OCTOBER 1979

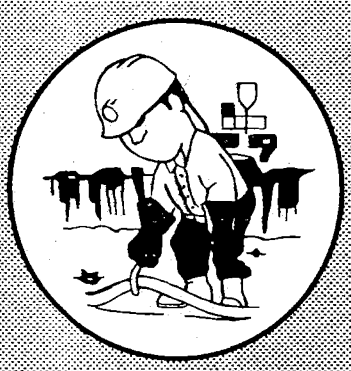
HOLMES SAFETY ASSOCIATION

E PLURIBUS UNUM

SAFETY EFFICIENCY

MINERAL INDUSTRIES

BULLETIN



United States Department of Labor

MSHA

Mine Safety and Health Administration

CONTENTS

October 1979

HOLMES SAFETY ASSOCIATION MONTHLY SAFETY TOPIC

Discussions with Miners Who Load Skips and Pull Chutes:

1. Noise in some skip pocket locations appears to exceed allowable limits due primarily to the air blast from opening and closing guillotine doors.

2. On some skip pockets, the chute from the pocket to the skip is not completely enclosed. Highly fluid or fast-running muck could run over the top of the chute gate and injure the skip loader or wash the loader down the shaft. The opening permits an operator to use a bar or blow pipe to move hangups, but a more efficient and less dangerous procedure is needed. Perhaps powerful water sprays could be located in the ore pocket aimed at the chute with controls for the sprays in the skip loaders' station.

3. Rocks, so large that they will cause the chute puller or skip loader problems, should never be allowed to leave a stope. From a time, money, and injury standpoint such rocks are a menace to company profits. From the chute puller and skip loader standpoint, they are a definite threat and safety hazard. Where it is at all possible, it seems reasonable that this unnecessary hazard should be brought to an end.

4. Communications are nonexistent in most mines between miners in stopes and chute pullers, and skip loaders and car dumpers. If a chute is empty, there is no way that most chute pullers know when the miner will start slushing. If the chute is hung up, a chute puller may be trying to get the hangup to move when suddenly struck by a fresh supply of muck from the stope above. Telephone communication would allow a chute puller to inform the miner in the stope above that there was a hangup. Also, mines could equip each chute with a flashing light that the miner above could turn on when beginning to slush muck into the chute.

If miners on a haulage level walk by an empty chute, and the miner in the stope above starts slushing, rock entering the chute is apt to fly out and hit the miners. If communciation were available to the chute puller, the puller could call the miner and ask the miner to drop enough muck to fill the lip of a chute that the chute puller had emptied.

To free a chute, the chute puller has to let the door down and stand right in front of the chute. Occasionally, if the miner in the stope thinks a chute is hung, the miner will run water into it. If a chute puller is trying to free the chute at the same time, the puller does not know about the water. The water

may build up behind the hangup and suddenly a surge of water-lubricated muck-and-rock mixture hits the chute puller with great force. A good communication system could eliminate this problem. It is not a safe practice for the chute puller to climb up the manway to communicate with the miner. If the miner above starts slushing, the chute puller could be injured by rock falling down the manway.

If it is necessary to wash down chutes, why not install in the storage area above the chute, power nozzles that the chute puller could operate. In order to wash down a chute, why does the chute puller have to stand in front of the open chute with arm extended into the chute with a water hose and use a finger to produce pressure on the water?

Skip loaders are often injured because they have no way of knowing when cars are being dumped in the skip pocket. A skip loader may be trying to free a hangup with a bar or a blow pipe when a carload of muck suddenly hits the pipe or bar. A blinding light could be installed in the skip loaders' station that would be activated by the car dumpers before a carload of muck was dumped.

5. Illumination at loading points is frequently not adequate. Chute pullers need floodlights directed on cars so they can clearly see when the cars are adequately loaded.

Skip tenders need floodlights directed on skips to see when they are loaded and other lights directed on the flow of material to clearly see the consistency of the material.

Adequate floodlights inside the skip pocket and chute pocket would enable chute pullers and skip loaders to clearly see the cause of hangups.

Light on gate controls is generally little or nonexistent. Operators should not have to guess or go by feel on where the controls are.

6. Skip loader stations often have only a chain or other inadequate gate in front of the shaft. If a skip loader should slip or get off balance from any cause (heat exhaustion or other), they could fall down the shaft. Adequate safety would seem to require chest-high gates extending to about four-to-six inches above the floor in front of the shaft. It would seem reasonable also that gates should open into the station and butt solidly up against timber on both sides and be secured against the timber when not in use.

