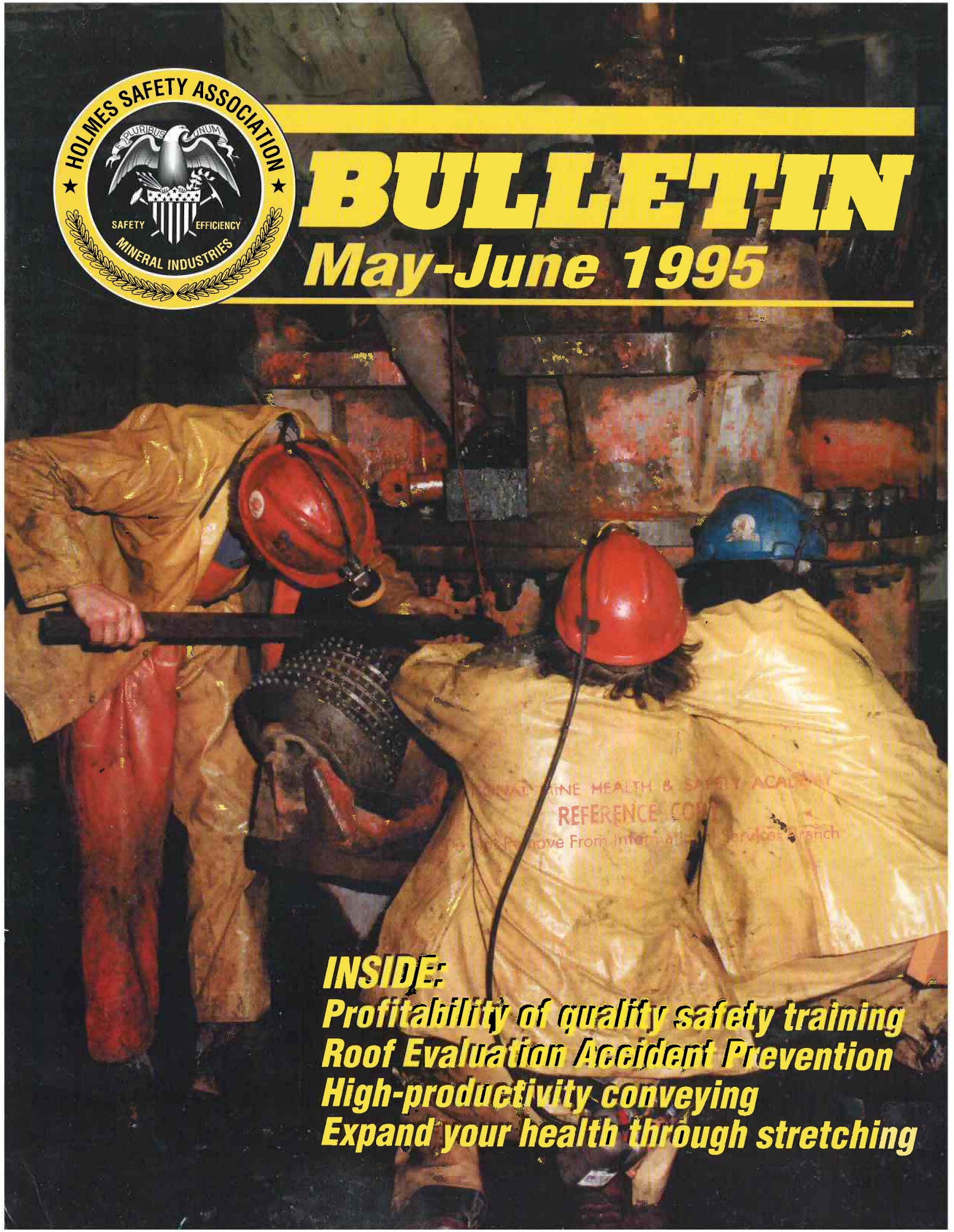

BULLETIN

May-June 1995

INSIDE:

Profitability of quality safety training
Roof Evaluation Accident Prevention
High-productivity conveying
Expand your health through stretching

Holmes Safety Association
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1994-1995

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*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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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 "HSA Bulletin" articles are those of the authors and should not be interpreted as representing official policy of the Mine Safety and Health Administration.

KEEP US IN CIRCULATION—PASS US ALONG

WELCOME NEW MEMBERS

NAME	CHAPTER NO.	LOCATION
Herzog Stone	11054	Mena, AR
Table Rock	11055	Branson, MO
Sharon L. Haley	11056	Falls City, OR
Crystal Fuels	11057	Matewan, WV
Sycamore Fuels	11058	Matewan, WV
P.M. Charles Shop	11059	Matewan, WV
Sprouce Creek Plant	11060	Matewan, WV
Rocky Hollow Mine	11061	Matewan, WV
Bel-mar Coal	11062	Fayetteville, WV
Western Mingo, #1	11063	Naugatuck, WV
Western Mingo, #2	11064	Naugatuck, WV
Western Mingo, #3	11065	Naugatuck, WV
P.M.I. Coal Co., Inc. #2	11066	Red Jacket, WV
Hampden Coal Co., Inc.	11067	Gilbert, WV
Justice Mine Service	11068	Justice, WV
Daniels Branch Coal Co. Inc.	11069	Gilbert, WV
Last Chance Leasing Inc.	11070	Gilbert, WV
Chesterville Sand & Gravel	11071	Chesterville, OH
Columbus Gravel Plant #210	11072	Columbus, OH
Columbus Limestone #221	11073	Grove City, OH
No. 10 Surface	11074	Charleston, WV
J.M. Hamilton & Sons Inc.	11075	Marion, OH
Central Ohio Dist. Council	11076	Columbus, OH
OG&E Electric Services	11077	Ft. Smith, AR
Lake Placid Blue	11078	Ausable Forks, NY

NAME	CHAPTER NO.	LOCATION
Mountain Green	11079	Ausable Forks,
NYHatchet Mill Mine	11080	Owensboro, KY
National Lime & Stone Co.	11081	Delaware, OH
Rivereagle Corp.	11082	Pikeville, KY
Pyro-Chem	11083	Beckley, WV
Town of Roxbury	11084	Roxbury, NY
Diaz Ambulance Service	11085	Saugerties, NY
Dryden Oil Co. Inc.	11086	Stone Ridge, NY
S.A. Manufacturing Co. Inc	11087	Campbell Hall, NY
Operating Engrs. Local #825b	11088	Saugerties, NY
Black Bear Mining Inc.	11089	Gilbert, WV
Dapper Coals Inc.	11090	Varney, WV
Lake Energy, Inc.	11091	Gilbert, WV
Gardner Pit & Mill	11092	Santa Barbara, CA
Bee Rock	11093	Santa Barbara, CA
Buellflat Rock Co.	11094	Solvang, CA
J & H Enterprises, L.L.C.	11095	Betsy Layne, KY
Southwest Ready Mix Inc.	11096	Taft, CA
Stollings Trucking Co. Inc.	11097	Mount Gay, WV
Loyal Creek #4	11098	Ford City, PA
Latrobe Construction	11099	New Florence, PA
Energy Fuels Coal, Inc.	11100	Florence, CO
U.S. Quarried Slate Products	11101	Fair Haven, VT
Ground Water Technology	11102	Schenectady, NY
Standard Labs	11103	Gillette, WY

Holmes Safety Association monthly safety topic

Fatal machinery accident

GENERAL INFORMATION: A 38 year old shift extraman/underground roofman with 14 years of mining experience, 5 months at this classification, was fatally injured when he was crushed beneath the operator canopy of a hydrocarrier, when it turned over on its side. The operation mined lead, zinc, and copper produced from veined ore by mining with conventional drill-blast-muck techniques in a room and pillar configuration.

DESCRIPTION OF ACCIDENT: The victim and another shift extraman/roofer, reported for work and rode the cage down at their regular starting time of 7 am. The fill-in foreman gave the victim and his co-worker their assignments and they left the lunchroom about 7:30 am.

The victim and his co-worker checked the pump, then went to get the hydrocarrier. They performed the normal pre-shift inspection of the vehicle and found no problems. The fill-in foreman saw them in that area about 8:00 am. The co-worker told him they didn't have enough bolts, so they were going back to the shop.

They retrieved the bolting materials, fueled up the vehicle, and filled the hydraulic tank. They left the shop about 8:30 am. The co-worker remembers hitting the brakes to stop and talk to someone on the way to 62W56.

They arrived at the site a little before 9:00 am, and began backing up the heading. The co-worker was driving and the victim sat in the jump seat on the right. The driver had to "floor" the throttle in order to get the vehicle to go up the steep hill. The driver said he had not used this equipment on a grade this steep before. He said he was within a few seconds of stopping the vehicle at the position he wanted to set up. He throttled down some, but before he could finish positioning and lower the jacks, the engine quit suddenly. He said he thought he hit the brakes, but the vehicle seemed to shoot away. He said he pumped the brakes on the way down, but it kept going faster. He didn't pull the emergency control button for the brakes and didn't try to apply the parking brake.

Since the brakes weren't holding, he thought he could steer the unit into the wall and ride it down. He hit the rib, and the unit stopped and bounced back a little. Out of the corner of his eye he saw the victim leaving the vehicle on the right. He doesn't know if he jumped, fell, or was thrown out by the impact. A seat belt was provided for the victim, but it was unlatched. He also saw and felt the rear end of the unit swing down to the right. He thought he was in trouble when the vehicle slowly tipped to the right and then fell over. He hung onto the steering wheel and saw that the top of the canopy had landed on and trapped the victim. Help was summoned and the maintenance supervisor started the recovery process. He arrived about the same time as a front-end loader he asked for. They started to lift the hydrocarrier with the loader, but it started to slip downhill, so they got another loader. They lifted the cab to free the victim and rushed him to the shaft. He had no vital signs. The EMTs had arrived and an ambulance came shortly thereafter. They determined that the coroner should be called.

CONCLUSIONS: The direct cause of the accident was the failure of the service brakes to hold the vehicle on the steep grade. Contributing to the accident was the fact the parking brake was inoperable and was not available to stop or slow down the vehicle.

Seat belts were provided and were to be worn according to company policy, but they were not. Had the victim been belted into his seat, he may have survived.

There were no auxiliary steering components provided on the vehicle. The victim may have been able to better control the descent of the vehicle if he could have steered.

The design of the wheel housings were such that slow fluid leakage and defects in the brake shoes and liners were difficult to detect unless disassembled.

Pressure gauges on the hydraulic side of the system would have detected the master cylinder defect and would be an indicator of leaking cylinders.

