

MINM 30 CFR Standards Review

Clarification of eight standards:

30 CFR §§ 56/57.4501

30 CFR §§ 56/57.14105

30 CFR §§ 56/57.12016

30 CFR §§ 56/57.12017

30 CFR §§ 56/57.4501

- Fuel lines
 - Fuel lines shall be equipped with valves capable of stopping the flow of fuel at the source and shall be located and maintained to minimize fire hazards. This standard does not apply to fuel lines on self-propelled equipment.
 - Cited at least 1050 times, but never cited in a fatal investigation

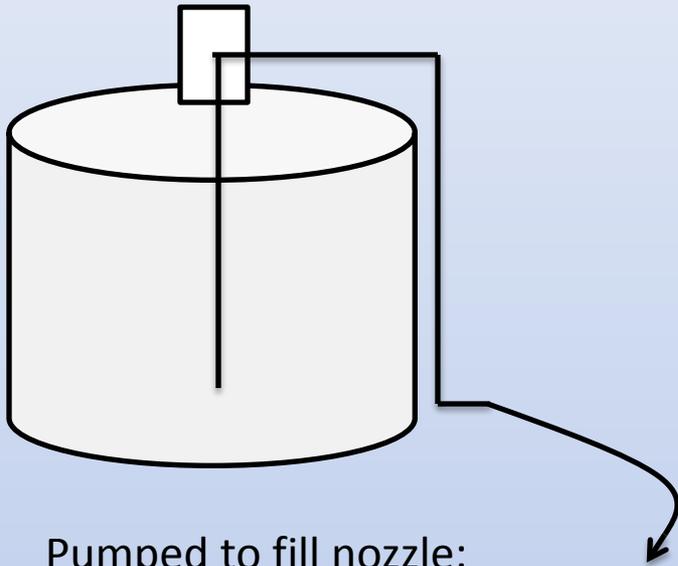
30 CFR §§ 56/57.4501 - Clarification

- 30 CFR §§ 56/57.4501 apply to fuel lines at all surface metal and nonmetal mines, and all underground metal and nonmetal mines, respectively, except fuel lines on self-propelled equipment.
- These standards address the hazard potential of leaking or broken fuel lines by requiring a valve at the fuel source to allow the fuel flow to be shut off in the event of leakage.
- Fuel sources commonly include fixed or portable containers such as storage tanks, fuel tanks, drums, cans, barrels or holding receivers from which liquid or gaseous fuel is transferred or delivered for consumption or used to power equipment.

