The **1996 Catalog of Training Products** is a 115-page fully indexed book that lists all health and safety training videotapes and other materials presently available from the National Mine Health and Safety Academy. The book provides descriptions, prices, and ordering information for more than 800 items. The new catalog also features an updated list of Bureau of Mines-produced training materials and a listing of training packages developed by participants in MSHA's State Grants program.

To order copies of either or both of the new catalogs, call, write, or FAX the National Mine Health and Safety Academy at:

National Mine Health & Safety Academy  
Office of Academy Services, Box 1166  
Beckley, WV 25802-1166  
Phone: (304) 256-3257  
FAX: (304) 256-3299

# 10

## Target practice

Salt Lake City, UT—When the Salt Lake County (Utah) Sheriffs Office decided to build a new firing range, officers knew they wanted to make the facility as “green” as possible. U.S. Bureau of Mines (USBM) scientists in nearby Salt Lake City knew how to help. But it took the global information superhighway to get the two groups together.

“Making sure that what we do is environmentally sound is a big issue for us here in the county,” said Deputy Nicholas Roberts. “I’d been researching heavy metal contamination at firing ranges for four years. Then I discovered that the people with the answers were only miles away.”

On the Internet, Roberts found references to USBM work on cleaning up military firing ranges. Bureau scientists and Navy engineers have turned basic mineral processing techniques into a treatment process for getting lead from bullets out of soil.

### Cleaning up firing ranges

taught researchers some things about keeping them clean in the first place. So when Deputy Roberts came to the Bureau for advice, scientists were ready.

“From our remediation work, we’d learned how significant ultrafine particles of lead are. If you use sand instead of soil for the berm (that’s the area behind the targets where bullets land), you should be able to reduce fragmentation,” explained USBM scientist Jerold Johnson. These small lead fragments are most likely to be carried off the site by airborne dust or along water drainage routes.

“We looked at maintenance plans for the range,” Johnson said. “Because some fragments occur when bullets hit each other, we recommended a berm sampling procedure and schedule to determine the cleaning frequency of the berm.”

USBM scientists also helped the Sheriff’s Office design a one-of-a-kind waste treatment unit for the new range.

Deputy Roberts believes that the new facility, which will serve several law enforcement agencies, will be the Nation’s first self-cleaning firing range. It incorporates a piping and trap system to capture any water that drains from the area where bullets hit. Unique polymer beads containing peat moss (a water treatment developed by the USBM) will remove lead and other metals from the water.

“We want the water to be strained and filtered so that it comes off the range 100 percent clean,” Roberts said.

USBM scientists will help the Sheriff’s Office monitor how well the system performs. Roberts hopes to complete construction by late September.

“We’ve worked hand-in-hand with the Bureau to make the range a model,” Roberts said. “It’s simple, not that expensive, and we can keep our water and environment clean.”

*Reprinted from the August 1995 Bureau of Mines TIPSHEET.*

### **December 9, 1911; Cross Mountain Mine, Briceville, TN; 84 killed**

On that morning part of the force of 125 men remained on the surface waiting the arrival of more railroad cars in which to load the day’s output. At 7:20 a.m., when the explosion occurred, 89 men were in the mine; 5 survived the explosion and the resulting afterdamp by barricading themselves.

The mine workings from the 17th right and 17th left entries to the face of the main entry were affected by the explosion with greatest violence in the 23rd to 26th left entries. Rescue crews

immediately started restoring ventilation and were joined by apparatus crews under direction of [U.S. Bureau of Mines] Director Holmes and engineers of the Bureau of Mines. Apparatus crews explored and worked in advance of the men erecting brattices and recovering bodies. Apparatus crews rescued the men from the barricade and extinguished several fires. The consensus of opinion among the men wearing the breathing apparatus was that the mouth-breathing type was much preferable to the helmet, especially

under the conditions of low roof in this mine. The ignition was thought to have been caused by an open light, although there was also evidence that a blownout shot of black powder may have ignited gas and dust. Ventilation was weak, and fireboss inspections were incomplete. Workings were dry and dusty, although some sprinkling was done in main haulways.

*From Bureau of Mines report, by J. J. Rutledge, and State inspector’s reports.*

## Cheaper, shorter-lived locomotives?

Modern heavy-duty diesel-electric locomotives will last as long as 40 years with frequent regular maintenance. They also cost more than \$1.5 million each.

A research project should be developed and funded to determine whether the industry might be better off with less costly units that wouldn't last as long, a sub-group on vehicles, track and track/train dynamics recommended.

Locomotives have become increasingly expensive as railroads demand longer life and less

downtime for maintenance. And because customers are demanding more, builders are increasing prices.

The long life of locomotives has slowed the introduction of new technology, hurting the railroad industry in the long run.

The motor carrier industry replaces trucks on a four-to-five year cycle. That assures manufacturers of a steady market and encourages research and development expenditures.

Railroads deal with locomotive cost by continually seeking ways

to avoid buying new units. The lack of market certainty has led to reduced research and development efforts.

The need for research into customer needs and logistics is needed. Greater knowledge of customer motivation could allow carriers to develop service management plans that would allow them to retain a larger share of the added value of improved service.

*Reprinted from the August 1993 (Volume 28, Number 1) issue of the National Coal Leader.*

## Tree-compatible ground cover for reclamation

*By: John Torbert and James Burger,  
College of Forestry and Wildlife Resources*

Almost 90 percent of surface-mined land in Virginia is replanted with trees. One of the greatest facing tree planting efforts is competition from ground covers planted during reclamation.

Reclamation laws require surface mine operators to plant a ground cover vegetation during reclamation to control erosion. In most cases, mine operators establish ground covers by hydroseeding grass and legume seed with fertilizer and paper mulch. Within a few weeks, the reclaimed area becomes covered with a lush growth. Under good growing conditions, the grasses and legumes can grow to two or three feet high within a few

months. This kind of growth definitely controls erosion, and is good when the post-mining land use is hayland or pasture.