4 Remote reset for continuous miners used in extended cuts

By Albert L. Brautigam and August J. Kwitowski
U.S. Bureau of Mines

Introduction

Since being introduced in 1979, extended cut mining (ECM) has gained acceptance in U.S. coal mines. Current Mine Safety and Health Administration (MSHA) records show that about 23 percent of the total operating continuous mining sections have ECM approvals. With ECM, remote-controlled continuous miner machines drive entries in excess of 20 feet inby permanently supported roof. ECM safety considerations are getting industry-wide attention. A particular problem area is the interruption of power on the continuous miner while making an extended cut. Mine workers are tempted to dart under unsupported roof to reset the circuit breaker(s) on the continuous miner without regard to regulations or personal safety. MSHA originally identified this problem and requested the U.S. Bureau of Mines (USBM) to develop a solution. During interviews conducted at six mines, 26.4 percent of the 53 continuous miner operators and helpers cited "restoring power to a remote continuous miner" as one of the most likely causes for miners who do their job to go under unsupported roof.[1] A suggested countermeasure proposed by interviewed miners was to develop a method to reset the breakers from a remote location.

Approach

The research approach taken was to minimize or eliminate the need for the operators of extended cut continuous miners to go under unsupported roof to restore power to their machines. To accurately

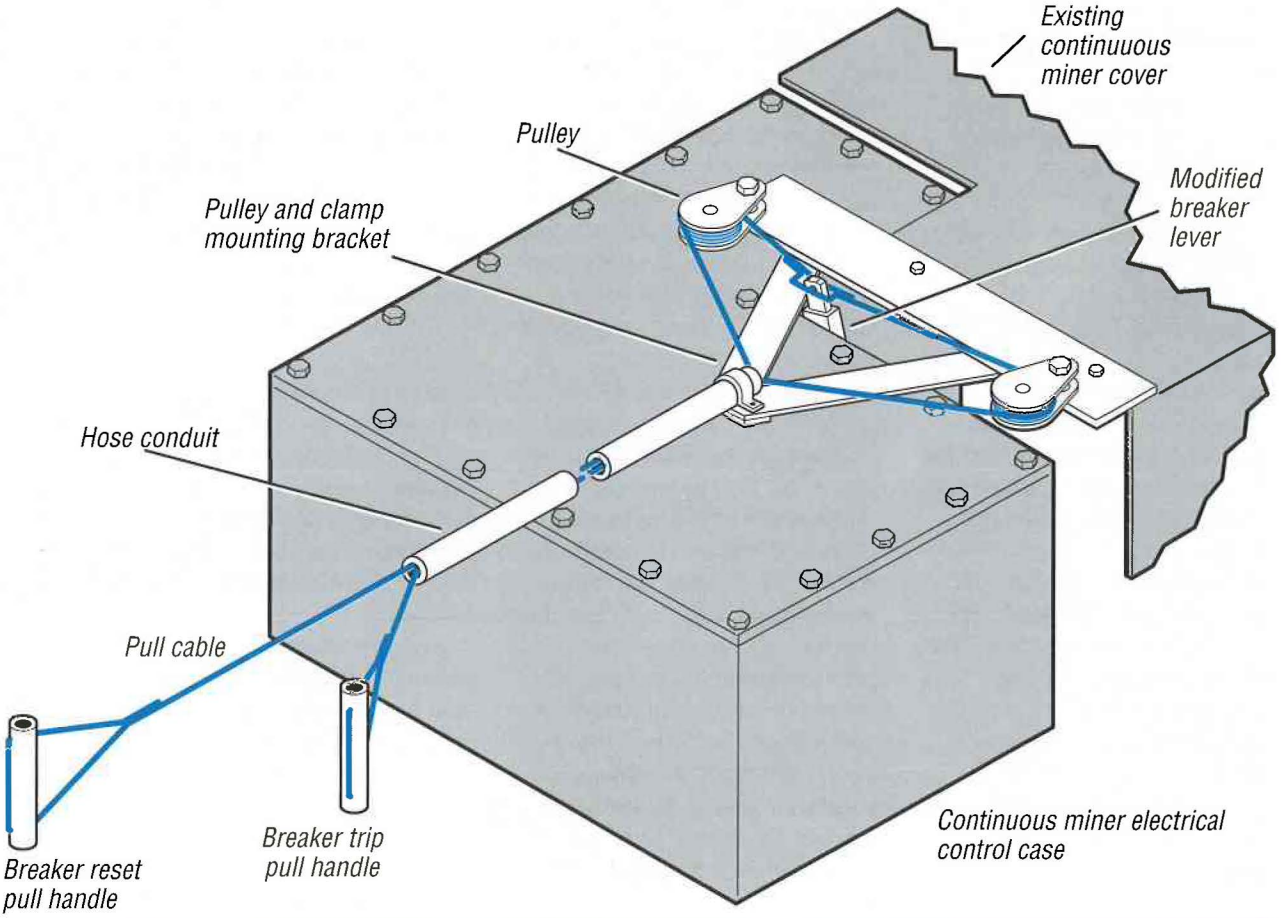


Figure 1.— Manual reset system installation.

identify the causes of power interruptions, information was solicited from coal mining operators, mining equipment manufacturers, MSHA, and the United Mine Workers of America (UMWA). Reasons cited for the circuit breakers tripping included legitimate overload conditions, isolated circuit design problems, and reset levers being struck against a rib or by falling strata. Based on feedback and support from MSHA and the UMWA on the validity of the reset problems, the USBM developed two remote reset systems. Both of the developed reset systems, one manual and the other electro-hydraulic, allow circuit breakers on continuous miners to be reset remotely from safe outby locations under supported roof.

Manual reset system

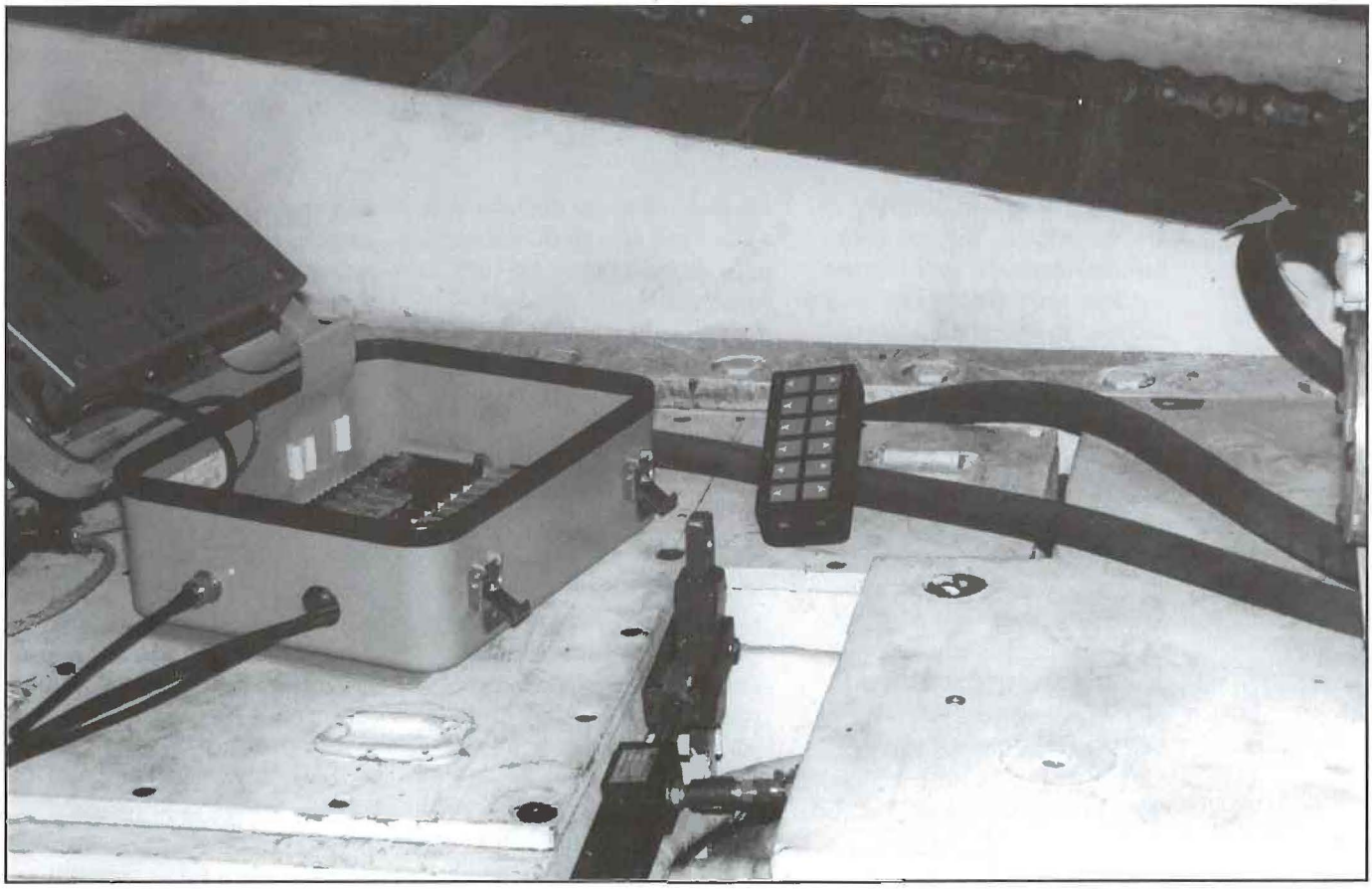
Figure 1 illustrates a manual reset system. Two pull cables, guided by pulleys, operate the electrical breaker handle on the continuous miner electrical control case. The breaker handle usually requires modification to accommodate a hole or eye ring for attachment of the two opposing cables. The pulleys guide the two cables from the modified breaker handle to the inby end of a length of hose clamped to the continuous miner. The lengths of the cables and hose conduit depend upon the depth of the ECM operation. At the outby end of the hose conduit, each cable terminates with a color-coded pull handle for breaker trip and reset actions. Numerous mounting arrangements of the system components are possible to permit installation on a wide variety of continuous miners.

Electro-hydraulic reset system

The electro-hydraulic reset system provides the machine operator with trip and reset control of continuous miner breaker(s) from the radio remote control unit console. This system consists of two basic sections--the electric and the hydraulic/mechanical.