7. It appears desirable that skip-pocket gates should open under air pressure and close when the pressure is removed. Otherwise, air lines must be maintained in excellent condition all of the way to the surface. If air lines are not maintained in excellent condition, a break any place ahead of the skip-loading point will make a skip loader unable to close an open gate.

A skip loader under such conditions could get rid of the skip as quickly as possible, but muck would continue to flow down the shaft until the pocket was empty.

8. Miners should not work in a shaft below a skip pocket that is loading skips. Is a standard procedure needed to warn miners on every station below the pocket? Could a flashing light be installed on every station?

October 1979

Session XXXIX

HOLMES SAFETY ASSOCIATION MONTHLY SAFETY TOPIC

Mandatory Safety Standards, Surface Coal Mines and Surface Work Areas of Underground Coal Mines

Fire Protection

Subpart L

Sections 77.1104 - 77.1108

In today's session we will continue our discussion on fire protection and begin with provisions pertaining to our first category--means to prevent fires. Combustible materials, grease, lubricants, paints, or flammable liquids shall not be allowed to accumulate where they can create a fire hazard. This, in essence, refers to good housekeeping. Excessive quantities of coal or coal dust shall not be permitted to accumulate, particularly where other highly-flammable materials are present.

Internal-combustion engines, except diesels, shall be shut off and stopped before being fueled. This would eliminate one source of ignition while fuel is being transferred from one container to another.

Battery-charging stations shall be located in well-ventilated areas. Battery-charging stations shall be equipped with reverse-current protection where such stations are connected directly to direct-current power systems. Battery-charging stations shall be adequately ventilated to prevent the accumulation of explosive gases, particularly hydrogen, which can be released during the charging cycle.

Belt conveyors in locations where fire would create a hazard to personnel shall be provided with switches to stop the drive pulley automatically in the event of excessive slippage.

Now we discuss safety standards pertaining to our second category--means to fight fires. Each operator of a coal mine shall provide an adequate supply of firefighting equipment which is adapted to the size and suitable for use under the conditions present on the surface at the mine.

The intent of this general paragraph is to give the operator a choice in type of extinguishing agent and, in some respects, the size or quantity of the unit. Questions can arise on the definition of the term, "adequate supply," particularly for portable fire extinguishers, as for example, at a motor drive. Many of these questions can be answered by

referring to the "National Fire Protection Codes," particularly Code No. 10.

The whole fire-control system shall be considered, for example, if the operator provides a sprinkler system at a hazardous location, then smaller hand-held units would be acceptable at a specific location within the sprinkler-protected area. Likewise, if a good water hydrant-hose system is offered, then small units could be acceptable at a specific location. An isolated plant ordinarily would require a higher degree of protection than a plant served by a local fire department.

Firefighting equipment required under Section 77.1108 shall meet the following minimum requirements:

1. Waterlines. Waterlines shall be capable of delivering 50 gallons of water a minute at a nozzle pressure of 50 pounds per square inch. Where storage tanks are used as a source of water supply, the tanks shall be of 1,000-gallon capacity for each 1,000 tons of coal processed (average) per shift.

2. Fire extinguishers. Fire extinguishers shall be:

   a. Of the appropriate type for the particular fire hazard involved;

   b. Adequate in number and size for the particular fire hazard involved;

   c. Replaced immediately with fully charged extinguishers after any discharge is made from an extinguisher, and

   d. Approved by the Underwriter's Laboratories, Inc., the Factory Mutual Research Corp., or other competent testing agency acceptable to the Mine Safety and Health Administration.

3. Fire hose. Fire hose and couplings shall meet the requirements of the Underwriter's Laboratories, Inc., or Factory Mutual Research Corps.' specifications. Cotton or cotton-polyester jacketed hose shall be treated in accordance with the U.S. Department of Agriculture Forest Service Specification 182 for mildew resistance. The water pressure at the hose nozzle shall not be excessively high so as to present a hazard to the nozzle operator.

The size and location of fire extinguishers required in Section 77.1108-1(b) should follow recommendations given in the appropriate "National Fire Protection Association Codes." The type of extinguishing agent shall conform with the size and class of potential fire hazard. Carbon tetrachloride fire extinguishers are not acceptable in accordance with the "National Fire Protection Code." Carbon tetrachloride is toxic and is harmful if not handled properly.