Tree planters have different ways of dealing with problems caused by fast-growing ground cover. Some "spot spray" herbicides around the tree seedling to kill competing vegetation, and some plant trees with a fertilizer tablet to stimulate early tree growth. Our early research showed these practices to be effective but expensive. As a result, we began to develop a "tree-compatible" mine reclamation ground cover for use where land is to be reclaimed with trees.

A tree-compatible cover also

eliminates the use of chemical herbicides or fertilizer tablets. Use of tree-compatible ground covers can save up to \$50/acre in seed and fertilizer costs.

Specific recommendations for tree-compatible ground covers are described in the Powell River Project Extension Publication Number 460-123, "Restoring Forests on Surface-Mined Land," available from local Extension offices or by contacting Jon Rockett, area Extension agent, mined-land development, 703/328-0162.

*Reprinted from the December 1993 (Volume 28, Number 5) issue of the National Coal Leader*

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## Southern Mine Rescue Association annual rescue contest

A mine Rescue and First Aid contest was held by the Southern Mine Rescue Association on May 5th & 6th, 1995 at New Iberia, Louisiana. The Morton Salt Co. and AKZO Salt Inc. sponsored the program under guidance of Tom Medver and Lonnie Badeaux, respectively.

The contest included a field problem, separate first aid problem, bench test, 25 question written test, and 10 question written gas test. A banquet featuring boiled crawfish and awards ceremony was held the evening of May 6th. A dance closed out the evening.

There were winners from 5 different states covering the 1st 5 places.

First place was won by Mississippi Potash, Inc. of

Carlsbad, NM, whose team captain is Robert Baldrige.

Second place was captured by Dravo Lime Maysville of Maysville, Ky, team captain: Gary Lewis

Third place was occupied by Morton Salt Company of Grand Saline, Tex., team captain: Randy Rogers.

In fourth place was North American Salt of New Iberia, La, team captain: Robert Ramero.

In fifth Place was Asarco West Fork Regulators of Bunker, Mo, team captain: Kenny McCabe.

Total discounts ranged from a low of 47 to a high of 204.5

The winner of the Benchmans contest was Walt Bryant Jr. of the Grand Saline salt mine of Grand Saline, Texas. Second place went to Joe Baca of the WIPP Blue Team from Carlsbad, New Mexico.

This is one of the longest running contests in the metal and nonmetal mining industry. The first contest was held in 1971 with 4 teams participating. In 1972 there was 9 teams from 7 mines participating. The National Mine Service Company Honored the only team still in competition from the 1971 contest with a gift in the form of a gold plated flame safety lamp. Joel Garhard, products manager from National Mine Service out of Indiana, Pa., presented the award to Harry Anderson former team captain of the no. 1 team from the Avery Island Mine. Harry is presently the manager of the Avery Island operation.

*Whitey Jacobson, E&T Specialist, MSHA South Central District Office, Dallas, Texas*

## New contests in coal miners' competition

The Tamaqua Historical Society announced it has added two new competitions to the annual Anthracite Coal Miners, Contest during the Heritage Day festival. Contests were held at 1 p.m. behind the Tamaqua Railroad Station.

New contests, to commemorate the roles children played in the early days of mining, will include coal pickers and slate pickers for children up to age 15.

Deep coal miners from throughout the state's coalfields were honored. Demonstrated skills

used by miners were contests for scooping, tamping and blasting, and prop making. Trophies were awarded.

*Reprinted from the October 5, 1995 edition of Allentown, Pa's The Morning Call. Thursday, First Edition, Pg. B3, Community Newslite.*

## Automotive

Picking out objects from the area behind your pickup's front seat will be alot easier for drivers of select new models from GM and Ford. The 1996 extended-cab Chevy C/K and GMC Sierra fullsize pickups, and extended-cab versions of Chevy S-Series and GMC Sonoma compact pickups,

will have a side access panel option. Ford's 1997 F-150 Supercab model will include a third door as standard equipment. On models from both manufacturers, access is gained by first opening the front door, then lifting a handle on the inside of the secondary panel/door. Structural reinforce-

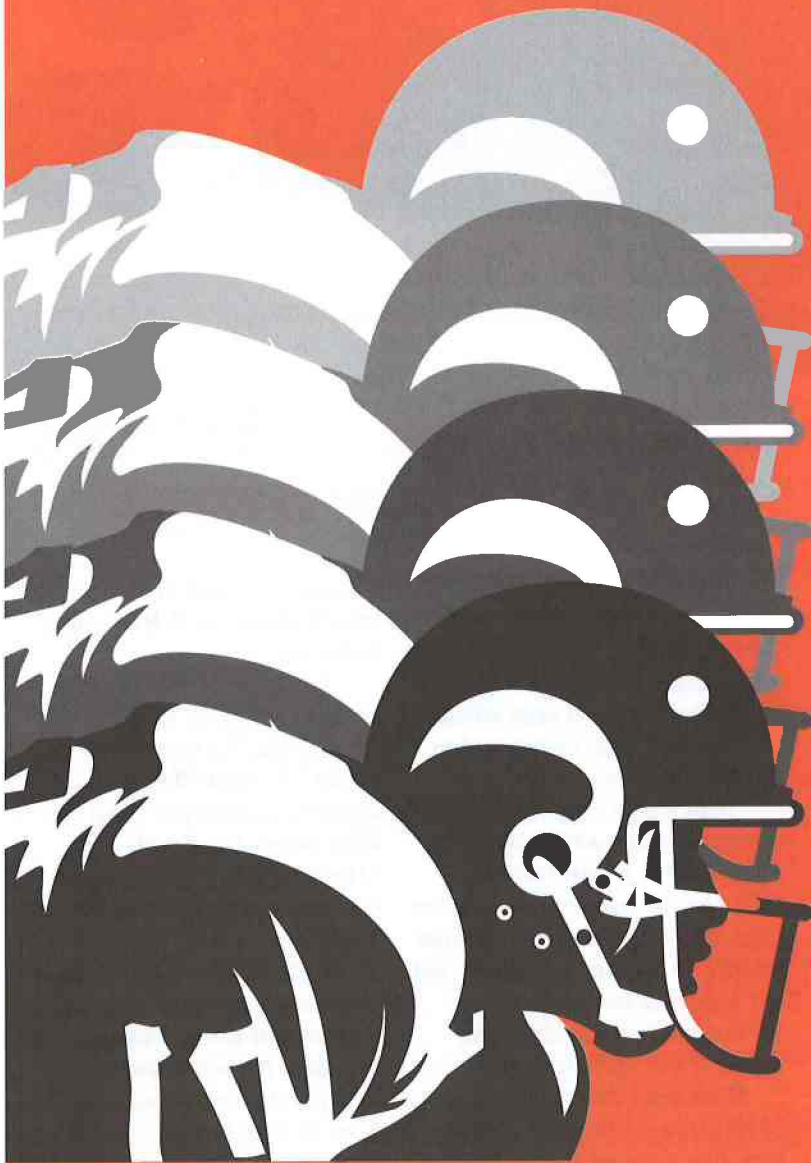
ments make the new configuration as safe as conventional cabs, according to the manufacturers. Chrysler is also considering a third-door option for its pickup line.