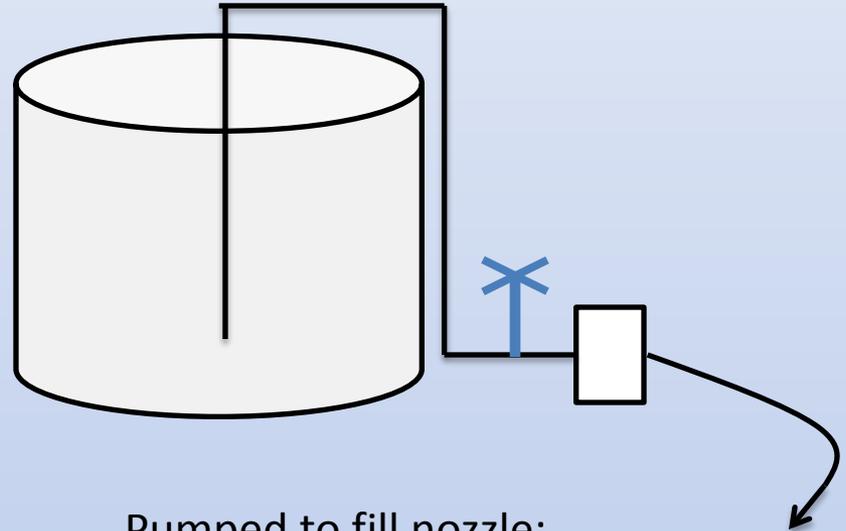
30 CFR §§ 56/57.4501

Clarification, cont'd

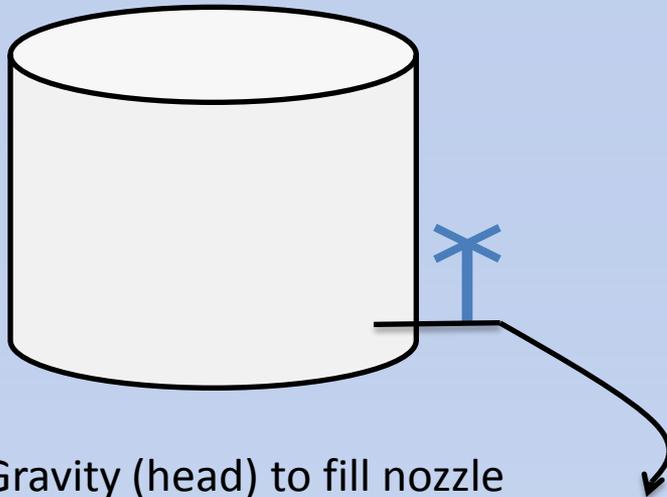
- The required shut off valve must be installed in the fuel line, located at the fuel source and maintained in working order.
- This standard does not apply to fuel tanks that are provided as an integral part of manufactured equipment, such as gasoline- or diesel-powered pumps, generators, light plants, compressors and welders, that do not have fuel line shut off valves, unless they were supplied as original equipment by the manufacturer.
- The standard does not apply to fuel lines on self-propelled equipment.



Pumped to fill nozzle:
Pump above or internal to tank -
If leak develops, shut pump off



Pumped to fill nozzle:
Pump external to tank



Gravity (head) to fill nozzle

30 CFR §§ 56/57.4501
Fuel lines and tanks.
Example illustrations of
valve requirement ()
(Be sure valve is located
close to fuel source)



A valve is needed in this line upstream at the fuel source. The dispensing nozzle shown does not qualify because it is not located at the source.

The 30 CFR §§ 56/57.4501 fuel line standards do not apply to fuel lines on self-propelled equipment



30 CFR §§ 56/57.14105

- Procedures during repairs and maintenance
 - Repairs or maintenance of machinery or equipment shall be performed only after the power is off, and the machinery or equipment blocked against hazardous motion. Machinery or equipment motion or activation is permitted to the extent that adjustments or testing cannot be performed without motion or activation, provided that persons are effectively protected from hazardous motion.

30 CFR §§ 56/57.12016

- Electrically powered equipment shall be deenergized before mechanical work is done on such equipment.
- Power switches shall be locked out or other measures taken which shall prevent the equipment from being energized without the knowledge of the individuals working on it.
- Suitable warning notices shall be posted at the power switch and signed by the individuals who are to do the work.
- Such locks or preventive devices shall be removed only by the persons who installed them or by authorized personnel.

30 CFR §§ 56/57.12017

- Power circuits shall be deenergized before work is done on such circuits unless hot-line tools are used. Suitable warning signs shall be posted by the individuals who are to do the work.
- Switches shall be locked out or other measures taken which shall prevent the power circuits from being energized without the knowledge of the individuals working on them.
- Such locks, signs, or preventative devices shall be removed only by the person who installed them or by authorized personnel.

Clarification of 30 CFR §§ 56/57.14105, §§ 56/57.12016 and §§ 56/57.12017

The following section clarifies the applicability of six standards:

- **30 CFR §§ 56/57.14105**
 - Repair and maintenance: “...blocked against hazardous motion”
- **30 CFR §§ 56/57.12016**
 - Work on electrically-powered equipment
- **30 CFR §§ 56/57.12017**
 - Work on power circuits

30 CFR §§ 56/57.14105

Guidance:

- These standards are to be cited for failure to block against hazardous motion when performing mechanical maintenance or repairing electrically powered equipment
 - The standards apply to work that poses a hazard that will not result in an electrical shock or burn
- Historically, these standards have been cited over 1650 times, including in 17 fatality cases

Application of 30 CFR §§ 56/57.14105 and §§ 56/57.12016

Key points:

- The requirements to control hazardous movement of electrically powered equipment, which has historically been applied through the “lockout-tagout” provisions of 30 CFR §§ 56/57.12016, are more properly addressed by the “blocking against motion” requirements of 30 CFR §§ 56/57.14105.
- 30 CFR §§ 56/57.12016 apply to the hazard of electrical shock and are intended to abate the risk of electrocution. These standards do not apply to hazards created by the mechanical movement of equipment.