October 1979

HOLMES SAFETY ASSOCIATION MONTHLY SAFETY TOPIC

Part 4 - Lifting and Handling Material

In this message, three steps are listed giving the action sequence for a carrying operation involving two or more persons. These steps, if properly followed, should help to reduce some of our material handling injuries.

Step 1. Each person gets into proper position (same side if a two-man carry) facing in the direction the material is to be carried. They crouch and grasp the item. Effort is applied, using the leg muscles, lifting together at a command from the leader, and each straightens own body.

Step 2. At a word from the leader, the persons step off with the right foot, keeping step, and stopping at a signal from the leader. Remember that you must be extra careful not to stumble or fall when carrying material, since the result could very well be injurious to both you and your coworker.

Step 3. The leader signals, and the lifting process is reversed with each person returning to original position at the start of the lift.

Step 4. Upon completion of any job, all tools and leftover materials shall be gathered, inspected, and stored in an orderly manner in their proper location.

In our next message we will discuss still another duty that requires some advance planning--handling of material from moving conveyors.

(For underground and surface mining operations)

October 1979

Session LXV

HOLMES SAFETY ASSOCIATION MONTHLY SAFETY TOPIC

Federal Mine Safety and Health Act of 1977

Section 303(i)

Part 75.309 of the Code of Federal Regulations

Return Air; Tests and Adjustments

In today's session, I would like to discuss another important examination that is required by the Federal Mine Safety and Health Act of 1977. This provision of the Act states that if, when tested, a split of air returning from any working section contains one percent or more of methane, changes or adjustments shall be made at once in the ventilation so that the returning air contains less than one percent of methane. The changes or adjustments shall be made so as to increase the quantity of air in the affected split, or an improvement must be made in the distribution of air in the working section to the extent that the methane content is reduced to less than one percent.

The tests required under this section shall be made at 4-hour intervals during each shift by qualified persons. Methane content in the split shall be measured at a point or points where methane may be present in the air current between the last working place of the working section and the junction of that split with another split. Tests to determine the methane content in the split shall be made at a point not less than 12 inches from the roof and ribs.

If, when testing a split of air returning from any working section, it is determined that the air contains 1.5 percent or more of methane, all persons except those necessary to correct the situation shall be withdrawn from the affected area and all electrical power shall be cut off in the area until the amount of methane is reduced to less than one percent. If the changes or adjustments required to alleviate the methane problem materially affect the main air current and thereby the safety of persons in the mine, the changes shall be made when the mine is idle.

The presence of 1.5 percent of methane in the air current returning from active underground working places indicates that considerably larger amounts of methane may be accumulating in the air at places in the mine through which the current of air

Distribution: Underground coal-mining operations

in such split has passed. Good safety practices require that employees shall be withdrawn from any portion of a mine that is endangered from the possibility of an explosion from the accumulation of methane. It is imperative that the cause of such a high percentage of methane in return air should be ascertained and immediate action taken to reduce the methane quantity to less than one percent.

October 1979

ABSTRACT FROM FATAL ACCIDENT

HOLMES SAFETY ASSOCIATION
MONTHLY SAFETY TOPIC

FATAL ELECTRICAL ACCIDENT

General Information: An electrical accident occurred on a Marion 5561 shovel, resulting in the death of an oiler, attempting to lift the metal cover box off the energized high-voltage collector rings.

Cause of Accident: The victim was removing the cover from the high-voltage (4,160 volts) collector rings when the metal cover contacted a collector ring, exposing the victim to 2,300 volts, phase to ground. Victim was not qualified to perform electrical work nor was he working under the direct supervision of a qualified person.

Conclusion: This accident occurred because management instructed a person who was not qualified to perform electrical work to remove the cover from the energized collector ring assembly.

(For surface mining operations)

SKETCH OF FATAL ELECTRICAL ACCIDENT

HOLMES SAFETY ASSOCIATION MONTHLY SAFETY TOPIC

EXPLOSIVES

Each day, in a multitude of ways, explosives serve all industry and enter into all phases of modern living. Although a large percentage of our coal is now produced by continuous miners and longwall systems, explosives are essential for mining coal. Today our message will explore some of the preferred practices in the use of explosives in coal mines.

In all underground areas of a coal mine, only permissible explosives, electrical detonators of proper strength, and permissible blasting devices shall be used; all explosives and blasting devices shall be used in a permissible manner. Permissible explosives shall be fired only with permissible shot-firing units. Only incombustible materials shall be used for stemming boreholes.