*Reprinted from the September 27, 1995 issue of the INDUSTRY.NET Report.*

# **WINTER ALERT**

October through March 1995-96

**You're always a winner with  
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defensive  
line:**



- **Ventilation**
- **Mine  
examinations**
- **Rock dusting**
- **Control of  
ignition  
sources**

U.S. Department of Labor — Robert B. Reich, Secretary  
Mine Safety and Health Administration — J. Davitt McAteer, Assistant Secretary



# 14

**Awards presenters are, left-to-right: Randy Foote, general manager, Mississippi Potash, Inc.; Bruce Watzman, vice president of safety, National Mining Association; Charles O. Dunn, president and CEO of Mississippi Chemical Corp.; and Vern Gomez, administrator for Metal and Nonmetal Safety and Health for MSHA.**



## **Mississippi Potash, Inc. receives 1994 Sentinels of Safety award**

For the second time in the company's history, Mississippi Potash, Inc. is the recipient of the Sentinels of Safety award, the nation's most prestigious mine safety award presented by the U.S. Department of Labor's Mine Safety and Health Administration (MSHA) and the National Mining Association (NMA).

As part of the national safety program, the Carlsbad, NM, mine was recognized as the safest in the country in the underground nonmetals division in the 1994 competition. To qualify for this award, a mining operation must have 30,000 employee-hours of mining exposure with no lost time. Mississippi Potash won the 1994 Sentinels of Safety with 308,760 safe employee-hours.

Along with a trophy and a Certificate of Achievement in Safety presented to the company, a Certificate of Accomplishment in Safety is awarded to each official and employee who contributed to the winning safety record.

"High productivity and safety are a powerful combination," Randy Foote, general manager, said. "A safe work environment for employees has always been a high priority for Mississippi Potash, and our history is one indication of the commitment placed on this aspect of our operations."

Mississippi Potash, then a part of Mississippi Chemical Corporation, first received the Sentinels of Safety Award in 1990. The company received this award for 218,373 safe employee-hours.

Mississippi Potash is now a wholly owned subsidiary of Mississippi Chemical.

"These safety records are a perfect example of what can be accomplished by working together," J. Davitt McAteer, Assistant Secretary of Labor for Mine Safety And Health, said. "The Sentinels of Safety trophy clearly shows that mining can be a safe occupation."

The Sentinels of Safety award is the oldest, established award for occupational safety. Former President Herbert Hoover announced the first award in 1925 when he was serving as secretary of commerce. The annual safety competition has continued uninterrupted to the present day.

In appreciation of the hard



work of the employees who are responsible for this award, Mississippi Potash held a picnic in honor of the employees and their families which was held at Washington Ranch on Aug. 19. Richard Lawson, Chief Executive Officer of the NMA, Bruce Watzman, Director of Safety at the NMA, J. Davitt McAteer, Assistant Secretary of Labor for MSHA, and Vern Gomez, Administrator for Metal and Nonmetal for MSHA, were at the picnic to present the award to Randy Foote and Charles O. Dunn, president of Mississippi Chemical Corp. Also in attendance were Coley Bailey, chairman of the Mississippi Chemical Board of Directors, and C.E. McCraw, Senior Vice President of Operations at Mississippi Chemical. Mississippi Potash, Inc.



*Feeding Mississippi Potash employees barbecue at the Sentinels of Safety picnic and celebration.*

produces granular potash, a fertilizer that it supplies primarily to the trade area west of the Mississippi River. The company

employs 218 people, 118 of whom work underground in the mine.

*Reprinted from a Mississippi Potash news release from Yazoo City dated August 14, 1995*

## Safety at sea

Pittsburgh, PA—Fire aboard ships in today's Navy can endanger hundreds of lives. The Navy recently turned to the U.S. Bureau of Mines (USBM) for help in ensuring the safety of those who go to sea.

Fire most often kills by suffocating its victims. USBM scientists recently tested emergency breathing devices that could help shipboard personnel avoid that fate. The models evaluated are being considered by the Navy as replacements for the 400,000 fire escape devices now carried aboard its ships.

The Bureau has a long history of developing and testing breathing devices used in mine emergencies. Miners and sailors have very different jobs, but a fire at work can leave both groups without the oxygen they need to

get out alive.

"Crew members below deck on a ship face the same potential danger of unbreathable air as workers in an underground mine," explained USBM biomedical engineer Nick Kyriazi. "They may have to travel through multiple rooms and long corridors to reach the surface if fire breaks out."

The emergency breathing devices now on Navy ships are nearing the end of their service lives. At the Navy's request, the USBM used a Bureau-developed breathing and metabolic simulator to see how well new prototype escape devices perform.

"It's easier to quantify metabolism with the simulator than it is with human subjects," Kyriazi said. "We can precisely control performance factors and repeat the tests under the exact same

conditions. Plus we don't have to deal with the many variables you run into with human testing."

Kyriazi, who conducted the tests, monitored four areas of performance: carbon dioxide levels, oxygen levels, temperatures, and breathing pressures. The data collected will help the Navy develop procurement specifications and select appropriate equipment.