Electric section

The electric portion of the reset system, on board the continuous miner, is composed of the radio remote control decoder/receiver unit interfaced to an intrinsically safe solenoid valve. The radio remote control system requires two spare discrete function outputs to control the dual coils of the solenoid valve. If independent control of multiple breakers is desired, each breaker requires a separate solenoid valve and pair of



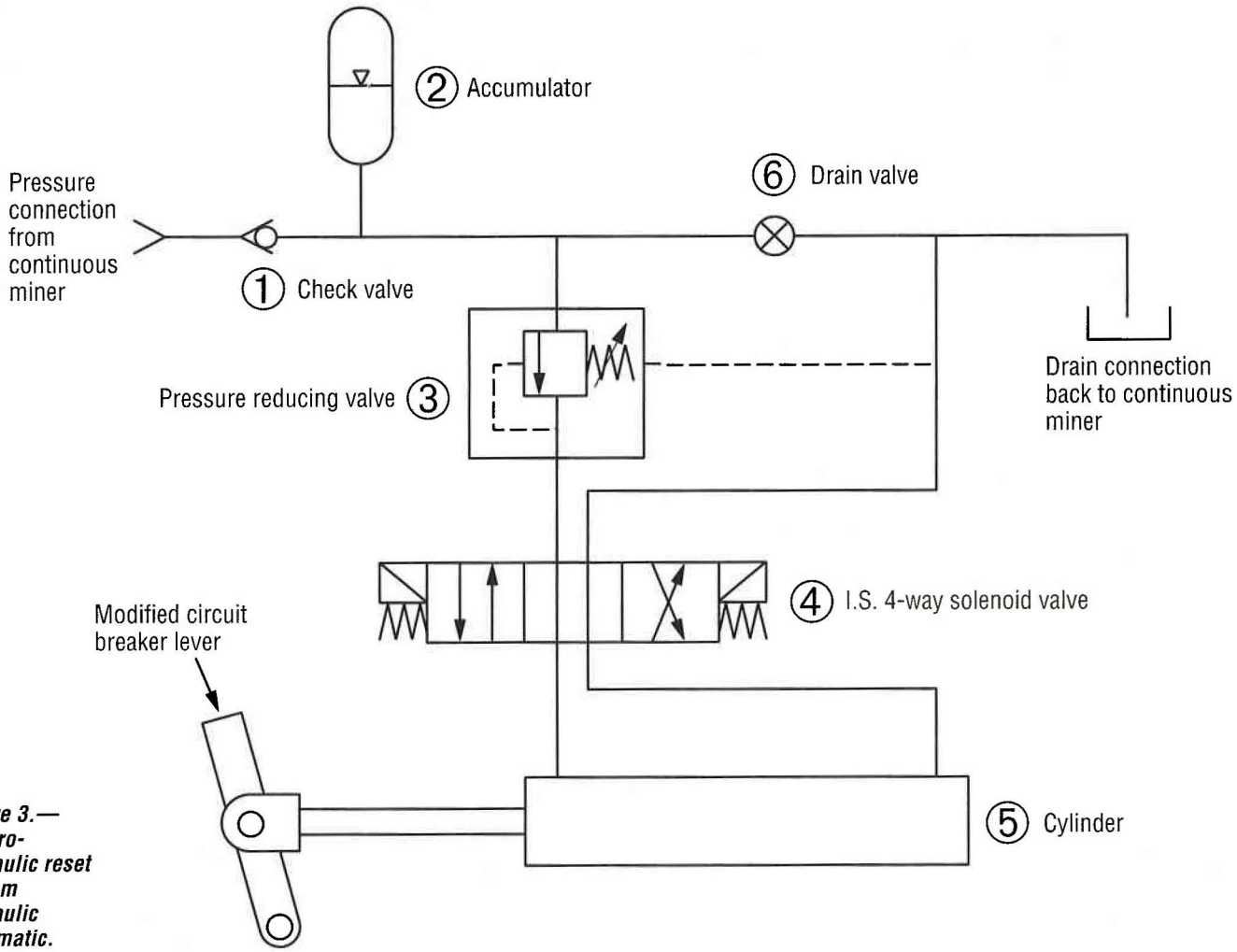


Figure 3.— Electro-hydraulic reset system hydraulic schematic.

radio remote control discrete function outputs. The operator's encoder/transmitter unit requires a pair of spare console function switches to control trip and reset actions for each remotely controlled circuit breaker. Obviously, the continuous miner radio remote receiver/decoder power source must remain active after any breaker has tripped. This can be accomplished by powering the decoder/receiver unit from an uninterrupted AC voltage source on the continuous miner or powering the receiver/decoder with a battery pack that is trickle charged during normal power conditions. Ideally, the solenoid valve should be powered from the same source as the receiver/decoder unit. Intrinsically safe solenoid valves are available with a variety of AC and DC voltage coils. Figure 2 shows the radio remote hand-held encoder/transmitter and receiver/decoder units used at the USBM during the testing of the prototype system.

Hydraulic/mechanical section

The design of the hydraulic/mechanical portion of the system is quite simple and consists of a few components with a cost of about $700 and eight hours of installation time. Figure 3 is a hydraulic schematic of the system. A small, double-acting cylinder is mechanically coupled to the circuit breaker lever. The cylinder is custom mounted so that it can both trip and reset the circuit breaker. Figure 2 shows the mounting arrangement of the hydraulic cylinder and associated linkage to the modified main circuit breaker lever on a continuous miner at the USBM.

The hydraulic cylinder is powered by a small accumulator that is charged by the continuous miner hydraulic system. A check valve retains the charge in the accumulator after the continuous miner hydraulic pump has shut down. Other components include a pressure reducing valve and an intrinsically safe, four-way solenoid valve. For testing purposes, available components were connected with hydraulic hoses and fittings. As an alternative, the entire subsystem could

be made more compact by using subplate-mounted, stackable components. All the components, except the accumulator, could be combined and mounted on a single subplate or manifold. The accumulator could be directly or remotely connected to this manifold or valve stack as space requirements allow.

The pressure reducing valve is necessary to provide a constant, limited force to the hydraulic cylinder. In the USBM prototype test setup, 250 psi was adequate to generate the force to operate the continuous miner main circuit breaker lever. Note that the internal leakage of the pressure reducing valve will drain the accumulator over a period of time. As a result, the remote reset capability will exist for a finite period after the continuous mining machine is shut down. Since the internal leakage of the valve is small compared to the accumulator volume, a period of several hours can be realized and is considered adequate for most breaker resetting situations. A longer time period could be obtained by using a larger accumulator. For an infinite time period, an intrinsically safe, zero-leak, solenoid poppet valve could be installed in the pressure reducing valve inlet circuit. This solenoid valve would have to be activated in conjunction with the four-way valve.

Summary

The USBM has developed two remote circuit breaker reset systems for continuous miners used in ECM sections. The simplicity of the manual reset system design promotes ease of retrofitting on most brands of continuous miners by coal operators. The electro-hydraulic reset system is a more sophisticated design that can be retrofitted on most remotely controlled continuous miners but is more suitable for incorporation into new equipment by manufacturers. Both designs have been successfully demonstrated to MSHA and the Pennsylvania Department of Environmental Safety. These agencies considered the reset system designs to be practical and not requiring special approval for use in coal mines. For further information, contact the authors at the Pittsburgh Research Center, U.S. Bureau of Mines, Cochrans Mill Road, P.O. Box 18070, Pittsburgh, PA 15236: Albert L. Brautigam (412) 892-6470; or August J. Kwitowski, (412) 892-6474.

[1]*Peters, R. and R. Randolph,* ***Miners' Views About Why People Go Under Unsupported Roof and How To Stop Them.*** *BuMines IC 9300, 1992, 59pp.*

Western coal production hits record in 1994

Mining of the West's low-sulfur coal broke industry records last year in Colorado and Wyoming. Production was boosted because of the federal Clean Air Act's requirement that utilities reduce airborne substances.

In Colorado, last year's production at the state's 22 mines was 7% over 1993's record for an estimated 26 million tons of coal.

"That's a healthy report for the industry," said Stuart Sanderson, president of the Colorado Mining Association. "We have the lowest sulfur fuel in the nation, and under the Clean Air Act, we are the compliance fuel of the future."

John Grasser, a vice president at the National Coal Association in Washington, D.C., said Colorado's 1994 production was so great, the state may move up from its No. 14 national ranking. "The rate of growth in the West has been higher even before the Clean Air Act went into effect. There is so much coal out there and it is well priced, so it's a very safe bet that we'll see a higher continued rate of growth in the West."

Wyoming also broke industry records to retain its No. l ranking as the nation's biggest coal producer. The state's 29 mines produced about 225 million tons of coal in 1994, compared with 210 million tons in 1993.

"We're cautiously optimistic that demand for Wyoming coal will continue," said Marion Loomis, president of the Wyoming Mining Association. "A lot depends on what the final decisions of the utilities will be."

About $1 billion is added to Colorado' s economy from the coal industry every year. About 2,000 miners are employed in the industry. Wyoming employs slightly more than 3,000 miners. Economists have estimated that for every mining job, another l0 are created in transportation and other support services.

As utilities strive to meet requirements under the Clean Air Act, they have the option of buying low-sulfur western coal, switching to natural gas, or installing wet scrubbers.

Up to 50% of Colorado's coal is used in-state, while Wyoming uses only 12.3% of its total production. Wyoming exports primarily to Texas and the east.

Reprinted from the February 1995 issue of Acquire's ***COAL TODAY.***

Safety first, last and always...

The profitability of quality safety training

By Joseph J. Larry, P.E.

At a two-section underground coal mine in Southern Appalachia the day-shift crews assemble for the mantrip. When the mine foreman reviews the manpower available, he finds that a dual boom bolter operator is a no-show. He assigns John Mason, a 23-year-old, to the task of bolter operator/helper to work with experienced bolter operator, Ray Schultz. Mason has worked in underground mines for 24 months, the last six months for the present company performing general labor. He has completed the 40-hour new miner training. Schultz is assigned to provide the bolter task training to Mason. When they arrive at the bolter, Schultz instructs Mason on the location and use of the operating controls, safety features and the how-to of installing roof bolts safely. Mason installs a few bolts, tentatively but safely, while Schultz observes Mason's performance. Finally, before leaving for his assigned duties at the left drill head station, Schultz tells Mason, "Continue bolting as I have instructed. Be careful. If you have any questions, I will be nearby to answer them for you." On the fifth day Mason, who has not yet grasped the safe techniques of installing roof bolts, is seriously injured when a large slab of roof falls between the bolts.

In 1993, there were 91 non-fatal lost-time injuries and fatalities (degrees 1 through 5) to miners who were installing roof bolts who had less than 13 weeks of bolter experience. Thirty-one percent of the total fatality and non-fatal lost-time injuries to bolter operator/helpers occurred to bolter operators/helpers with less than one year of task experience. Over 20% of the serious injuries were to miners temporarily assigned to perform the roof bolting task.

What can be done to reduce these many serious injuries? Although the company complied with the MSHA regulation pertaining to task training, Mason was not prepared to man the bolter position. Section 48.7 (Training miners assigned to a task in which they have had no previous experience) of the coal mining standards in 30 CFR Part 75 of the Federal Register is vague about the quality/ length of task training. How many operators who cannot afford a staff of skilled instructors use on-the job training (as in the above scenario) to comply with Section 48.7?