Here are some of the accepted blasting practices:

1. Where coal is cut, shots shall not be fired if the blast hole is drilled beyond the limits of the cut.

2. Boreholes shall be cleaned, and they shall be checked to see that they are placed properly and are of the correct depth, in relation to the cut, before being charged.

3. All blasting charges in coal shall have a burden of at least 18 inches in all directions of the height if the coal permits.

4. Boreholes shall be stemmed with at least 24 inches of incombustible material, or at least one-half of the length of the hole shall be stemmed if the hole is less than 4 feet in depth, unless other permissible stemming devices or methods are used.

5. Charges, exceeding 1-1/2 pounds, but not exceeding 3 pounds, shall be used only if boreholes are 6 feet or more in depth. The explosives are charged in a continuous train, with no cartridges deliberately deformed or crushed, with all cartridges in contact with each other and with the end cartridge touching the back of the hole and the stemming, respectively.

Distribution: Underground coal-mining operations

6. Shots shall be fired by certified shot firers wherever State law requires such certification. In mines, where certification of shot firers is not required by State law, the management shall designate competent persons to fire shots.

7. Boreholes shall not be charged while any other work is being done at the face, and the shot or shots shall be fired before any other work is done in the zone of danger from blasting, except that which is necessary to safeguard the employees.

8. Only nonmetallic tamping bars shall be used for charging and tamping boreholes. This does not prohibit the use of a nonmetallic tamping bar with a nonsparking metallic scraper on one end.

9. The leg wires of electrical detonators shall be kept shunted until ready to connect to the firing cable.

10. Shots shall not be fired from the power or signal circuits while any persons are in the mine.

11. The roof and ribs of working places shall be tested before and after firing each shot or group of multiple shots.

12. Ample warning shall be given before shots are fired, and care shall be taken to ascertain that all persons are in the clear. Persons shall be removed from adjoining working places when there is danger of a shot blowing through.

13. Mixed types or brands of explosives shall not be charged or fired in any borehole.

(Note to safety meeting leader): YOU MAY ADD ANY ADDITIONAL COMPANY SAFETY MEASURES HERE.

It should be pointed out that these were only a few of the practices necessary for the safe use of explosives. Let us exercise good judgment when using explosives so that no hazardous situations develop.

B E C A R E F U L ! ! !

