

(w) Electric detonators of different brands shall not be used in the same round.

(x) Adequate priming shall be employed to guard against misfires, increased toxic fumes, and poor performance.

(y) Except when being tested with a blasting galvanometer:

(1) Electric detonators shall be kept shunted until they are being connected to the blasting line or wired into a blasting round.

(2) Wired rounds shall be kept shunted until they are being connected to the blasting line.

(3) Blasting lines shall be kept shunted until immediately before blasting.

(z) Completely wired rounds shall be tested with a blasting galvanometer before connections are made to the blasting line.

(aa) Permanent blasting lines shall be properly supported, insulated, and kept in good repair.

(bb) At least a 5-foot airgap shall be provided between the blasting circuit and the power circuit.

(cc) When instantaneous blasting is performed, the double-trunkline or loop system shall be used in detonating-cord blasting.

(dd) When instantaneous blasting is performed, trunklines, in multiple-row blasts, shall make one or more complete loops, with crossties between loops at intervals of not over 200 feet.

(ee) All detonating cord knots shall be tight and all connections shall be kept at right angles to the trunklines.

(ff) Power sources shall be suitable for the number of electrical detonators to be fired and for the type of circuits used.

(gg) Electric circuits from the blasting switches to the blast area shall not be grounded.

(hh) Safety switches and blasting switches shall be labeled, encased in boxes, and arranged so that the covers of the boxes cannot be closed with the switches in the through-circuit or firing position.

(ii) Blasting switches shall be locked in the open position, except when closed to fire the blast. Lead wires shall not be connected to the blasting switch until the shot is ready to be fired.

(jj) The key or other control to an electrical firing device shall be entrusted only to the person designated to fire the round or rounds.

(kk) If branch circuits are used when blasts are fired from power circuits, safety switches located at safe distances from the blast areas shall be provided in addition to the main blasting switch.

(ll) Misfires shall be reported to the proper supervisor and shall be disposed of safely before any other work is performed in that blasting area.

(mm) When safety fuse has been used, men shall not return to misfired holes for at least 30 minutes.

(nn) When electric blasting caps have been used, men shall not return to misfired holes for at least 15 minutes.

(oo) If explosives are suspected of burning in a hole, all persons in the endangered area shall move to a safe location and no one should return to the hole until the danger has passed, but in no case within 1 hour.

(pp) Blasted areas shall be examined for undetonated explosives after each blast and undetonated explosives found shall be disposed of safely.

(qq) Blasted areas shall not be reentered by any person after firing until such time as concentrations of smoke, dust, or fumes have been reduced to safe limits.

(rr) In secondary blasting, if more than one shot is to be fired at one time, blasting shall be done electrically or with detonating cord.

(ss) Unused explosives and detonators shall be moved to a safe location as soon as charging operations are completed.

(tt) When electric detonators are used, charging shall be stopped immediately when the presence of static electricity or stray currents is detected; the condition shall be remedied before charging is resumed.

(uu) When electric detonators are used, charging shall be suspended and men withdrawn to a safe location upon the approach of an electrical storm.

§ 77.1304 Blasting agents; special provisions.

(a) Sensitized ammonium nitrate blasting agents, and the components thereof prior to mixing, shall be mixed

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and stored in accordance with the recommendations in Bureau of Mines Information Circular 8179, "Safety Recommendations for Sensitized Ammonium Nitrate Blasting Agents," or subsequent revisions.

(b) Where pneumatic loading is employed, before any type of blasting operation using blasting agents is put into effect, an evaluation of the potential hazard of static electricity shall be made. Adequate steps, including the grounding and bonding of the conductive parts of pneumatic loading equipment, shall be taken to eliminate the hazard of static electricity before blasting agent use is commenced.

(c) Pneumatic loading equipment shall not be grounded to waterlines, airlines, rails, or the permanent electrical grounding systems.

(d) Hoses used in connection with pneumatic loading machines shall be of the semiconductive type, having a total resistance low enough to permit the dissipation of static electricity and high enough to limit the flow of stray electric currents to a safe level. Wire-counteracted hose shall not be used because of the potential hazard from stray electric currents.

Subpart O—Personnel Hoisting

§ 77.1400 Personnel hoists and elevators.

Except as provided in § 77.1430, the sections in this Subpart O apply only to hoists and elevators, together with their appurtenances, that are used for hoisting persons.

(Sec. 101, Federal Mine Safety and Health Act of 1977, Pub. L. 91-173 as amended by Pub. L. 95-164, 91 Stat. 1291 (30 U.S.C. 811))

[48 FR 53241, Nov. 25, 1983]

§ 77.1401 Automatic controls and brakes.

Hoists and elevators shall be equipped with overspeed, overwind, and automatic stop controls and with brakes capable of stopping the elevator when fully loaded.

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§ 77.1402 Rated capacity.

Hoists and elevators shall have rated capacities consistent with the loads handled.

(Sec. 101, Federal Mine Safety and Health Act of 1977, Pub. L. 91-173 as amended by Pub. L. 95-164, 91 Stat. 1291 (30 U.S.C. 811))

[48 FR 53241, Nov. 25, 1983]

§ 77.1402-1 Maximum load; posting.

The operator shall designate the maximum number of men permitted to ride on each hoist or elevator at one time; this limit shall be posted on each elevator and on each landing.

[36 FR 9364, May 22, 1971. Redesignated at 48 FR 53241, Nov. 25, 1983]

§ 77.1403 Daily examination of hoisting equipment.

Hoists and elevators shall be examined daily and such examinations shall include, but not be limited to, the following:

(a) *Elevators.* (1) A visual examination of the ropes for wear, broken wires, and corrosion, especially at excessive strain points such as near the attachments and where the rope rests on the sheaves;

(2) An examination of the elevator for loose, missing or defective parts;

(b) *Hoists and elevators.* (1) An examination of the rope fastenings for defects;

(2) An examination of sheaves for broken flanges, defective bearings, rope alignment, and proper lubrication; and

(3) An examination of the automatic controls and brakes required under § 77.1401.

(Sec. 101, Federal Mine Safety and Health Act of 1977, Pub. L. 91-173 as amended by Pub. L. 95-164, 91 Stat. 1291 (30 U.S.C. 811))

[48 FR 53241, Nov. 25, 1983]

§ 77.1404 Certifications and records of daily examinations.

At the completion of each daily examination required by § 77.1403, the person making the examination shall certify, by signature and date, that the examination has been made. If any unsafe condition is found during the examinations required by § 77.1403, the person conducting the examination shall make a record of the condition