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FROM: KEVIN G. STRICKLIN
Administrator for
Coal Mine Safety and Health

NEAL H. MERRIFIELD
Administrator for
Metal and Nonmetal Mine Safety and Health

LINDA F. ZEILER
Acting Director of Technical Support

SUBJECT: Re-Issue of P09-11 - Application of 30 C.F.R. §§ 77.405(b),
56.14211, 57.14211, 56.14105, and 57.14105 to Dragline Masts

Scope

This information bulletin applies to mine operators (including independent contractors) performing work on surface areas, dragline manufacturers, and Mine Safety and Health Administration (MSHA) enforcement personnel.

Purpose

This bulletin alerts the mining industry to hazards associated with inadequately designed or constructed mechanical means for securing a dragline mast in a raised position. It also suggests methods to provide secure blocking when the means for blocking the mast are not provided by the manufacturer as an integral part of the machine.

Background

The safety standards (30 C.F.R. §§ 77.405(b), 56.14211, 57.14211, 56.14105, and 57.14105) applicable to performing work under machinery or equipment that is in a raised position require that such machinery or equipment be securely blocked in position. For dragline masts, this requirement applies when maintenance or repair is to be performed but the mast is still in a suspended position. MSHA has usually interpreted the blocking requirement to include mechanical and structural means which are engineered

and manufactured as an integral part of the machine. Evidence from a 1999 accident, which resulted in one fatality and serious injuries to another miner, has shown that an inadequately designed and constructed mechanical means of securing a dragline mast in a raised position can fail.

In the accident at issue, the dragline boom had been lowered to a horizontal position along the ground and blocked. The mast was then lowered to a position of 18 degrees off the horizontal. A steel structure was mounted on the top chord of the boom and used to support the mast in its raised position. The steel structure was clamped to the boom by four "slip-critical" connections. These connections consisted of an upper and lower steel plate, connected with six one-inch bolts to form a frictional attachment to the boom chord. Two of the four connections slipped, allowing the steel support to move and the mast to fall several feet. This resulted in the steel support striking the victims who were in an aerial manlift below the mast.

Information

MSHA recognizes that application of 30 C.F.R. §§ 77.405(b), 56.14211, 57.14211, 56.14105, and 57.14105 to dragline masts at surface coal and metal and nonmetal mines may include other means of blocking which, while not engineered and constructed as an integral part of the machine, may be equally effective in securely blocking a portion of the machine in a raised position. Such "after-market" or non-integrated devices may be acceptable to meet the standard if, in MSHA's judgment, the devices are adequately designed and constructed to securely block the raised portion of the mast.

In addition to "mechanical means" manufactured as an integral part of the machine, MSHA has identified the following three methods to securely block the mast of a dragline in a raised position:

- 1) The mine operator may use the dragline's mast support cables and a crane to block the dragline mast. The crane should be capable of holding twice the weight of the mast. The mast support cables and the crane should have a manually applied braking system to the support line to prevent any movement.
- 2) If the mast's supporting cables will not be used for support, the mine operator may use two cranes to block the mast. Each crane used for blocking the dragline mast should be capable of holding twice the weight of the mast and the cranes should have a manually applied braking system to the support line to prevent any movement.
- 3) If the mast's supporting cables will not be used for support, the mine operator may install two fixed length temporary pendant lines from the A-frame to the mast with each line capable of holding three times the weight of the mast. This installation should be adequately designed and constructed by a registered professional engineer and a certified welder.

Once supported by one of the above methods, the mine operator can conduct visual inspection, non-destructive testing, and minor maintenance and repairs to the mast, including welding repairs. In all cases, the dragline's boom is lowered to the ground and blocked.

Please note that mine operators are always encouraged to contact MSHA enforcement personnel with safety questions regarding 30 C.F.R. §§ 77.405(b), 56.14211, 57.14211, 56.14105, 57.14105 and any other safety or health standard. If appropriate, the MSHA enforcement personnel will contact their respective District Manager and the MSHA Office of Technical Support for assistance.

Authority

The Federal Mine Safety Act of 1977; and 30 C.F.R. §§ 77.405(b), 56.14211, 57.14211, 56.14105, and 57.14105.

Internet Availability

This PIB may be viewed on the Internet by accessing the MSHA home page at (<http://www.msha.gov>) and choosing "Compliance Info" and "Program Information Bulletins."

Issuing Office and Contact Person

Mine Safety and Health Enforcement, Safety Division

Robert Roark (202) 693-9556

E-mail: roark.robert@dol.gov

Harvey Kirk, (202) 693-9617

E-mail: Kirk.lewis@dol.gov

Technical Support

Stanley J. Michalek, (412) 386-6974

E-mail: michalek.stanley@dol.gov

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