October 1979

HOLMES SAFETY ASSOCIATION MONTHLY SAFETY TOPIC

THE JACKLEG-DRILL OPERATORS
PART III-A

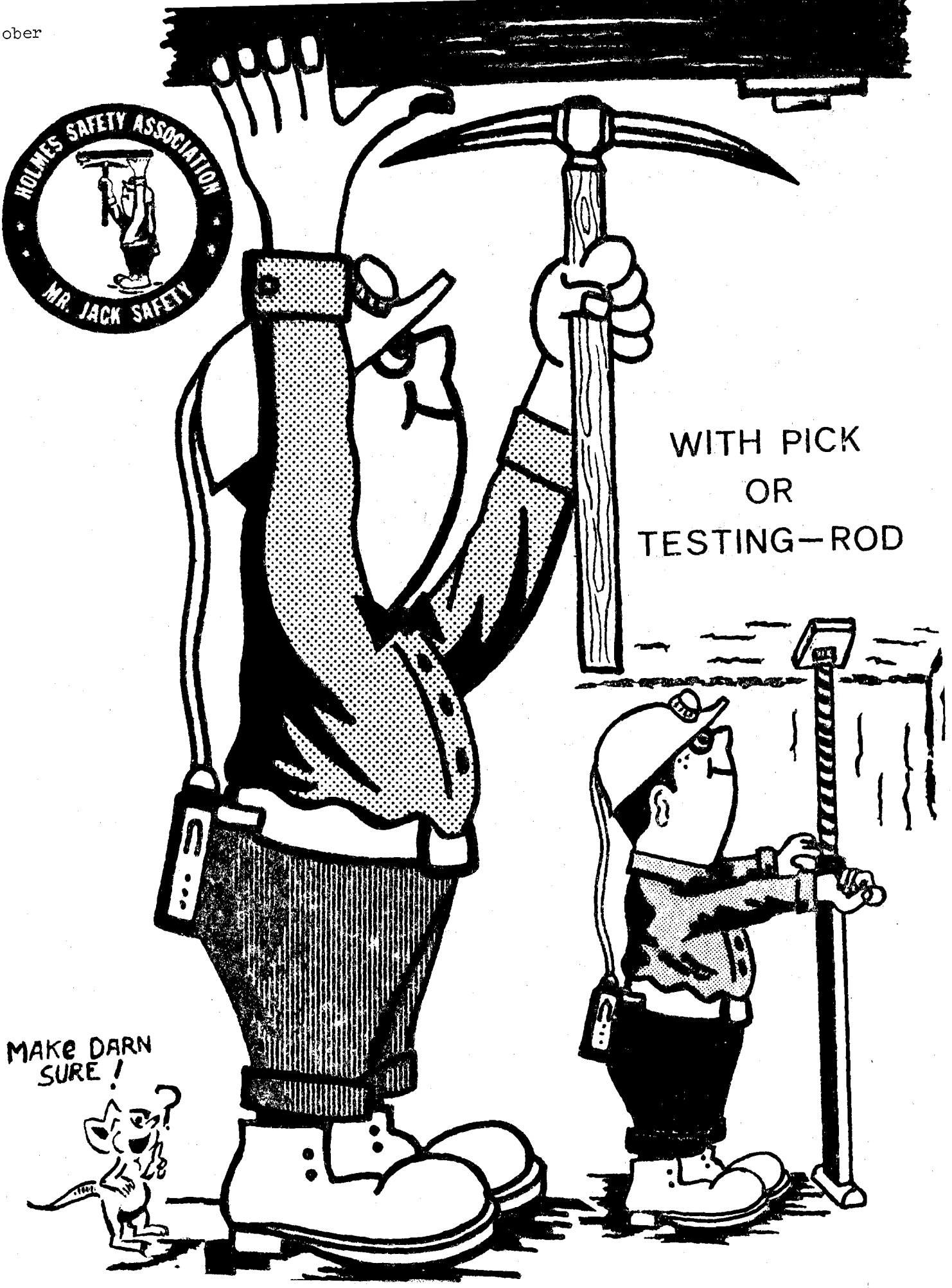
Today we will close our final discussions on the hazards, health and safety precautions while working and running jackleg-drills.

MSHA noise standards have been interpreted as requiring that all hand-held pneumatic rock drills be muffled, and where required, that ear protection continue to be used, to prevent exposure in excess of that specified in the standard. Although some miners have complained that muffled drills cause icing and drill inefficiency, a properly designed muffler will not significantly affect efficiency or cause icing that cannot be prevented. In cases where mufflers have been applied and miners have become accustomed to their use, acceptance is generally good. In fact miners prefer muffled drills when they are properly designed, because of the better visibility and cleaner atmosphere associated with their use.

Many of the machine accidents can be traced to poor visibility caused by dense fog. Foggy conditions should be eliminated as much as possible by installing water traps in the air line, proper adustment of the machine oiler and keeping the steel and water needle free of obstruction. A properly designed muffler will eliminate most of the fog caused by oil and water in the air line. Where freezing is a problem, water traps or an air drying system may be necessary. Under extreme freezing conditions, an antifreeze system such as tanner gas or notox may be installed in the air line.

Mufflers are capable of reducing noise levels below 115dBA, and this will protect persons who come into the vicinity of such drills for short periods without hearing protection. The combination of a properly designed muffler and well fitted hearing protectors will reduce the noise level reaching the drillers ear to below 90dBA, and should enable the miner to drill for the entire 8-hour shift without adverse or irreversible hearing damage.

Distribution: Underground mining operations - metal and nonmetal


HOLMES SAFETY ASSOCIATION
MR. JACK SAFETY
WITH PICK
OR
TESTING–ROD
MAKE DARN SURE!

October

HOLMES SAFETY ASSOCIATION

No. 1 Killer on Rampage

BOX SCORE--ROOF FALL ACCIDENTS

YEAR	Jan	Feb	Mar	April	May	June	July	Aug	Sept.	Oct	Nov	Dec	TOTAL
1977	4	4	4	2	7	2	0	3	0	4	4	4	38
1978	0	0	1	5	3	5	2	8	3	2	3	1	33
'79	3	4	5	2	4	5	5	12					

COAL MINING SECTION Keeping miners informed on the "SCORE" is a good method for maintaining interest in a safety activity.

CHANCE TAKERS ARE ACCIDENT MAKERS

* U.S. GOVERNMENT PRINTING OFFICE: 1979-O-677-093/I