The metabolic simulator used for the Navy tests supports Bureau research to improve rescue and escape breathing devices for the Nation's miners. Scientists are now working to reduce the overall size and weight of escape devices so that miners can comfortably wear them on the body at all times and have them immediately available in an emergency.

*Reprinted from the August 1995 Bureau of Mines TIPSHEET.*

## ***Southern Regional Mine Rescue Contest***

Dravo Lime from Maysville, Kentucky, placed second in the Southern Regional Mine Rescue Contest held in New Iberia, Louisiana on May 5-6, 1995. A total of 14 teams competed. Congratulations to the Dravo team for this accomplishment and for all the hard work expended in training and competing.

### ***Certificates of Achievement in Safety***

The following operations received letters and "Certificates of Achievement in Safety" from the Southeastern District Manager for accomplishments in safety:

#### **GEORGIA**

South Carolina Shop; Vulcan Materials Co.; Atlanta; for working 437,786 hrs from 4/1/80-3/29/95 without a lost-time accident or injury.

#### **NORTH CAROLINA**

Hickory Quarry; Martin Marietta Aggregates; Raleigh; for working 1,001,127 hrs since 11/20/78 without a lost-time accident or injury.

#### **SOUTH CAROLINA**

Morgan Corp., Spartanburg, for working 106,878 hrs from 3/1/92-3/30/95 without a reportable accident or injury.

### ***No lost time injuries...***

The following operations represent only the top three finishers in each state (for reasons of space) and received certificates of honor from the Holmes Safety Association for working the qualifying number of hours without incurring a lost-time injury:

#### **ALABAMA**

Gantts Quarry and Mill; Alabama Calcium Products; Sylacauga; 617,381 hrs; 10/1/91-6/30/93

Oyster Shell Products/Canal Road; Dravo Basic Materials Co., Incorporated; Mobile; 62,767 hrs; 4/1/92-6/30/93

Jemison Mine & Plant; Superior Products, Inc.; Jemison; 59,948 hrs; 4/1/92-6/30/93

#### **FLORIDA**

DuPont Florida Mine and Plant; E. I. DuPont de Nemours and Co.; Starke; 678,078 hrs; 7/1/91-3/31/93

Richardson Road Quality Aggregates; Quality Aggregates, Inc.; Sarasota; 60,162 hrs; 10/1/92-9/30/93

Naples Quarry; Florida Rock Industries, Inc.; Maples; 58,867 hrs; 7/1/92-12/31/93

#### **GEORGIA**

Clinchfield; Medusa Cement Co.; Clinchfield; 632,718 hrs; 4/1/91-9/30/93

Washington County Mine and Mill; Engelhard Corp.; McIntyre; 615,265 hrs; 4/1/89-9/30/93

Tyrone Quarry; Florida Rock Industries, Incorporated; Tyrone; 61,737 hrs; 1/1/92-3/31/93

#### **MISSISSIPPI**

Highway 27 Gravel Pit; W. J. Runyon and Son, Inc.; Vicksburg; 60,768 hrs; 4/1/93-12/31/93

Plant No. 1; Dickerson and Bowen, Inc.; Brookhaven; 56,468 hrs; 10/1/91-12/31/93

Tremont Plant; R & S Haulers and Distributors, Inc.; New Albany; 56,164 hrs; 7/1/92-12/31/93

#### **NORTH CAROLINA**

Crabtree Mine and Mill; Nello L Teer Co.; Durham; 609,292 hrs; 1/1/85-12/31/93

Ararat Rock Products Co.-Surry; Ararat Rock Products Co.; Mt. Airy; 64,103 hrs; 1/1/92-3/31/93

Lemon Springs; Martin Marietta Aggregates; Raleigh; 62,870 hrs; 1/1/92-3/31/93

#### **PUERTO RICO**

Planta Cal; Florida Lime Corp.; Ponce; 61,805 hrs; 1/1/93-12/31/93

Cantera Bravo; Cantera Bravo, Inc.; Hormigueros;  
54,953 hrs; 1/1/92-9/30/93  
Arenero Cialeno, Inc.; Arenero Cialeno, Inc.;  
Mayaguez; 54,765 hrs; 1/1/91-12/31/93

**SOUTH CAROLINA**

Kaolin Mine and Mill; Southeastern Clay Co.; Aiken;  
62,220 hrs; 1/1/92-3/31/93  
Marlboro Mine; Becker Materials, Inc.; Bennettsville;  
60,271 hrs; 1/1/93-12/31/93  
Berkeley Quarry; Martin Marietta Aggregates; Cross;  
59,603 hrs; 4/1/92-9/30/93

**TENNESSEE**

Gallatin Quarry and Mill; Rogers Group, Inc.; Gallatin;  
62,168 hrs; 4/1/92-9/30/93  
Savannah Quarry; Vulcan Materials; Knoxville;  
61,189 hrs; 1/1/92-6/30/93  
Springfield Quarry and Mill; American Limestone Co.,  
Inc.; Knoxville; 60,559 hrs; 1/1/93-12/31/93

**VIRGIN ISLANDS**

Springfield Crusher; Virgin Islands Cement and  
Building Products; St. Thomas; 54,588 hrs;  
1/1/92-6/30/93

**No fatal accidents or permanent total disabilities...**

The following operations represent only the top three finishers in each state (for reasons of space) and received certificates of honor from the Holmes Safety Association for working without incurring a fatal accident or permanent total disability:

**ALABAMA**

Tarrant; Southern Ready Mix, Inc.; Birmingham;  
110,017 hrs; 4/1/91-6/30/93  
Atmore Pit; FRI SE Materials, Inc.; Spanish Fort;  
109,196 hrs; 10/1/90-12/31/93  
Tuscumbia Quarry; Vulcan Materials Co.; Birming-  
ham; 108,059 hrs; 4/1/90-6/30/93