Safety departments of the 89 mines producing over 1 million tons annually have training instructors who accompany the inexperienced machine operators to the section to give them one-on-one machine instructions. The instructor remains with the miner for several shifts until the instructor is confident that the operator can handle the duties assigned to him efficiently and safely. Cannot those mine operators who produce less than 1 million tons find affordable alternate, but equal, training programs? Yes!

For calendar year 1993 these large underground mines produced 51.7% of the tonnage with 44.7% of the man-hours, 39.9% of the non-fatal lost-time injuries and 2 fatalities. The non-fatal lost-time incidence rate was 11.09 per 200,000 man-hours worked, or 12.37 injuries per 1 million tons mined.

For mines producing less than 1 million tons (93% of the total underground mines) the nonfatal lost-time injury rate was 13.2 per 200,000 man-hours worked, or 20.6 injuries per 1 million tons and 23 fatalities. At a conservative $22,000 cost per non-fatal lost-time injury (excluding no lost-day injuries or fatalities), the smaller operators are spending 18 cents per ton more than the larger coal producers on unemployment compensation, accident inspections, lost production, morale and medical costs.

These smaller operators need to reevaluate their preventive safety programs. They must have the confidence that their workforce is motivated and capable of learning how to perform the task efficiently and safely. Too many negative comments about the workforce, that is, "Many of my guys can't read," "My machine operators won't read training manuals," or understating the mine's injury record, are rationalizations for shirking safety training responsibilities. Management must understand that it has the moral and legal obligation to provide the greatest preventive safety training to its employees.

Injuries are numerous. How can the operator direct its immediate safety training to

reduce quickly the incidence rate? The operator can review the mine's accident record and address the safety training to the occupation or classification that creates the greatest hazard and/or safety cost. On the national level, 17.9% of the nonfatal lost-time injuries and 6 of the 25 fatalities happened to miners performing roof bolting tasks-drilling, inserting bolts or tramming. Also, another 7% of the total injuries were due to roof falls. If poor quality bolt installation and roof falls can be linked, the bolting task accounted for 1 out of 4 injuries. Therefore, at many mines if management addresses bolter operator training, it could reduce injuries.

Task training for present and potential roof bolter operators/helpers must include classroom instructions. Concept of roof bolting, bolter controls and lubrication, safety, MSHA regulations, safety techniques of bolting, and the mine roof control plan are a few of the topics that can best be taught in a classroom learning environment by an experienced instructor. Although many smaller operators cannot amortize the cost of a professional trainer on his staff, they should solicit their local mining association to provide such training; the cost would be funded by the many small operators who would participate. Or, the coal producers should petition the state mining university to provide the skilled training as part of its mining extension curriculum. Also, management could utilize the bolter manufacturer's technician/expertise to oversee the underground task training on the safe techniques to roof bolting. Quality safety training is available!

The underground coal industry is spending $133 million or $380,000 per million tons mined, on non-fatal lost-time injuries (excluding fatalities and no-lost time injuries). The industry lost 228,000 miner man-days due to non-fatal injuries; about 70% of the injuries required the injured miner to lose more than 5 days of work. Congress, governmental agencies, and the general public take a dim view of this record. With a little creativeness in miner safety training, management could downsize the number of serious miner injuries in a short time.

Joseph J. Larry, P.E. is a BSEM graduate of West Virginia University, a mining consultant and author of the book, "ROOF BOLTING WITHOUT INJURY." The book, $42.50, can be purchased from the author, 924 Farms Drive, Fairmont, WV 26554.

Reprinted from the February 1995 issue of Acquire's ***COAL TODAY****.*

Roof Evaluation Accident Prevention (REAP Program)

The year 1994 was a very good year for the coal mining industry and the REAP Program. There were eight roof and rib type fatalities in 1994, which matched the eight fatalities in 1988. The best in the history of coal mining. The mining industry can be justifiably proud of this record—but we must not lose sight of the ultimate goal of ZERO fatalities.

An important aspect of these improvements, of course, has been the rapid growth in the use of automatic temporary roof supports (ATRS) and the issuance of ATRS regulations, which contributed to the roof fall fatality decreases. As the chart on page 10 indicates, the mining industry has gone from 20 roof fall fatalities, while setting posts, in 1979 to zero since the enactment of the ATRS standards.

Generally, while injury rates in coal mining have greatly improved, roof and rib falls remain one of the major causes of death in underground coal mines.

Annually, on the average, roof fall fatalities account for approximately 44 percent of all underground fatalities. During 1988, the record low year for roof fall fatalities, the eight deaths accounted for 32 percent of the total. In 1994 the eight deaths accounted for 38.1 percent of the total underground mine fatalities. The 38.1 percent is still too high but, it was better than the average.

The incidence rate for roof and rib injuries per 200,000 workhours shows quite an improvement since the enactment of the 1969 Mine Act. The rate has fallen from 0.10 injuries in 1969, to 0.02 in 1994, a drop of 80 percent.

Three coal miners lost their lives in 1994 by traveling inby supported roof. Given the current high level of awareness of roof hazards and the widespread use of modern roof control technology, it is hard to understand how falls of roof and rib can still claim the lives of miners working inby supported roof—nine miners in the past two years.

In fact, the average distance that a fatality occurs inby supported roof is four feet. **Imagine**

that—a measly four feet separating life and death! The obvious explanation is that miners feel that nothing is going to happen to them. If they believe that, they truly have a false sense of security.

Not only do our miners harm themselves by unsafe work habits but they create untold hardships for their families as well. When we read about a fatal accident, we usually learn that the victim left behind a spouse and two or three children—not to mention other grieving relatives. No one thinks such a tragedy could happen, but too often it does. Many miners falsely believe that they live a charmed life and therefore take grave risks with tragic results.

We must do everything, within our power to impress upon our miners that "Inby is Out!" This message and others like it, are aimed at keeping miners safe from roof and rib-related injuries by making them aware of the hazards in their working environment. The theory being that once miners are aware of the hazards, they will be able to perform their assigned tasks in such a manner as to avoid potential accidents.

In order to get roof and rib type fatalities down to **zero**, REAP needs the industry's continued commitment. Success will depend on the joint efforts of everyone involved in underground coal mining—management, labor, and government.

Bob Glatter, the National Secretary for the Holmes Safety Association, gave me a copy of a miners circular which he obtained from the National Archives. The circular, published in 1926 for the Department of the Interior, is "Falls of Roof and Coal."

A paragraph in the circular states, "The public hears most about the loss of life in coal mine explosions and mine fires for the reason that in each such disaster many lives may be lost. An examination of the records shows that by far the largest death list, including nearly one-half of all the killed, comes from falls of the "Roof and Coal," and next comes the death list of mine-car and mine-locomotive accidents. About these the public hears little for the reason that the men are killed one or two or three at a time each day." As you can see the same thing was happening in 1911 and 1914 as they are today—the old addage that history repeats itself certainly has the ring of truth here.

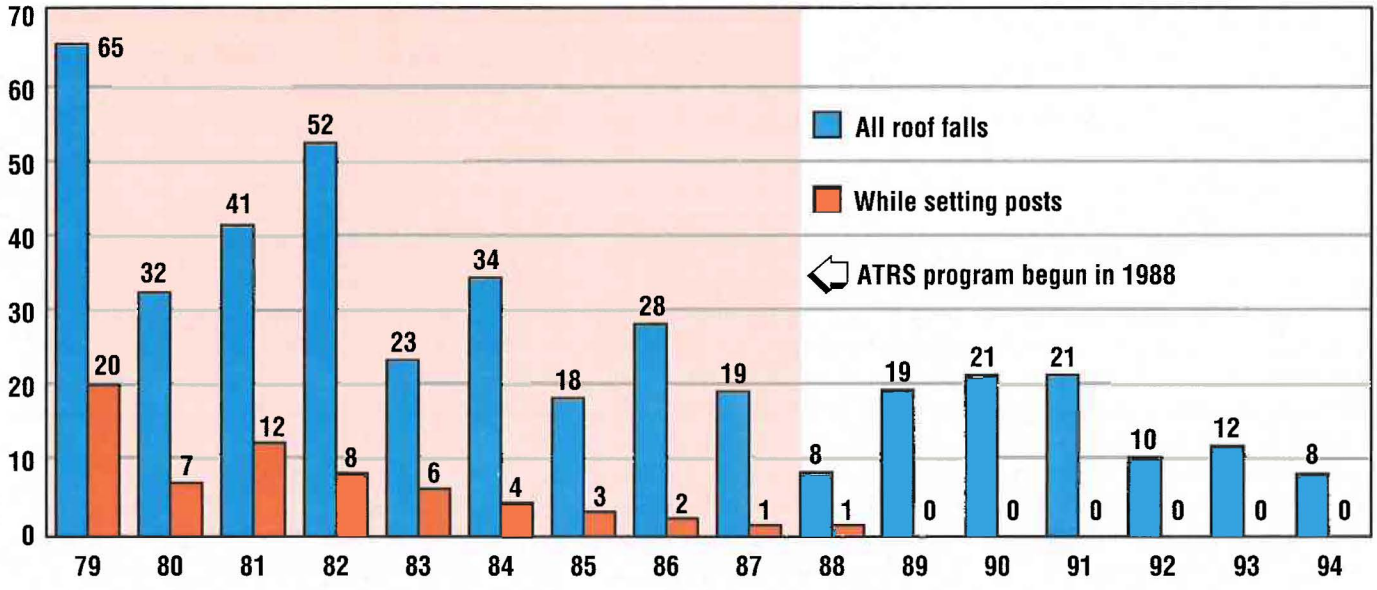
A point of interest is that, in 1911, 1,259 miners were killed in falls of roof or coal—47 percent of the total number of fatalities—2,656 deaths. In 1914, there were 1,131 roof fall deaths—46 percent of the 2,454 coal mine deaths that year. We have come a very long way from the extremely high miner death toll in that era. However, percentage wise, the figures are very nearly the same.

Please lend your support to the "REAP" program and we'll all "reap" the benefits of safer, more productive coal mines.

Thinking safety and REAP is a big plus! Practicing safety and REAP is a must!

Tony Turyn, MSHA National REAP Coordinator

Roof fall fatalities, 1979–1994



High-productivity conveying requires "system" approach

Twenty years ago you could simply buy conveyor "parts" (a belt, idlers, a small drive, a take-up pulley and head pulley) and "engineer" your conveyor as you went along. And, frankly, at the volumes handled in those days it really didn't take that much to make a conveyor run "right." Today, however, things are very different.

The high-productivity, high-volume conveying, that has become so essential to profitable longwall operations, requires a comprehensive approach that combines all of the conveyor components into a total integrated "system." This requires very sophisticated engineering expertise and in-depth "systems" experience in mining in general and conveyors in particular.