30 CFR §§ 56/57.14105

Blocking against hazardous motion

- Release stored energy and block against motion
 - Energy could result from motorized, mechanical, hydraulic, pneumatic, gravitational, spring or manual forces
 - Block equipment or materials that could slide, roll, rotate, swivel, swing, twist, pivot, shear, pinch, sag, fall, fall or tip over, or move in other hazardous ways
 - Depending on the equipment's configuration and power supply, lockout-tagout may be an acceptable means of blocking against motion

Truck Raised-Bed Restraint System

(Example of a well-designed, engineered blocking system)



Cables shown in stowed position

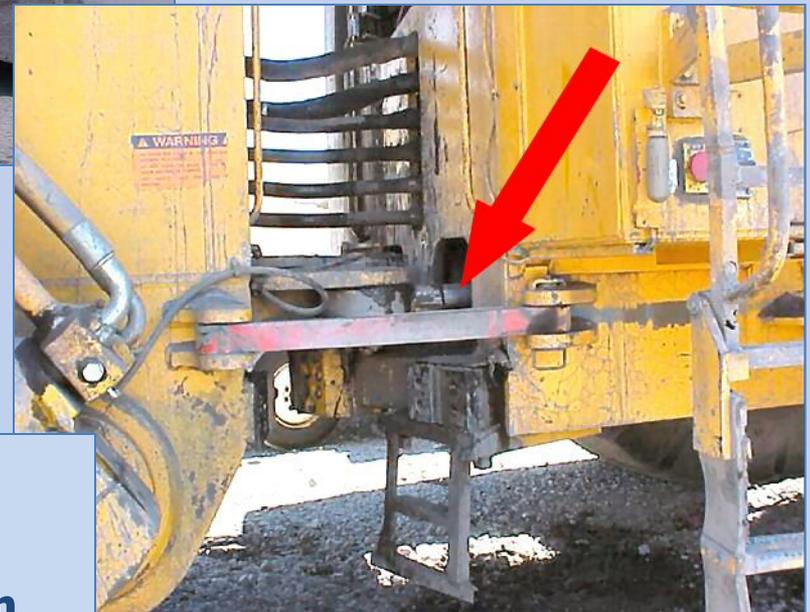


Cables ready to be attached

Blocking Articulated Equipment: Loaders and Haul Trucks



Danger zone: caught-between hazard when machine articulates



Articulation blocking bar prevents motion

30 CFR §§ 56/57.12016

Guidance:

- Per MSHA's course instructional manual CI 8a, "Mine Electricity – Metal and Nonmetal Surface and Underground Entry Level Training":
 - "Unless the power supply to electrically powered equipment is disconnected and locked out while a person(s) is working on the equipment, the equipment can be inadvertently started by others or by control circuits shorting, thus endangering the persons working on the equipment."
- MSHA's Program Policy Manual provides no further guidance

30 CFR §§ 56/57.12016, cont'd

- These standards have been used historically to cite mechanical hazards related to electrically powered equipment that could inadvertently be started and cause injury
- Many citations have been issued:
 - 30 CFR § 56.12016 – over 6160 citations, including in 4 fatality cases
 - 30 CFR § 57.12016 – over 561 citations, including in 1 fatality case
 - See next slide for explanation

30 CFR §§ 56/57.12016

Per Northshore Mining Company decision

(U.S. Court of Appeals, 8th Circuit, No. 12-2249)

<http://media.ca8.uscourts.gov/opndir/13/03/122249P.pdf>

- Standards 30 CFR §§ 56/57.12016 apply only to repair or maintenance work that poses a hazard of electrical shock to persons performing mechanical work
- Standards §§ 56/57.12016 are not to be cited for work that poses a non-electrical hazard
- Instead, when the hazard is machine movement, apply 30 CFR §§ 56/57.14105

30 CFR §§ 56/57.12017

Guidance:

- 30 CFR §§ 56/57.12017 apply only to work on electrical equipment or circuits that poses a hazard of electrical shock from a circuit becoming accidentally energized
- Must lock out or take other measures to prevent the power circuit from being energized without the knowledge of individuals working on circuit
- Locks, tags and other preventative devices shall be removed only by those who installed them, or by an authorized person
- Cited over 950 times, including in 11 fatality cases

30 CFR §§ 56/57.12017, cont'd

- If circuits are deenergized and locked out, also deenergize adjacent circuits that are subject to contact by persons

30 CFR §§ 56/57.12017, cont'd

- Alternatives to deenergize and lock
- Use hot line tools
 - Hot sticks and cutters
 - Insulating rubber
 - Gloves and protectors
 - Rubber insulating mats
 - Properly rated, tested and marked
- Photograph example on next slide

Hot Line Tools



**Hot line sticks and
protective glove bag**

Examples of Acceptable Deenergization Methods

- Disconnect and lock out main power switch for the piece of equipment to be worked on (this is the most preferable method)
 - Test to assure power is off
 - Apply lock(s) – one for each person on crew
 - Affix tags – one for each person on crew
- Remove / pull fuses from holders
- Remove fused cutouts
- Disconnect circuit conductors
- Lock & tag plug-receptacle combinations