**PUERTO RICO**

Planta Cal; Florida Lime Corp.; Ponce; 106,772 hrs;  
1/1/85-6/30/93  
Cantera Bravo; Cantera Bravo, Inc.; Hormigueros;  
105,931 hrs; 7/1/90-12/31/93  
Cantera de Puerto Rico; Cantera de Puerto Rico, Inc.;  
San Juan; 104,791 hrs; 1/1/89-12/31/93

**FLORIDA**

Pit No. 1; Union Rock and Sand Corp.; Hollywood;  
116,734 hrs; 1/1/87-3/31/93  
Sweetwater Quarry; Miami Crushed Rock, Inc.;  
Miami; 114,661 hrs; 1/1/91-3/31/93  
L. W. Rozzo, Inc. Quarry; L. W. Rozzo, Inc.; Pembroke;  
112,209 hrs; 1/1/92-12/31/93

**GEORGIA**

New York Mine; Georgia Marble Co.; Marble Hill;  
113,973 hrs; 4/1/92-12/31/93  
Junction City Quarry; Martin Marietta Aggregates;  
Augusta; 112,188 hrs; 7/1/91-12/31/93  
Columbus Plant; Blue Circle Aggregates, Inc.,  
Lithonia; 108,958 hrs; 10/1/90-12/31/93

**MISSISSIPPI**

Highway 27 Gravel Pit; W. J. Runyon and Son, Inc.;  
Vicksburg; 108,826 hrs; 7/1/91-3/31/93  
Traxler Gravel Division; Jackson Ready Mix Concrete;  
Jackson; 108,310 hrs; 4/1/91-6/30/93  
Sojourner Pit and Plant; D & B Sand and Gravel Co.,  
Inc.; Georgetown; 108,118 hrs; 10/1/90-6/30/93

**NORTH CAROLINA**

Jamestown; Martin Marietta Aggregates; Greensboro;  
112,604 hrs; 10/1/91-9/30/93  
Chapel Hill Quarry; American Stone Co.; Greensboro;  
109,846 hrs; 1/1/91-9/30/93  
Raleigh-Durham Quarry; Martin Marietta Aggregates;  
Raleigh; 108,520 hrs; 7/1/91-6/30/93

**SOUTH CAROLINA**

Aiken Plant 47; Kentucky-Tennessee Clay Co.; Aiken;  
106,616 hours; 4/1/90-6/30/93  
Patterson Vermiculite Co.; Laurens County Mine;  
Enoree; 106,559 hrs; 10/1/91-9/30/93  
Ware Quarry; Southern Aggregates Co.; Jamestown;  
103,495 hrs; 1/1/91-3/31/93

**TENNESSEE**

Dickson Mine and Mill; Burns Stone Co., Inc.;  
Dickson; 114,162 hrs; 7/1/91-9/30/93  
Old Fort Quarry; S and S Rock, Inc.; Old Fort; 111,296  
hrs; 10/1/91-9/30/93  
Savannah Quarry; Vulcan Materials; Knoxville;  
110,874 hrs; 7/1/90-6/30/93

## Wellness in the workplace: a holistic approach

This short article will introduce you to a new and widened perspective of health and safety, one which moves beyond more traditional models and approaches. This new framework for approaching health and safety in your life and in the lives of your families and fellow workers will help you to better understand and achieve wellness in your homes and in your workplaces. Concern for health and safety is a result of social and economic value systems. The greatest concentration of traditional health and safety efforts were and remain focused on "safety". Health issues have been relatively late in attracting both attention and resources. This is not surprising since there is generally an immediacy to accidents and injuries and consequently a somewhat more direct and more easily understood connection between cause and effect. In contrast, the cause/effect relationships for ill health and disease are much more complex and the consequences of the disease and illness processes and outcomes very often take many years before they are recognized, understood and addressed. This might be best demonstrated by contrasting our "safety response" to a mechanical amputation in a workplace with our "health response" to a gradual limb paralysis which might result from workplace exposure to a neurotoxic chemical, to repetitive strain or as a physiological response to psychological/emotional stress. In the latter instance, it will take much longer and perhaps several cases to become aware of the problem, to

treat the condition, to identify the causes and to prevent the recurrence.

Worker compensation systems are beginning to recognize that disease, illness, disability and premature death can result from either sole or contributing workplace exposures to processes and products. However, progress toward a degree of compensation and toward corrective or protective action in the workplace very often remains slow as evidence is gathered. Currently, worker compensation cases for injury related deaths are successful approximately twice as often as cases for premature deaths resulting from illnesses which may be either directly or partially workplace related. However, it is clear that work related illness is becoming an increasingly more important social and economic concern. To continue to address safety issues and to increase our illness prevention efforts, we must reposition ourselves to look at each challenge within a broader understanding of "health". Health or "holistic health", is defined by the World Health Organization as, "a state of complete physical, mental and social well being." "Good health" is defined as "a state or feeling of well being in which people are happy and productive." What goes into making us healthy or well is a blend of factors called the "determinants of health". If we understand these determinants, we understand how the workplace can affect our health. Safety becomes a built-in aspect of this more comprehensive approach. Noteworthy are the reciprocal

considerations that *our wellness contributes to our productivity and our productivity contributes to our wellness*. The model presented here, with a few modifications, was developed by the Premier's Council on Health, Well-being & Social Justice in its January 1993 publication, *Nurturing Health*.

Our **GENETIC MAKE-UP** contributes to our overall development, to our physical and mental capacities, to our inherent ability to resist or develop disease and to our ability to recover from disease and injury. As with all of the determinants, there is interaction with the others. Consequently, one can imagine how our genetic make-up affects our potential for living and working. Our natural adaptation influences our health and safety in whatever work role we undertake. At the same time, factors such as chemical and radiation exposure in a work role may alter our natural or inherent developmental potential and processes to create a greater short or long term risk of illness, injury and premature death. Such influences may even alter our ability to reproduce and the potential outcome of that reproduction.

As we evolve from cradle to grave, we are dependent upon our own personal **SOCIAL SUPPORT** network. The degree to which we have caring and supportive families, friends and communities is critical to whether we achieve our overall developmental potential as a child, as a student, as a worker and as a contributing and supportive member of our society. Our working associations (corporations/unions) are among the

elements within our communities that can influence the values and resources that operate within our social support network. Our personal values and productivity influence the values and resources of our families, our friends, our associations and our communities. We are interdependent, we depend on each other for our health and wellness!