No longer can the "typical" manufacturer successfully respond to the unique demands and specialized problems of underground conveying in today's mining environment. An overall approach to conveying has to be taken and application specifics must be examined carefully and accurately to ensure that overall "system" demands are dealt with responsibly and intelligently.

One of the companies leading the way in this more comprehensive overall-system approach is Continental Conveyor & Equipment Company of Winfield, Alabama.

Continental Conveyor has been the leader in coal conveying for decades and has developed particularly comprehensive information concerning the more specialized aspects of the conveying science. This has allowed the Continental engineering team to develop advanced proprietary information on conveyor behavior under the full range of mining conditions and circumstances. This information provides startling insights into the phenomena that occur at operational extremes and in everyday starts and stops. And Continental Conveyor has used this proprietary "systems" knowledge to develop some of the

world's most productive conveying equipment.

Of particular interest to long-wall operators are the advances that have been made by Continental in large drive technology. Conveyor drives with power ranges measured in the thousands of-horsepower are no longer unusual in Continental installations. This dramatic advance in scale has been made possible through the use of unique power control systems that manage torque levels by the millisecond and by engineering methods that predict and eliminate potential problems and limitations at the earliest design stages.

In some applications, advanced drive technology is required to provide the ultra precision control that is necessary for complex controlled start-up and shut down sequences. In fact, every high-productivity conveying installation is unique in some way—that's why advanced system experience has become so essential to today's conveyor engineering team.

While working closely with some of the world's leading mining corporations, Continental has set the records for long single-flight panel conveyors using proprietary tripper booster drive technology. (At the other end of the spectrum, specialized Continental low-coal drives have solved the problems inherent to low seam operations. This has made additional resources mineable and economically recoverable.)

The introduction of the Continental High Angle Conveyor (HACK) into the mining environment some years ago has also significantly altered the rates and volumes of coal that can be elevated vertically. Vertical lifts can now be measured in hundreds-of-feet and in thousands-of-tons per hour. This has added new flexibility to mine plans and has brought the reliability and convenience of standard conveyor components to the technology.

As you may know, longwall operations were universally plagued by the inefficiencies and the downtime associated with piston type take-up winches. Fortunately, these have been all but replaced by the patented Continental "constant tension" winch technology which utilizes a unique drum concept to effectively eliminate winch related problems. This technology, when combined with the high productivity belt storage and advanced belt winder units provide what many have referred to as the "ideal" conveyor belt handling system.

The patented Continental belt winder simplifies and improves the control and handling of belting when adding belt to the system. It incorporates a patented pinch-roll drive arrangement that delivers a constant winding speed and pull to the belt roll. The pivotal spool allows the spool of belt to be rotated 90 degrees in either direction. Lift cylinders make removal and installation operations significantly easier.

Proven in the toughest underground applications, Continental belt storage units are famous for their single carriage design which permits the use of automatic drop carriage assemblies. Also, the stationary pulley section concept on the Continental system eliminates fifteen moving parts common to conventional units.

More recently, Continental Conveyor introduced an amazing effective center loading tail section. This unit, it is believed, will virtually eliminate the costly loading problems that the coal industry has suffered for decades. It uses an amazingly simple "moving skirt" (patent pending) concept that travels side-to-side with the belt and remains centered on the belt. This approach dramatically reduces the hazard of spillage into the tail section mechanisms and minimizes the numerous problems associated with uncentered loads—throughout the conveying system.

Also notable for its contribution to mine housekeeping efficiencies is the unique Continental cleanup conveyor which effectively eliminates the cost of cleaning up dribble from underneath the belt discharge outby belt. It uses a shuttle car type flight conveyor concept, incorporating a control module that permits adjustable intermittent operation for fully automatic cleanup of transfer spillage. This unit is designed to endure the punishment associated with even the most severe mining applications.

All of these advances, combined with high durability idlers and idler rolls, horizontally curving conveyors, modular slider beds and many, many other technologies developed by Continental Conveyor make modern conveying—even in extremely high volumes—one of the most trouble free areas of mining operations. More importantly, these developments, when combined with an overall engineering approach like the one used at Continental Conveyor & Equipment Company of Winfield, Alabama, can only lead to dramatic improvement in mine economies and improvements in industry profitability.

Reprinted from the December 1994 issue of Acquire's COAL TODAY.

School will soon be out!

PLEASE DRIVE CAREFULLY

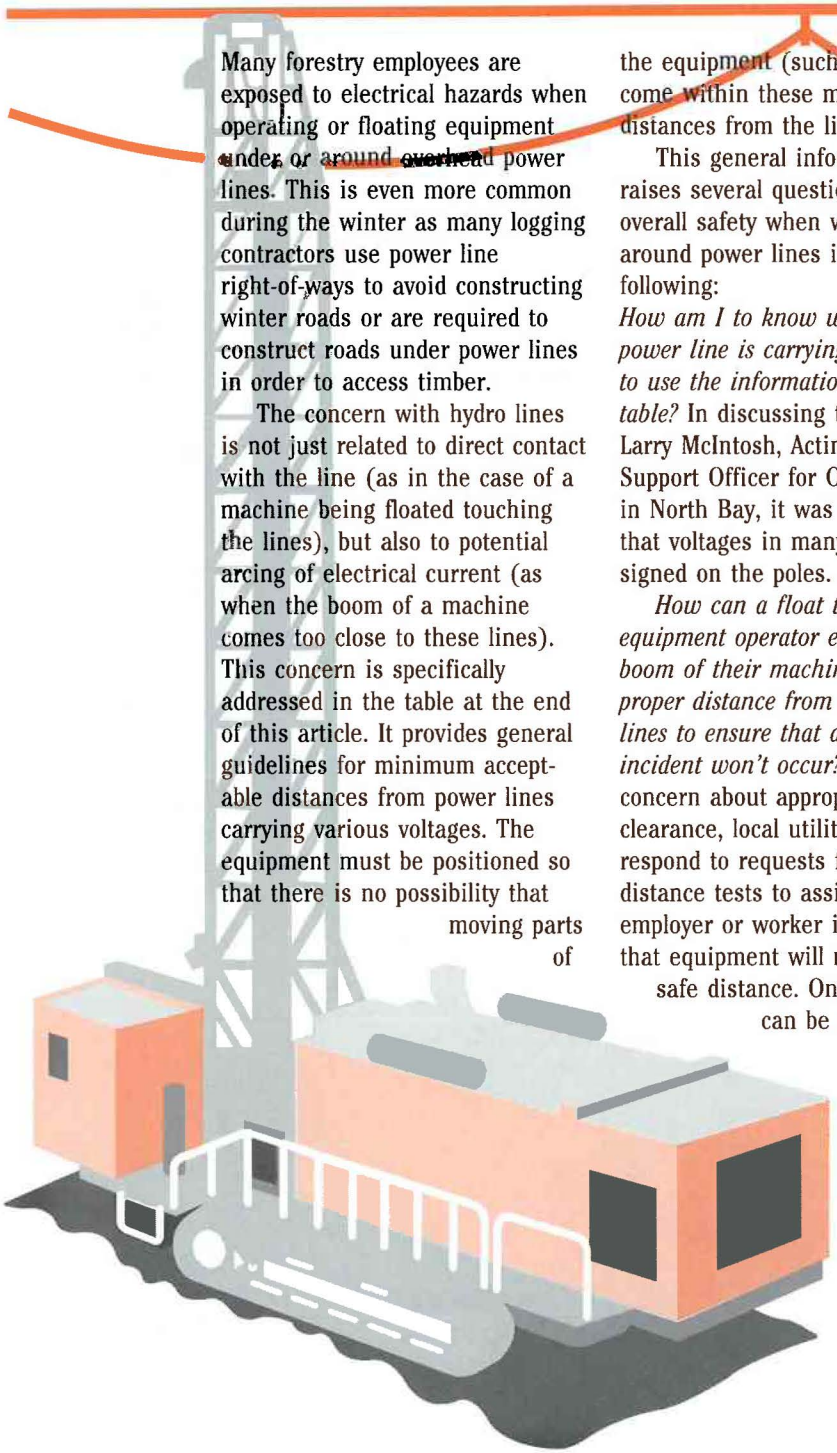
14 Heavy equipment and live power lines... a deadly match

by Tom Weston, CRSP, ONRSA Consultant/Trainer, Forestry Sector

Although this article is written from a [Canadian] forestry perspective, it is applicable to anyone who operates equipment in the vicinity of power lines.

Many forestry employees are exposed to electrical hazards when operating or floating equipment under or around overhead power lines. This is even more common during the winter as many logging contractors use power line right-of-ways to avoid constructing winter roads or are required to construct roads under power lines in order to access timber.

The concern with hydro lines is not just related to direct contact with the line (as in the case of a machine being floated touching the lines), but also to potential arcing of electrical current (as when the boom of a machine comes too close to these lines). This concern is specifically addressed in the table at the end of this article. It provides general guidelines for minimum acceptable distances from power lines carrying various voltages. The equipment must be positioned so that there is no possibility that moving parts of the equipment (such as drills) can come within these minimum distances from the line.



This general information raises several questions regarding overall safety when working around power lines including the following:

How am I to know what voltage a power line is carrying to allow me to use the information in the table? In discussing this with Larry McIntosh, Acting Field Support Officer for Ontario Hydro in North Bay, it was explained that voltages in many cases are signed on the poles.

How can a float truck driver or equipment operator estimate if the boom of their machine is the proper distance from the power lines to ensure that an electrical incident won't occur? If there is concern about appropriate clearance, local utilities will respond to requests for conducting distance tests to assist the employer or worker in ensuring that equipment will maintain a safe distance. One point which can be addressed at this time is that the distance between the line and the ground may vary from one time of the day to another due to varying electrical loads being carried—the greater the load, the more sag. This must be considered to ensure the maximum safety for employees.

Is arcing a concern if I am only loading a few clams of wood piled under a power line? McIntosh indicated that many equipment operators overlook this hazard because they feel "it will just take a few minutes." Any time equipment is within the minimum distance noted in the table, the machine and operator are exposed to the potential of an electrical accident.

Consideration of each of the above points is of key importance to employers and workers who will be operating or supervising equipment which will be exposed to the hazards of power lines. For assistance in addressing any concerns which you may have regarding power line safety, contact your local [MSHA] office.

Minimum distance from live power lines

Voltage of power line	Minimum distance
750 to 150,000 volts	3.0 meters
150,001 to 250,000	4.5 meters
250,001 and over	6.0 meters

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

Holmes Safety Association monthly safety topic

15

Fatal rubber tire haulage accident

GENERAL INFORMATION: A 48 year old ventilation/curtain man with 19 years of mining experience, one year at this classification, was killed in a rubber-tired haulage accident when the bucket of a battery scoop he was riding in was struck by a loaded battery ram car that was passing through a run-through curtain.

