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PROGRAM INFORMATION BULLETIN NO. P11-08

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SUBJECT: Reissue of P07-22 - Operation of Continuous Haulage Systems

Who needs this information?
Coal Mine Safety and Health (CMS&H) enforcement personnel and underground coal mine operators need this information.

What is the purpose of this bulletin?
This Program Information Bulletin (PIB) informs mine operators and CMS&H enforcement personnel of the concerns and potential hazards associated with the use of continuous haulage systems. This bulletin provides guidance for the safe use of such systems.

Information
Continuous haulage systems, known as mobile bridge conveyors, commonly consist of an alternating series of piggyback mobile bridge carriers (MBCs) and chain bridge conveyors. They are either physically attached to the continuous miner or detached and independently trammed behind the miner. At a mobile dolly located on the discharge end of the system, coal is dumped onto a rigid frame modular tailpiece (RFM) installed as an extension of the belt conveyor. In some systems, a mobile bridge carrier feeder-breaker is added to size the mined material. The system usually comprises a number of MBCs and a number of bridge conveyors, one bridge behind every MBC. The number of units varies depending upon mining requirements and the configuration of the area being mined. The RFM is at least the length of the system plus the continuous miner to accommodate the travel of the dolly as the system moves from fully retreated to fully extended during the mining cycle. MBCs provide the means to articulate the system around corners and move in concert with the continuous miner and other units in the system. Because of the nature of the design and operation of these systems, there are some concerns unique to the use of these systems. These concerns include:

- Ineffective communication between unit operators, including the miner operator, and other system workers.

- Confined space around the system.

- Limited visibility to the MBC operators, especially the operator of the most outby MBC.

- Failure to follow safe working procedures.

A review of continuous haulage accidents during the period covering 1985 to the present reveals that 8 fatal accidents occurred during this period. Also, 343 nonfatal accidents occurred during the same period resulting in many serious injuries. Therefore, it is important that the system be designed and operated in a manner that addresses the concerns outlined above.

The following is a list of the aforementioned fatal accidents with a description of each.
DATE
DESCRIPTION OF FATAL ACCIDENT

8/17/1987
Victim was trapped between machine and rib while tramming mobile bridge conveyor.

10/31/1990
Victim operating an MBC was struck in the head with a 48 inch long piece of roof bolt drill steel when the drill steel he was trying to insert into the opening on the conveyor tail roller made contact with the revolving tail roller causing it to break and strike him.

8/28/1991
Victim was injured from roof fall while operating the No. 3 MBC.

8/18/1994
Victim suffered fatal crushing injuries when he was caught between the Long Airdox mobile bridge carrier and the mine rib.

10/24/2000
Victim apparently removed himself from the operator's compartment of the Long Airdox No. 3 MBC and received fatal crushing injuries when he was caught between the machine operator's compartment canopy and the coal rib. The accident occurred as the mobile bridge conveyor was being set up to mine in the No. 4 Face.

4/7/2006
Employee received fatal injuries when he became caught in the dolly of a mobile bridge system.

4/21/2006
Employee was found pinned between the #4 mobile bridge unit and the section lo-lo conveyor belt structure. He was apparently troubleshooting a report of weak tramming on the left side of the mobile unit.

06/09/2009
Supply car was delivering concrete block into a break to build permanent stopping when the chain broke letting supply car roll through curtain crushing foreman between supply car and 94L bridge causing fatal injury.

In order to reduce the number of accidents associated with the use of these systems, MSHA recommends adoption of the following:

- Entry/crosscut configuration, mining sequence, and equipment setup should be developed and used to minimize pinch points.
- Sight lines should be established and closely followed to ensure proper clearance at all times.
- All workers and operators, including the miner operator, should maintain an adequate means of two-way communication with each other.
- During operation, MBC operators should stay within the confines of the operator deck at all times. The entire system should be automatically de-energized when any operator of an MBC leaves his/her operating station. Technology is currently available for automatic and complete system de-energization when an operator leaves the work station to reduce the risk of injury.
- Miners should not cross over the bridge system until the entire system is de-energized.
- Miners should not cross under mobile bridge units when there is a potential for collapse.
- Any panic bar and/or emergency stop switch in any of the MBCs should de-energize the entire system when activated.
- Manual positions on sequence switches should not be used to run the system during normal production.

- The panic bar and/or emergency stop switch on the MBC should also be able to de-energize the continuous mining machine.
- Where the coal bed height permits, all MBCs should be equipped with protective cabs or canopies at each operating station. Equipment size should be compatible with mining height and width, considering adequate roof control and necessary clearance.
- Procedures should be established to minimize the number of miners traveling or working along the system while it is in operation. During place changing or other extended movement, foot travel alongside the haulage system by miners other than equipment operators should not be permitted.

What is the background for this PIB?
The use of continuous haulage systems is increasing. Continuous haulage systems were introduced to the mining industry in the late 1950s, have been used routinely since the early 1970s, and following significant improvements became widely used in the early 1980s. Modern day versions have been responsible for dramatically increasing productivity. From 1985 to the present, there have been 8 fatalities, and 343 nonfatal accidents. Most of these accidents, including four involving fatalities, are attributed to the limited clearance between the equipment and the coal rib, roof, and mining equipment, resulting in crushing injuries to miners. One fatality and many injuries occurred while miners were working near the conveyor belt at the discharge end of the continuous haulage system. Another fatality occurred because an MBC operator did not have the ability to de-energize the continuous miner from the MBC control station. Many injuries resulted from crossing over/under the mobile bridges and from miners, other than MBC operators, traveling near or working on continuous haulage equipment while it was in operation. Other accidents are attributed to lack of visibility, ineffective communication between operators, and from the system not being automatically de-energized when any one of the operators left the operating station. This bulletin is intended to alert the industry to these occurrences in an effort to minimize such accidents in the future.

What is MSHA's authority for this PIB?
The Federal Mine Safety and Health Act of 1977, as amended, 30 U.S.C. § 801 et seq.; 30 C.F.R. § 75.1725(a).

Is this PIB on the Internet?
This PIB may be viewed on the World Wide Web by accessing the MSHA home page and choosing the respective links, "Compliance Info" and "Program Information Bulletins."

Who is the MSHA contact person for this PIB?

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Who will receive this PIB?

MSHA Program Policy Manual Holders
Underground Coal Mine Operators
Mining Equipment Manufacturers
Special Interest Groups