Our **INDIVIDUAL BEHAVIOR** as a determinant of our well being both contributes to and results from our health. Behavior and freedom imply personal choices. These choices substantially alter our development, the degree to which we need and receive social support, our health, our education, our employment and even our genetic present and future. These behaviors also impact on those around us, leading to a potential struggle between personal and societal choices. This process of achieving an acceptable balance between the good of the one or few versus the good of the many results in laws and regulations that, using agreed upon principles or values, help define acceptable behavior. Examples of these potentially life altering or threatening behaviors are substance abuse (smoking and drinking), dangerous recreation and play (suntanning, unprotected sexual activity, untrained and/or unprotected sporting activity), dangerous driving (speeding, no seat belt) and dangerous work practices (untrained and unprotected tool, equipment and materials handling). Our diet and physical activity choices also impact on our wellness over both the short and long term. The potential consequences of our choices, demonstrate how important it is to try to see the larger picture when we make our individual choices and support a collective choice.

**LIVING AND WORKING.** Our

quality of life impacts on our work and our work impacts on our quality of life. Second only to sleep, the largest part of our life is spent at work. Work occupies the vast majority of our awake lifetime and probably a significant part of our sleep time. By time alone, work has the overwhelming potential to influence our well being. Fill this time with deadlines, equipment, tools, technology, inorganic and organic materials, structured and unstructured social interaction and a host of other factors and one quickly realizes that the nature of our work plays a key role in our wellness and our productivity. Work processes and the raw materials and production materials combined and applied in these processes further complicate hazard potential and the need for education, training and both formal and informal healthy processes, systems and behaviors.

Part of being a healthy workplace is ensuring that the workplace is a caring workplace where, in addition to the many other considerations, a formal and informal support network is fostered and maintained. Elements of this network are benefits which provide

for health care such as drugs, treatment, dental services and counseling services (employee assistance program). Employee social groups and recreational activities also play a role.

The human factor ensures that we will never achieve our absolute good health. We are assured of the never ending task of trying to improve our health both in and away from the workplace.

With what is now a broader understanding of the holistic picture of health, *how do we go about maintaining and improving our health and wellness? How do we present or reduce illness and injury and premature death?*

What we need to consider is a **HEALTH PROMOTION PHILOSOPHY**. No, I don't mean talking about it or running ads on television. Health promotion is as complex as the interactions and interdependencies of the many determinants of health. It involves approaching the determinants on a number of fronts, sometimes together and at other times apart. Envision a "Rubik's Cube" and you begin to visualize the need to work with the linked pieces in an attempt to come closer to the correct mixes and matches. Health promotion involves political and regulatory approaches, education, training, behavioral change and a variety of other techniques in an effort to influence individual and collective choices toward those which serve our well being. It is a proactive approach which may well learn from the past, but which looks to change the future for the better.

As practitioners or supporters of workplace health and safety, your challenge is to become a health promoter—one who influences change through proactive approaches which invite and encourage everyone to instinctively consider wellness and the determinants of health as an important aspect of their every choice and activity. In a workplace this means that every operational and human resource decision is based on principles of wellness. Decisions consider ergonomics, system safety, ventilation, noise, vibration, radiation, shift lengths and timings, the repetitive nature of activities, working alone, nutrition and hydration, sanitary facilities, necessary physical strength, needed education and training, controllable and uncontrollable environmental factors, personal responsibilities—all in the context of human health and productivity.

Major advances in health and safety have been achieved over the last twenty years. However, in most industries we appear to have reached a threshold in lowering the traditional statistical measures of workplace incidents, illnesses and deaths (lost time injuries, compensable injuries, reportable incidents and illnesses, fatalities and compensation rates, to name a few). If we are to maintain and lower these thresholds, we must

shift more appropriate levels of resources to proactive efforts. Properly done, our workplaces and society will experience a reduction in the expensive consequences of emergency services, health treatments, rehabilitation, lost or reduced productivity, social supports, and the costs of replacement hiring and training—not to mention the psychological and emotional costs to all of us. The meaning of the advertising jingle

*“pay me now or pay me later”* seldom rang truer than in its application to health and safety and our holistic efforts to achieve **WELLNESS IN THE WORKPLACE.**

*John J.G. Connors, MB, SB OSJ, CD, CDSC, BA, MHSA, FRSH, ONRSA  
Executive Director*

*Reprinted from the July/August 1995 issue of Ontario [Canada's] Natural Resources Safety Association's Health & Safety RESOURCE.*

## **Custom coals plant nearing completion**

### **New technology promises to bring high sulfur coals into clean air compliance**

Construction of Custom Coals International's (CCI—Pittsburgh) advanced coal cleaning plant near Central City is moving at a rapid pace and should be completed this fall. Construction began in December 1993.

A joint venture of Genesis Coals Ltd. Partnership and Genesis Research Corp., the CCI process treats high-sulfur bituminous coal to produce Carefree Coal and Self-Scrubbing Coal. Both products are designed to be competitively priced, high-Btu fuels that can be used without major plant modifications or additional capital expenditures, offering utilities an alternative to flue gas scrubbers, low-sulfur coal or fuel switching.

Under the U.S. Department of Energy (DOE) Clean Coal Technology project, four raw test coals will be treated at CCI's Laurel Preparation Plant, then test-burned at three utilities in Indiana, Ohio, and Pennsylvania later in 1995. CCI and its subcontractor, CQ Inc.

(Homer City) will collect baseline data, then develop a test plan to compare power plant performance and assess the environmental and health impacts of the technologies (a DOE environmental impact study found no significant impacts).

CCI's technology creates a product that can reduce a utility or industrial power plant's total sulfur emissions by 80-90 percent. Carefree Coal combines conventional coal cleaning with new technology that cleans very fine sized coal, which is separated in an advanced cyclone for sulfur and ash removal. CCI's unique separation system removes noncombustible material (ash) and over 90 percent of coal's pyritic sulfur.