This operation is an underground coal mine with three vertical service shafts and one material slope. Mining occurs at depths from 550 to 800 feet. The mine presently operates nine continuous mining machine sections in both main heading development and in production panels, and employs 617 miners. The average production of the mine is 6,500 to 7,500 clean tons per day. Typical mining involves developing five to nine entries in both mains and rooms.

DESCRIPTION OF ACCIDENT: The 3211 section crew under the supervision of the section foreman entered the mine at the 320 portal, traveled via diesel man bus, and arrived on the No. 3211 section at about 7:30 am. He examined the faces of the entries and other areas of the section, and assigned the members of the crew their respective duties. The section had just been relocated to the 3211 main heading, from a set of connecting rooms adjacent to the main heading.

The continuous mining machine was located in the face of the 2 right entry. He instructed the miner crew of two to move the continuous mining machine to the 1 right entry. He instructed the roofbolters to move the bolter into 2 right entry. He also instructed the scoop operator to obtain the needed supplies for the roofbolter and deliver them to the 2 right entry. He also requested the victim (ventilation/curtain man) to go to the adjacent worked out rooms, that had been recently mined, to retrieve brattice cloth that was left in that area.

The scoop operator contacted the victim and proceeded to the adjacent rooms to retrieve the brattice material. The continuous miner was mining coal in the 1 right entry when the scoop operator and the victim left the section.

The continuous miner finished mining in the 1 right entry and moved to the belt heading entry while the scoop operator and the victim were in the adjacent rooms.

At about 9:30 am, the scoop operator and the victim returned to the section. The scoop operator was operating the scoop with the bucket in the forward position of travel and the victim was being transported in the bucket. The scoop operator stopped the scoop in the intersection of the last open crosscut between 1 and 2 left entry. Immediately after the scoop stopped, a loaded ramcar traveled through the run-through drop (line brattice) striking the scoop bucket and coming to rest on the upper portion of the victim's legs.

The section foreman was at the face of the 1 left entry making routine examinations when the accident occurred. He immediately proceeded to the accident site. The victim was freed without delay and the section foreman instructed the scoop operator to retrieve the first aid supplies and the section electrician to call for a track manbus and notify the surface to summon an ambulance. The victim was transported to the section beltheader (about 7 crosscuts) where he was removed from the scoop and placed on a stretcher and transported to the surface at the 320 portal arriving at about 9:55 am. An ambulance arrived at the mine at 10:01 am and an emergency medical helicopter arrived with a doctor aboard, at 10:22 am. The victim was transported by helicopter to the medical center. He was pronounced dead at 3:25 p.m. the same day.

CONCLUSION: The accident occurred when the battery end of a loaded Simmons and Rand ramcar traveling through a run-through drop struck the bucket of an S and S battery scoop that was transporting the victim.

Contributing factors to this fatality were; The victim was a passenger riding in the bucket in the forward position of travel as the scoop returned to the section. The audible warning devices provided on the scoop and ram car were not distinguishable over the noise of the equipment operating in the area.

Model checklist

(This page was inadvertently dropped from the "Behavior-based safety" article on pg. 3 in the April 1995 issue of the ***HSA Bulletin****)*

The traditional model is attitude-based

Safety concept:

• The Personal Fallacy—erroneous conclusion that because persons suffer accidents, safety efforts need to focus on the internal states of persons.

Underlying assumptions:

• The Accident Cycle is inevitable and therefore repeated efforts are required.
• If outside consultants or management can change what goes on inside of individual employees, then they can get employee behavior to change.

Indirect focus:

Efforts center on changing the personal beliefs and attitudes of individuals in the hope of thereby changing their behavior.

Wage-roll accountability:

At wage-roll levels this old paradigm leads to campaigns to get people to feel responsible for safety, and to get them to give up whatever beliefs they have that supposedly stop them from behaving safely.

Management accountability:

At the management level this old paradigm results in campaigns to get managers to lead the effort, to inspire and motivate so as to create the changes inside of individuals.
And all of this because managers are held accountable for bottom-line injury frequency results.

Top-down model:

• **Management** bosses, motivates, entices, supplies incentives, coaxes.
• **Wage-roll personnel** attend meetings, win prizes, lose prizes, suffer disciplinary action.
• Safety problems are prioritized and solved by management, sometimes with wage-roll input.

Low effectiveness:

Continuing accident cycle or performance plateau.

The new model is behavior-based

Safety concept:

• The Systems Approach—sees safety as a systems issue (not a personal issue), requiring a systems answer.

Underlying assumptions:

• Continuous Improvement in safety is possible and desirable.
• Since individuals have direct control of their actions but not of their attitudes & beliefs, effective management of behavior is the place to begin — then both individual and cultural change will follow.

Direct focus:

Efforts are focused directly on behaviors, actions, and performance. What goes on inside the individual is respected as private.

Wage-roll accountability:

Individuals can act in accordance with the inventory of critical behaviors and therefore protect themselves. They do behavioral observation and feedback, thus protecting their co-workers and building a data base for continuous improvement.

Management accountability:

Management can act to create the organizational consequences that reinforce safe behavior, i.e., compliance with the facility's inventory of critical behaviors. Managers are accountable for the quality of the safety culture and atmosphere, and for the expanded sphere of wage-roll activity levels that they empower.

Collaborative model:

• **Managers** are not seen as bosses but as people who empower the whole team.
• **Wage-roll personnel** serve with distinction as steering committee members and as behavioral observers, helping to develop their facility's inventory of critical behaviors and giving their peers ongoing verbal and charted feedback on safety performance.
• **Wage-roll & Management** personnel work together on problem solving for continuous improvement.

High effectiveness:

The step-change to continuous improvement in safety performance.

Rising electricity demand will result in higher coal use

Utility coal demand will increase to 843 million tons by 1995, if the latest short term energy outlook by the Energy Information Administration (EIA) proves correct. The study says strong U.S. economic growth will increase electricity demand by 3.3% this year and about 2% in 1995, which will push utility coal demand.

Utility coal demand in 1993 was 813.5 million tons, EIA said. In 1994, the total is expected to increase 2.5% to 833.5.

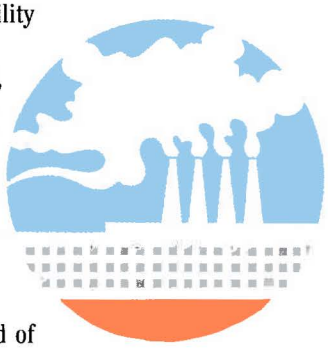
Unfortunately for coal producers, the same isn't expected to be true for prices. EIA said utility coal prices in 1993, which averaged $1.38 per million Btu, will remain virtually unchanged in 1994. In 1995, prices should climb to $1.40 per million Btu.

Coal electricity supply

(kilowatt-hours in billions)

Category	1993	1994	1995
Net utility	1639.2	1673.4	1696.3
Non utility	53.4	57.6	61.6

Coal should provide about 57% of U.S. electricity generation in 1993, and about the same amount in both 1994 and 1995, the EIA data indicates. For non-utility generation, coal provided 16.4% of the total in 1993, and is forecast to provide 16.2% in 1994, and 16.7% in 1995.



EIA also predicted crude oil prices will likely rise slowly in 1995, perhaps reaching $18 per 42-gallon barrel by the end of the year. Current prices are $13 to $16 per barrel.

Reprinted from the February 1995 issue of Acquire's ***COAL TODAY.***

Dashing AMD by filling the voids...

Device could revolutionize treatment of acid mine drainage from abandoned mines

According to researchers at the West Virginia University branch of the National Mine Land Reclamation Center, its newly invented "Burnett Ejector"--a metallic device with no moving parts--may provide an economical way to treat acid mine drainage (AMD) while solving a burgeoning solid waste disposal problem.

With the advent of clean coal combustion technologies for electric power plants that generate high-alkaline ash, scientists have been working to develop a natural, low-cost way to use it to treat—and hopefully prevent—AMD seeping from abandoned underground coal operations. The Burnett Ejector promises an economical solution to the environmental problems of utility waste disposal and degradation of water quality from past mining practices at less than half the cost of other currently available technologies.

Powered by compressed air, the device fits into the bottom of two 1.5-inch rubber hoses, which are fed into a mine void through an 8-inch borehole. Once in place, the ejector can be rotated fullcircle, blowing the acid reducing fill material in all directions. Compressed air leaves the ejector at supersonic speed while fill material dropped through a 3-inch steel pipe inserted through the same 8-inch borehole rides the turbulent airstream, filling the mine void.

The Burnett Ejector is now under test at a 25-acre mine site in the Freeport coal seam in Preston County, WV. Preliminary results show that as much as 1,500 tons of ash per month can be stowed into the old mine. Cost is $13/ton of ash, but the researchers say that expense can be reduced to $5/ton with economies of scale.

Reprinted from the February 1995 issue of Acquire's ***COAL TODAY.***

18 Counter ergonomics' 'New Age' injuries with strong preventive training program

Industry safety survey indicates a growing concern over the incidence of ergonomic injuries

Ergonomics is fast becoming today's hottest issue in workplace safety. However, do not let the word intimidate you. While it may be a new science, ergonomics deals with a familiar subject—matching individuals' needs with the demands of work to prevent injuries and maintain productivity.

Sparked by the rise in lost workdays from cumulative trauma disorders (CTDs), ergonomics seeks ways to prevent these disabling "new age" illnesses, which include carpal tunnel syndrome, nerve entrapment, bursitis, back problems and a range of muscle and tendon disorders. Aches are no longer considered "part of the job."

CTD-related illnesses result from activities involving repetitive motion, cramped posture, unusual stress and other physiological and psychological pressures on a daily basis. While they may seem minor, CTDs can be as painful and disabling as conventional injuries. They are having a growing impact on worker productivity in plants and offices throughout industry.

Examples of occupations with high CTD risk include (but are not limited to) data entry clerks and other keyboard users, machine operators, parts assemblers, sorters and packers and other jobs that involve repetitive physical motion, a fixed or cramped working position or a high level of anxiety.

Top priority

Since CTDs affect worker health and reduce productivity, their prevention is receiving top priority from management and safety professionals across industries. Ergonomics-related topics have become popular items on the agenda at professional meetings, business conferences and trade expositions.

An industry survey yields another indication of the importance of ergonomics. For five out of the last six years, respondents to a DuPont safety survey of the chemical and food industries have identified ergonomics as their number one safety training concern, including a record 38 percent this year. Clearly, ergonomics and its family of injuries and illnesses are today's top safety concern across industry.

The 1994 DuPont safety survey also revealed the impact of ergonomic injuries and illnesses on lost workday cases (LWCs). The companies surveyed

reported that an average 27.5 percent of their LWCs in the previous year resulted from CTDs and similar disorders.

Addressing this high number and looking for ways to stem the tide has become a priority objective of safety professionals in the firms surveyed. In fact, more than 70 percent reported their companies have already established programs to deal with ergonomic-related safety issues.

Not surprisingly, the growth of CTDs has also gained regulators' attention. Federal and many state regulatory agencies are now considering ergonomic standards for classifying and reporting ergonomic-related injuries and illnesses. Regulators are busy preparing guidelines for employee education and preventive training.

In California, the Occupational Safety and Health Standards Board will soon make ergonomics a part of the official state safety standard. And federal legislative action is anticipated during the next several months. While the California approach deals with job specific training, the federal standards are expected to focus on ergonomic improvement of workstations and mechanical devices.

Ongoing training

The most important task—training workers for prevention of ergonomic injuries and illnesses—will be management's responsibility. The best approach is to integrate ergonomics into a company's ongoing safety management program.

Fortunately, ergonomics is an "easy fit" with other elements of the industrial safety agenda. Training information can be communicated to employees with the same tools and by the same methods used for other safety issues because the same principles apply. Properly integrated with existing training modules, ergonomics can be a logical and timely extension to a sound safety management program that is already in place.

As with all safety activities, management commitment and employee involvement are the keys to resolving ergonomic-related injuries and illnesses. Management must provide a hazard-free work environment, ergonomically sound equipment and tools and appropriate training that focuses not simply on the "how" but also the "whys." Trained employees then become responsible for their own personal safety, for implementation of new safety practices and for continuous feedback on ergonomic conditions in their work areas.

For guidance in developing an ergonomics program, safety managers can tap a variety of resources.

The most successful training programs allow participants to learn important ergonomic concepts at their own pace and then apply this newly acquired information through activities such as field audits. Videotapes, which provide examples of how to put these concepts into practice in common workplace situations, and group discussions are both great tools for reinforcing key teachings.

Consultants and other ergonomic specialists can be another source of valuable advice. However, like any new discipline, ergonomics has spawned "experts" with limited first-hand experience in implementing industrial safety training. So be cautious. Always check credentials and references before engaging an outside consultant.

The cure for the alarming rise in ergonomic injuries and illnesses appears to be the same tried and true remedy that has succeeded with other workplace hazards: Combine employer involvement, worker education and safety training into a structured safety management program focused on prevention. Investing now in ergonomics education will pay health dividends to your workforce—and productivity dividends to your company—for years to come.

By Tony Bimonte, Programs Development Manager, DuPont Safety & Environmental Services, Wilmington, DE.

Reprinted from the November 1994 issue of ***Occupational Safety & Health.***

Bureau of Mines schedules three technology transfer workshops

The USBOM has scheduled 3 Technology Transfer Workshops to provide user training on an advanced mine fire and ventilation computer simulation program. The workshops will be held May 16-18, 1995 at the University of Missouri–Rolla in Rolla, MO; June 12-14, 1995 at the University of Utah in Salt Lake City, UT; and July 18-20, 1995 at the U.S. Department of Labor Mine Safety and Health Administration's National Mine Health and Safety Academy in Beckley, WV.

Attendance will be limited to fifteen participants at each location, and reservations will be accepted on a first-come-first-served basis. Those wishing to attend should contact:

Linneas W. Laage, U.S. Bureau of Mines
Twin Cities Research Center
Minneapolis, MN, 55417
Telephone: (612) 725-4624
Fax: (612) 725-4526
Internet: laage@tcrca.usbm.gov

20 Expand your health through stretching

You can run but you can't hide from the proven health benefits of regular aerobic exercise, the kind of exercise that works both your heart and lungs. The health benefits of stretching exercises have been less well publicized. Nevertheless, stretching should be a key part of every person's exercise regimen. Why? Because stretching before and after you exercise helps prevent injuries that can occur with jogging, bicycling, and even walking. Stretching before engaging in your aerobic exercise of choice makes exercising easier because it prepares your muscles for the activity. And stretching helps maintain "flexibility," the capacity to use muscles and joints throughout their full range of movement.

Flexibility and good health--it's no stretch

How does flexibility impact on your health? Just consider what lack of flexibility does. Lack of flexibility can stress your back, hips, and neck resulting in low back pain, neck and shoulder pain, and even deformity. Most physical therapists recommend stretching as part of a rehabilitation program for a common complaint: low back pain. A recent study found that people with persistent low back pain who engaged in a stretching regimen experienced less pain and greater activity levels than those who did not.

Your personal "stretch" best

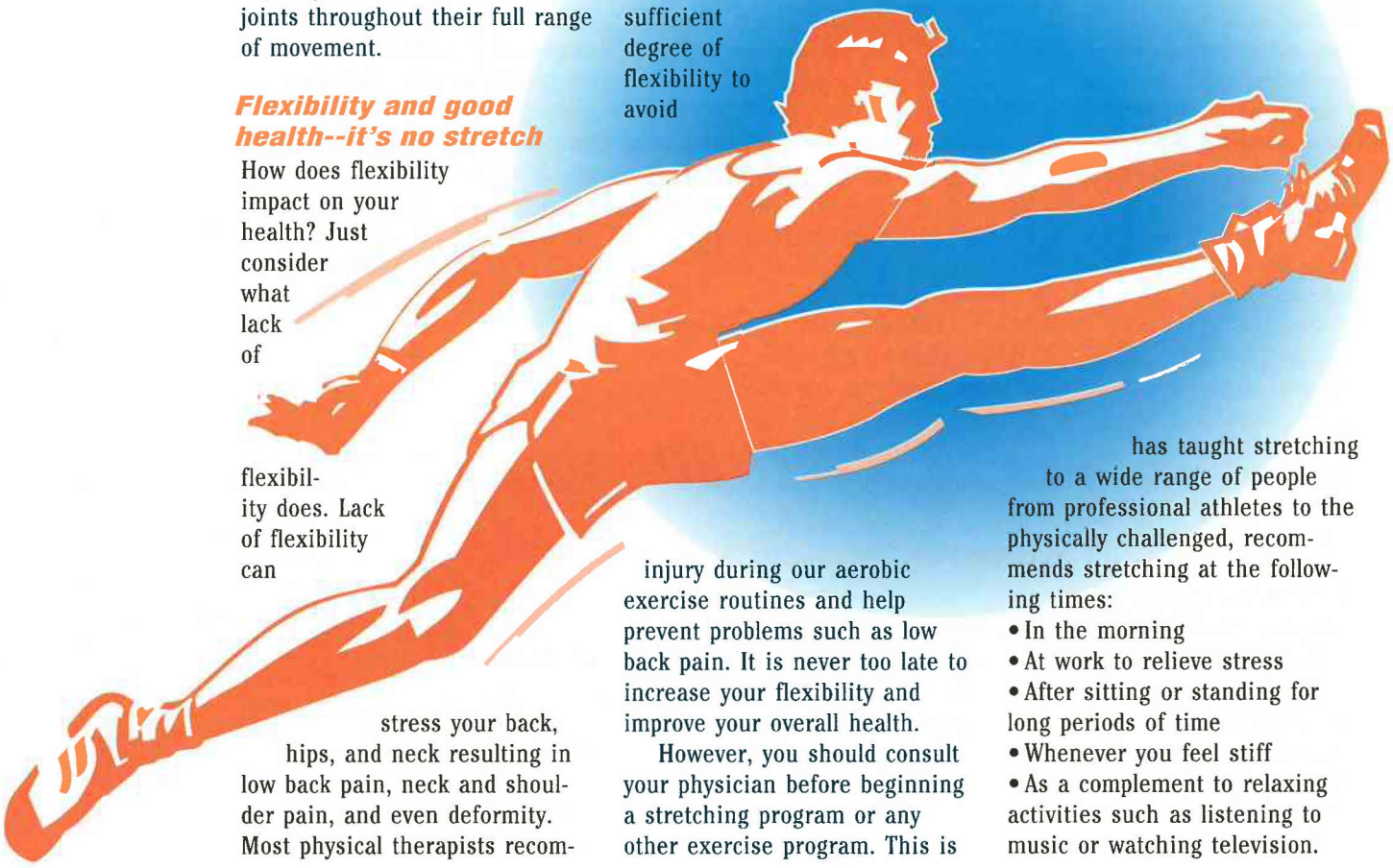
In general, children are more flexible than adults, and women are more flexible than men. Some people naturally appear to be more flexible than others. Let's face it, most of us will never be able to perform the acrobatics of a gymnast. But we can achieve a sufficient degree of flexibility to avoid injury during our aerobic exercise routines and help prevent problems such as low back pain. It is never too late to increase your flexibility and improve your overall health.

However, you should consult your physician before beginning a stretching program or any other exercise program. This is especially important for people with joint or muscle problems, people who have been inactive for a long period of time, or people who have recently undergone surgery.

When should you stretch?

Stretching is one of those activities that can be done almost anywhere— while waiting for a bus, at work, or in front of the television. You should always stretch before and after engaging in aerobic exercise such as jogging. But it is also good to stretch at various times of the day. Bob Anderson, a physical education expert who has taught stretching to a wide range of people from professional athletes to the physically challenged, recommends stretching at the following times:

- In the morning
- At work to relieve stress
- After sitting or standing for long periods of time
- Whenever you feel stiff
- As a complement to relaxing activities such as listening to music or watching television.



What should you stretch?

Ideally, you should stretch every part of the body—neck, back, legs, hips, arms, and shoulders. If you can't find time to stretch them all, concentrate on those body sections that will get strained the most. For instance, before an aerobic workout such as walking or jogging stretch areas of the lower body—lower back, hips, and legs. Before engaging in resistance exercise such as isotonics, also known as strength or weight training (see the July 1994 *HSA Bulletin*), stretch areas of the upper body—arms, neck, and shoulders.

Slow, gradual stretching without bouncing, known technically as "static" or "sustained" stretching, is the type recommended today. Bob Anderson divides the static stretch into two parts that follow each other in a smooth movement. The first part is the "easy stretch." Stretch for 10 to 30 seconds until you experience a mild tension, then relax while holding the stretch. The tension should lessen while you are still in the stretch position. If the tension does not decrease, don't stretch as much, and find a level of tension that is comfortable for you. After the easy stretch comes the "developmental stretch." While in the easy stretch position, move a fraction of an inch further until you again feel a mild tension and hold this position for 10 to 30 seconds. Again, the tension should lessen; if it does not, back off a little from your original stretch. Eventually you will want to spend 20 to 30 seconds in the easy stretch and 30 seconds or more in the developmental stretch.

It is important to breathe correctly during stretching. Your breathing should be slow and deliberate. Take a deep breath before stretching, then exhale slowly while bending into the stretch. Never hold your breath while stretching.