For coals high in organic sulfur, the firm's Self-scrubbing process adds a sorbent such as limestone or dolomite, which is peptized with the finest fraction of the Carefree Coal. During combus-

tion, 30-35 percent of the remaining pyritic and organic sulfur react with the sorbent, reducing SO<sub>2</sub> emissions even more than the Carefree process alone.

In August 1994, a U.S.-led consortium with CCI as the principal partner signed a cooperative agreement with the People's Republic of China to build a coal-cleaning plant, a 500-mile underground pipeline and a dewatering and port loading facility valued at \$888.6 million.

CCI has also signed letters of intent in Poland, where the firm proposes to build and operate coal cleaning plants from which power plant customers will purchase processing services. CCI projects a market of 10 to 14 million tons of processed coal products annually, with profits to reach \$20 million per year.

*Reprinted from the September 1995 issue of the Pennsylvania Coal Monthly.*

## National mining hall of fame, museum get facelift

The National Mining Hall of Fame and Museum took the wrappings off its \$838,000 remodeling and new construction project in May 1995.

The Museum occupies the former high school and junior high in Leadville, Colorado, and the core of the building dates from 1898. The Mining Hall occupied the building in 1987 and drew 24,000 visitors in 1994.

The renovations took place during this past winter which required the front of the 70,000 square-foot building to be enclosed in a huge plastic tent. This plastic tent enabled the contractors to continue working during the winter months. At an elevation of 10,152 feet, this was not an easy task.

### Highlights of the project include:

- Restoration of the facade of the building to its original 1900-era appearance plus the addition of 11 arches and a balcony overlooking the 1870 silver mining boomtown.
- A number of stained glass windows
- A new roof, sidewalks, landscaping, exterior lighting, and parking.
- Provisions for handicap access and an elevator.
- Conversion of the old school gym into a multi-use Community Convention Center to attract tourism.
- Renovation of the old school band room into the Edmund J. Longyear Memorial Auditorium, a conference center.
- Renovation of the entry way

and foyer into an attractive reception area, enhanced by red carpeting and a series of display cases featuring mineral specimens. This additional work on the entrance was made possible by a \$50,000 grant from the Boettcher Foundation of Denver.

The 28 dioramas depicting the history of hardrock mining in Colorado will be housed in the Hank Gentsch Memorial Diorama Room. These dioramas were done by Mr. Gentsch as therapy to regain movement in his hands after a 1949 auto accident left him paralyzed from the waist down. He spent thousands of hours in the intricate carving and painting of mining camp figures and scenery thus creating this history scene. He donated them to the museum in 1990. Mr. Gentsch passed away in January 1995.

The Edmund J. Longyear Memorial Auditorium will seat 100 and includes state-of-the-art audio and visual equipment. It is dedicated to Mr. Longyear who was a pioneer in the use of diamond drilling in the exploration and development of iron ore and minerals beginning on the Mesabi Range of Minnesota. Mr. Longyear was inducted into the Hall of Fame in 1990 and Mr. Gentsch was an honorary life member of the Museum.

Women In Mining's National President Jackie Beesley was recently elected as a Director of the Mining Hall of Fame and Museum Board.

Women In Mining National has been working with the Museum for the past several

years in the development of two or three rooms which will include more hands-on activities for those visiting the museum as well as one room to honor women in the mining industry. The first set of conceptual drawings are almost complete and National Museum Chair, Elaine Kochevar and her committee have been gathering ideas from other successful museums for ideas to include in the hands-on room.

The Museum Board of Directors voted to return their yearly Hall of Fame Induction Banquet back to Denver. The banquet was held at the Westin Hotel Tabor Center in Denver on Sunday, September 24th. New nominees are now being reviewed by the Board of Governors and will be announced about July 1, 1996.

Gary Prazen, famed artist/sculpture of Helper, Utah, has created a bronze statue of a miner and through the National Mining Hall of Fame and Museum, will present an annual "Prazen Living Legend Award" to an individual, within or without the industry, who has made significant contributions to mining. The initial award will be presented at the Induction Banquet in Denver.

The one-of-a-kind work of art is 28 inches tall.

Please call Elaine Kochevar at 702-623-1150 to offer your assistance in developing our WIM rooms at the Museum.

*Reprinted from the October 1995 issue of Acquire's Coal Today.*

## Rescue work stopped at mine accident site in India

New Delhi, Sept. 30—Rescue operations were halted Saturday at the accident site where 64 miners were trapped for the fifth consecutive day inside a flooded shaft at a colliery in the eastern Indian state of Bihar, officials said.

"Rescue work has been completely stopped as the water level around the site has not come down because of overnight rains," a state government spokesman said.

Rescuers late Friday managed to plug the breached Karti canal, from where water gushed into the pit Thursday.

"The canal has been completely plugged," he said. "We have not fixed any date for the rescue operations to begin."

The accident occurred on Tuesday at the Gaslitand mine in

Dhanbad district, about 155 miles (250 kilometers) from Calcutta, where incessant rains had flooded the pit and trapped 64 miners. Twenty-seven others managed to escape from the pit after an alarm was sounded.

The 64 miners were trapped when manual elevators in the shaft broke down around 11:00 p.m. (1730 GMT) Tuesday.

A spokesman for the state-run Coal India Ltd. said 34 families living around the accident site were asked to vacate their homes.

The bodies of the miners who died Thursday in three other accidents in mines within a nine-mile (15-kilometer) radius of Gaslitand were recovered last night.

Ten miners had died of asphyxiation, and as a result of collapsed walls and flooding.

The Gaslitand mine, which has a

daily production of about 150 tons of coal, employs 275 workers.

Dhanbad was the site of India's worst coal mine tragedy in 1976 when some 350 miners died after water entered the Chasnala mines.

Forty-six coal miners died in June last year when poison gas engulfed a pit in the eastern city of Asansol.

Bihar has the highest mineral output, including coal, in the country. India nationalized collieries in the 1960s in a bid to boost the safety and improve the working conditions of the country's tens of thousands of miners.

*Reprinted from the 1995 Agence France Presse and the 1995 Caledonian Newspapers Ltd. The Herald (Glasgow, Scotland) September 28, 1995.*

## Four die in Spanish mine accident

Langreo, Spain, Oct. 14—Four coal miners died and four were injured Friday when a metal retaining wall collapsed in the Nalon mining basin at Langreo, northwest Spain, a spokesman for the Hunosa mining company said.

Rescue operations continued overnight to save the lives of other miners who may have been buried alive 600 meters (2,000 feet) below the ground, he added.

The accident happened during

a shift change at about 8:30 pm (1930 GMT) between the sixth and seventh floor of the Candin pit.

Rescuers early Saturday had not managed to retrieve the body of the fourth fatality.

It was not immediately clear how many people were in the mine at the time of the accident nor why the wall caved in on the miners.

Two of the four injured men were in serious condition, suffering from fractures and trauma, the

company spokesman said.

Trade union representatives later met to consider a regional work stoppage on Saturday that could affect some 10,000 miners.

Since the start of the year, 29 miners have died in accidents in the Asturias region.

*Reprinted from an October 1995 Agence France Presse report.*



## Mine explosions kill two, injure eight in southern Siberia

Moscow, September 30, 1995—Two separate methane gas explosions, apparently caused by safety violations, killed two and injured eight coal miners in the Kuznetsk region of southern Siberia.

One explosion, which killed one and injured six miners, occurred Friday night in Prokopievsk, near the regional center of Kemerovo.

The ITAR-Tass news agency said engineers conducting a planned blast to expose coal deposits committed “gross violations” of safety rules by not checking the amount of methane in the area and keeping workers around the site.

In the second incident Saturday morning, a mine expert caused a methane explosion when he decided to destroy some outdated explosive materials by a blast, it said. The underground blast in Kiselyovsk, also near Kemerovo, killed one and injured two people.

Russia’s deteriorating coal industry is plagued by accidents and problems related to poor work conditions and non-payment of wages.

Nearly 200 miners have died in accidents so far this year, according to industry officials.

The head of the Kemerovo regional administration, Mikhail Kisliuk, blamed the accidents Friday and Saturday on “the sharp decline

in state subsidies to the coal mining facilities and no-payments” of wages.

He said lack of subsidies prevented mine managers from improving safety conditions, while the workers who have not received their salaries for months could not be expected to adhere to labor discipline, the Interfax news agency reported.

In a telegram to government authorities in Moscow, quoted by Interfax, Kisliuk warned that a miners’ strike in the area might be “inevitable” and demanded that a committee of experts be sent to the region at once.

*Reprinted from the 1995 Associated Press AP Worldstream news service.*

## Chinese mining accidents up

Beijing, Oct. 23—Coal mine accidents in China’s southern Guangdong province claimed 140 lives in the first nine months of the year, almost twice as many as the same period in 1994, a regional newspaper reported.

The *Yangcheng Evening News* said the fatalities were in 67 accidents between January and September, 83 deaths and 25 accidents more than in the same period last year.

Accidents in state mines and those run by small towns have shown a marked increase, the paper said in last Friday’s edition.

The authorities blame the breach of safety rules for the increase and stress that more and more mines are operating without permits.

In a recent circular, the provincial government ordered illegal mines to close immediately and demanded heavier punishments

for those responsible for accidents.

Just over 1,000 people died in mining accidents in China in 1994, according to official figures, but this year’s statistics are likely to be higher since over 600 miners died in the first three months of 1995 alone.

*Reprinted from an October 1995 Agence France Presse report.*

## Five South African miners die

Johannesburg: Five South African miners were killed and eight others injured in an underground explosion, mine owners said. The accident happened on

Tuesday night at Elandsrand Gold Mining Company Limited in Carletonville, 30 miles south-west of Johannesburg, Anglo American Corporation of South Africa Limited

spokesman James Duncan said.

*Reprinted from the September 28, 1995 edition of the Caledonian Newspapers Ltd’s The Herald (Glasgow, Scotland).*

## THE LAST WORD...

Diligence is the mother of good luck.—Benjamin Franklin

Genius is one percent inspiration and ninety-nine percent perspiration.—  
Thomas A. Edison

What we hope ever to do with ease, we must learn first to do with diligence.—  
Samuel Johnson

Nothing matters until you make it matter.

You will never do anything well until you do it many times poorly.

Do not allow people you don't even know to dictate who you will become.

The reason people fail is not because of what they don't know. It is because they refuse to put into practice the things they do know.

Winners finish what they start.

To err is human but to blame the other guy is more human.

***THIS WILL BE YOUR LAST ISSUE*** *If you did not return the form on page 23 of the October issue*

**NOTICE:** We welcome any materials that you submit to the Holmes Safety Association Bulletin. **We DESPERATELY need color photographs suitable for use on the front cover of the *Bulletin*.** 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.

**DON'T FORGET:** *If you have not returned the questionnaire at the end of the October issue of the Bulletin, PLEASE do so. We are planning to purge our subscriber list in December!*

**REMINDER:** The District Council Safety Competition for 1995 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

Please address all editorial comments to the editor, Fred Bigio, at the above address. Phone: (703) 235-1400



# Holmes Safety Association Officers and Executive Committee 1994-1995

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Cover photo of the Joy 14CM10 continuous miner courtesy of Joy Technologies Inc. We welcome **any** materials that you submit to the Holmes Safety Association Bulletin. We especially need color photographs (8" x 10" or larger—color negatives are acceptable) for our covers. We cannot guarantee that they will be published, but if they are, we will list the contributor(s).

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*Mark your calendar*  
**NOW!**



## ***Coming events:***

- *Dec. 5-7, Power Gen Americas, Anaheim, CA*
- *Dec. 6-8, Northwest Mining Assoc., 101st Annual Conv., Spokane, WA*
- *Mining Management Round Table Discussions:*
  - *Jan. 9, Eau Claire, WI*
  - *Jan. 11, Appleton, WI*
  - *Jan. 17, Madison, WI*
- *Jan. 17-19, NMC's Transportation Seminar, Tempe, AZ*