The following stretching exercises are part of a regimen developed by Bob Anderson especially for people who are 50 years or older. Most of these stretches are for the lower body and would be a perfect complement to a walking or jogging exercise regimen.

Neck and back stretch

Lie on a mat with legs bent and feet flat on floor. Interlace your fingers behind your head so that elbows are pointing toward the ceiling. Using the power of your arms, slowly bring your head, neck, and shoulders forward until you feel a slight stretch. Hold an easy stretch for 5 seconds. Repeat three times. Do not overstretch.

Hamstring stretch

Lying on the mat, straighten both legs and relax, then pull your left leg toward your chest. For this stretch keep the back of your head on the mat, if possible, but don't strain. Hold an easy stretch for 30 seconds. Repeat, pulling your right leg toward your chest.

Lower leg stretch

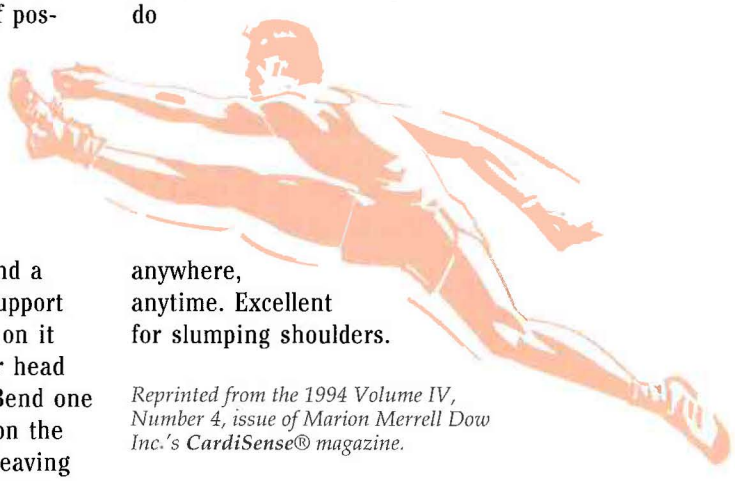
To stretch your calf, stand a little way from a solid support such as a wall and lean on it with your forearms, your head resting on your hands. Bend one leg and place your foot on the ground in front of you, leaving the other leg straight behind you. Slowly move your hips forward until you feel a stretch in the calf of your straight leg. Be sure to keep the heel of the foot of the straight leg on the ground and your toes pointed straight ahead. Hold an easy stretch for 30 seconds. Do not bounce. Stretch both legs.

Groin stretch

While seated on the floor, bring the soles of your feet together with your heels a comfortable distance from your groin. Now, put your hands around your feet and slowly pull yourself forward until you feel an easy stretch in the groin. Move forward by bending from the hips and not from the shoulders. If possible, keep your elbows on the outside of your lower legs for greater stability during the stretch. Hold a comfortable stretch for 30 to 40 seconds.

Arm and shoulder stretch

In a standing or sitting position, interlace your fingers above your head. Now, with your palms facing upward, push your arms slightly back and up. Feel the stretch in arms, shoulders, and upper back. Hold stretch for 15 seconds. Do not hold your breath. This stretch is good to do anywhere, anytime. Excellent for slumping shoulders.



Reprinted from the 1994 Volume IV, Number 4, issue of Marion Merrell Dow Inc.'s ***CardiSense®*** *magazine.*

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What to do when you feel lousy but can't cancel the trip

Sniffle, wheeze, cough, barf...

The timing stinks. Yesterday you awoke with a scratchy throat. Today, you've got a full-blown cold. Tomorrow, you and your family travel across the country on a well earned vacation.

The culmination of months of preparation, this vacation is your chance to shine. As another sneeze rips through your body, you think, "The way I'm feeling, the only thing that's likely to shine is my runny nose."

Adding to your misery is the travel ahead—dragging your luggage through the airport, being holed up in an airplane cabin for five hours, and then dragging your luggage through *another* airport. How on earth, you wonder, will you cope?

The most sensible counsel, of course, is to stay home, rest, drink plenty of fluids, eat well, etc. But let's get real; that's a luxury you can ill (so to speak) afford—what with deposits, reservations, disappointed family members, etc.

So travel you must. Unfortunately, the traveling itself can aggravate your illness. "Anything that changes the routine, especially traveling across time zones, will slow down the healing process," says Bradley A. Connor, M.D., medical director of Travel Health Services in New York. "Realize that your resistance is down, and that you're setting yourself up for a high-risk situation."

Below, advice to follow before heading to the airport and while in flight:

Alas, the common cold

If you have a cold, flying can deal a double blow to your body. Dry cabin air dehydrates the system, while changes in barometric pressure can cause sinus pain and exacerbate an ear infection. For travelers who have a cold or nasal congestion, Connor offers this advice:

- Take a decongestant or use a nasal spray prior to flying to minimize the risk of sinus pain during takeoff and landing.
- Drink plenty of fluids, not only to counteract low humidity in the cabin, but because decongestants dry out mucus membranes, which can increase the risk of infection.

Another approach is offered by Lauren Fox, R.N.C.S., a family nurse practitioner in Monument Beach, Mass., who advocates "adjunctive therapy" to assist rather than suppress the body's own healing. She offers these tips:

- Thin out your body's mucus by drinking lots of fluids—especially apple cider vinegar—and avoiding dairy and other fatty foods before flying.
- To ease ear discomfort in flight, chew gum; this will open up the Eustachian tubes.
- For sinus congestion, inhale the steam from hot ginger tea—carry the tea bags on board.
- To alleviate a sore throat, gargle with water and cider vinegar.

An ounce of prevention

What should you do if you feel the warning signs of a cold or flu as you prepare to leave town? Connor counsels common sense: "If you're working hard to hit deadlines before a trip, realize that some things can wait. Slow down. Sometimes a good night's sleep can make all the difference."

Fox adds these suggestions:

- Boost your intake of vitamin C, to 2,000 to 6,000 milligrams daily.
- Bolster your defenses with Echinacea, a flower extract available at health food stores.

"Echinacea has immune-building properties," Fox explains. "It can do one of two things: actually stave off the cold or reduce the symptoms so you don't get as sick. It works best at the initial stages."

That aching stomach

When traveling, stomach or intestinal distress can be among the most inconvenient of illnesses. Connor notes, however, that the most common such ailment, viral gastroenteritis, does not respond to antibiotics. His advice:

- Drink extra liquids to replace body fluids lost in the dry atmosphere of an airline cabin.
- Combat diarrhea by taking something like Imodium. "It paralyzes the bowel and stops it from contracting, which will give you very good symptomatic relief," Connor says.

Fox offers these tips:

- To ease diarrhea, take acidophilus, a microorganism that occurs naturally in the intestines and is available in capsule form.
- For nausea, drink ginger tea.
- For stomach cramps, aloe vera juice, another plant product, can offer relief, while papaya tablets or fresh papaya will alleviate heartburn. Peppermint tea will ease stomach discomfort. Don't expect the flight attendant to have these remedies on the cart; come prepared.

Enjoy your vacation...

by playing it SAFE

You've earned your vacation, and you should enjoy it. Even though you'll be taking some time off from work, remember not to take "time off" from safety. "Playing it safe" while you're on vacation can help you and your family avoid accidents and injury while getting the rest and recreation you deserve. Playing it safe means preparing for your activities ahead of time, securing your home if you'll be away, and using common safety sense.

Prepare for activity

Think ahead to where you'd be going and what you'll be doing. If you're planning a vacation in a warm climate, be sure to pack the proper sunscreen creams, loose-fitting, lightweight clothing, sun hats, sunglasses, and a cooler or jug for carrying cool liquids. Build up your sun exposure gradually—15 minutes the first day, 20 minutes the second day, 25 minutes the third day, and so on. [Be especially aware of the terrible potential for skin cancer that extreme sun exposure holds for young children.] If you will be boating, swimming, water skiing, or enjoying other water sports, make sure that all family members can swim before allowing them to participate in those activities. Take lessons in each activity from a qualified professional who can teach you the rules of the sport as well as specific safety tips.

Secure your home

Before leaving on vacation, make sure that your home is secured. This checklist can help you prepare for your departure.

- Are all electrical appliances (except your refrigerator) unplugged?
- Are gas pilots and water faucets turned off?
- Are windows and doors securely locked?
- Have you arranged for someone to pick up your mail?
- Did you cancel your newspaper subscription?
- Have you notified friends, relatives, and/ or neighbors where you'll be and how you can be reached?
- Have you set a timer to turn lights on and off, [a radio tuned to a talk radio station,] or asked someone to do it for you?
- Have you notified your local police station when you'd be leaving and when you expect to be back?

Safety sense

In addition to these tips, your most important tool for having a safe vacation is your own common safety sense. When staying in unfamiliar surroundings, always check for fire exits, alarms, and escape routes.

Wherever you go, be sure to bring along your family's medical information—insurance ID card, immunization records, history of diseases, and prescription medications—in the event one of you should become ill. ***NEVER*** leave small children unattended. Bring along a first aid kit and manual and familiarize yourself with their contents. When you use your safety sense, you'll be able to relax and enjoy your vacation. You'll come back refreshed and ready... for next year!

Reprinted from Parlay International's 1988 publication: ***Personal Safety and Health.***

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"A tool is but the extension of a man's hand, and a machine is but a complex tool. He that invents a machine augments the power of man and the well-being of mankind." — Henry Ward Beecher

"Men have become tools of their tools." — Henry David Thoreau

"One machine can do the work of fifty ordinary men. No machine can do the work of one extraordinary man." — Elbert Hubbard

"To curb the machine and limit art to handicraft is a denial of opportunity." — Lewis Mumford

"The machine unmakes the man. Now that the machine is so perfect, the engineer is nobody." — Ralph Waldo Emerson

"Our grand business is not to see what lies dimly at a distance, but to do what lies clearly at hand." —Thomas Carlyle

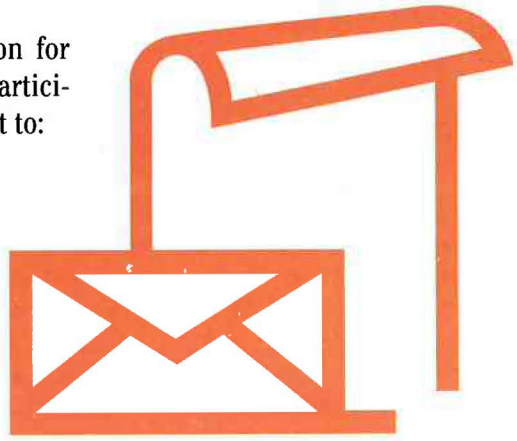
"The best way to cheer yourself up is to try to cheer somebody else up." — Mark Twain

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.

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

Phone: (703) 235-1400



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-l 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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