§ 57.4761 Underground shops.

To confine or prevent the spread of toxic gases from a fire originating in an underground shop where maintenance work is routinely done on mobile equipment, one of the following measures shall be taken: use of control doors or bulkheads, routing of the mine shop air directly to an exhaust system, reversal of mechanical ventilation, or use of an automatic fire suppression system in conjunction with an alternate escape route. The alternative used shall at all times provide at least the same degree of safety as control doors or bulkheads.

(a) *Control doors or bulkheads.* If used as an alternative, control doors or bulkheads shall meet the following requirements:

(1) Each control door or bulkhead shall be constructed to serve as a barrier to fire, the effects of fire, and air leakage at each opening to the shop.

(2) Each control door shall be—

(i) Constructed so that, once closed, it will not reopen as a result of a differential in air pressure;

(ii) Constructed so that it can be opened from either side by one person or be provided with a personnel door that can be opened from either side;

(iii) Clear of obstructions; and

(iv) Provided with a means of remote or automatic closure unless a person specifically designated to close the door in the event of a fire can reach the door within three minutes.

(3) If located 20 feet or more from exposed timber or other combustible material, the control doors or bulkheads shall provide protection at least equivalent to a door constructed of no less than one-quarter inch of plate steel with channel or angle-iron reinforcement to minimize warpage. The framework assembly of the door and the surrounding bulkhead, if any, shall be at least equivalent to the door in fire and air-leakage resistance, and in physical strength.

(4) If located less than 20 feet from exposed timber or other combustibles, the control door or bulkhead shall provide protection at least equivalent to a door constructed of two layers of wood, each a minimum of three-quarters of an inch in thickness. The wood-grain of one layer shall be perpendicular to the wood-grain of the other layer. The wood construction shall be covered on all sides and edges with no less than 24-gauge sheet steel. The framework assembly of the door and the surrounding bulkhead, if any, shall be at least equivalent to the door in fire and air-leakage resistance, and in physical strength. Roll-down steel doors with a fire-resistance rating of 1½ hours or greater, but without an insulation core, are acceptable provided that an automatic sprinkler or deluge system is installed that provides even coverage of the door on both sides.

(b) *Routing air to exhaust system.* If used as an alternative, routing the mine shop exhaust air directly to an exhaust system shall be done so that no person would be exposed to toxic gases in the event of a shop fire.

(c) *Mechanical ventilation reversal.* If used as an alternative, reversal of mechanical ventilation shall—

(1) Be accomplished by a main fan. If the main fan is located underground—

(i) The cable or conductors supplying power to the fan shall be routed through areas free of fire hazards;

(ii) The main fan shall be equipped with a second, independent power cable or set of conductors from the surface. The power cable or conductors shall be located so that an underground fire disrupting power in one cable or set of conductors will not affect the other; or

(iii) A second fan capable of accomplishing ventilation reversal shall be available for use in the event of failure of the main fan;

(2) Provide rapid air reversal that allows persons underground time to exit in fresh air by the second escapeway or find a place of refuge; and

(3) Be done according to predetermined conditions and procedures.

(d) *Automatic fire suppression system and escape route.* If used as an alternative, the automatic fire suppression system and alternate escape route shall meet the following requirements:

(1) The suppression system shall be—

(i) Located in the shop area;

(ii) The appropriate size and type for the particular fire hazards involved; and

(iii) Inspected at weekly intervals and properly maintained.

(2) The escape route shall bypass the shop area so that the route will not be affected by a fire in the shop area.

Appendix I for Subpart C—National Consensus Standards

Mine operators seeking further information in the area of fire prevention and control may consult the following national consensus standards.

MSHA standard	National consensus standard
§§ 57.4200, 57.4201, 57.4261, and 57.4262.	NFPA No. 10—Portable Fire Extinguisher. NFPA No. 11—Low Expansion Foam and Combined Agent Systems. NFPA No. 11A—High Expansion Foam Systems. NFPA No. 12—Carbon Dioxide Extinguishing Systems. NFPA No. 12A—Halon 1301 Extinguishing Systems. NFPA No. 13—Water Sprinkler Systems. NFPA No. 14—Standpipe and Hose Systems. NFPA No. 15—Water Spray Fixed Systems. NFPA No. 16—Foam Water Spray Systems. NFPA No. 17—Dry-Chemical Extinguishing Systems. NFPA No. 121—Mobile Surface Mining Equipment. NFPA No. 291—Testing and Marking Hydrants. NFPA No. 1962—Care, Use, and Maintenance of Fire Hose, Connections, and Nozzles.
§ 57.4202	NFPA No. 14—Standpipe and Hose Systems. NFPA No. 291—Testing and Marking Hydrants.
§ 57.4203	NFPA No. 10—Portable Fire Extinguishers.
§ 57.4230	NFPA No. 10—Portable Fire Extinguishers. NFPA No. 121—Mobile Surface Mining Equipment.
§ 57.4260	NFPA No. 10—Portable Fire Extinguishers.
§ 57.4261	NFPA No. 14—Standpipe and Hose Systems.
§ 57.4533	NFPA Fire Protection Handbook.
§ 57.4560	ASTM E-162—Surface Flammability of Materials Using a Radiant Heat Energy Source.

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Tuesday
January 29, 1985

Part III

Department of Labor

Mine Safety and Health Administration

30 CFR Parts 55, 56, and 57
Recodification of Safety and Health Standards for Metal and Nonmetal Mines; Final Rule

DEPARTMENT OF LABOR

Mine Safety and Health Administration

30 CFR Parts 55, 56, and 57

Recodification of Safety and Health Standards for Metal and Nonmetal Mines

AGENCY: Mine Safety and Health Administration, Labor.

ACTION: Final rule.

SUMMARY: This final rule recodifies the existing safety and health standards for metal and nonmetal mines in Title 30 of the Code of Federal Regulations (CFR). The recodification renumbers and combines the existing standards in 30 CFR Parts 55 and 56 into a single Part 56 which will apply to all surface metal and nonmetal mines. Part 57 continues to apply to metal and nonmetal underground mines only. This recodification will reduce duplicate standards and establish a comprehensive numbering system which conforms to that recommended by the Office of the Federal Register. In addition, this document corrects certain omissions in the July 1, 1984 edition of Title 30, CFR.

EFFECTIVE DATE: April 15, 1985.

FOR FURTHER INFORMATION CONTACT: Patricia W. Silvey, Director, Office of Standards, Regulations, and Variances, MSHA, (703) 235-1910.

SUPPLEMENTARY INFORMATION: On March 25, 1980, the Mine Safety and Health Administration (MSHA) published an Advance Notice of Proposed Rulemaking (ANPRM) in the **Federal Register** (45 FR 19267) announcing a comprehensive review of metal and nonmetal mine safety and health standards in 30 CFR Parts 55, 56, and 57. In a subsequent ANPRM published on November 20, 1981 (46 FR 57253), MSHA announced selection of eight sections of standards for priority review. Among the goals of this review, the ANPRM listed consolidation of duplicate standards. Beyond this organizational change, MSHA stated that the review project was intended to delete unnecessary standards, update existing provisions to address technological change, and reduce unnecessary reporting and recordkeeping requirements.

At the beginning of the standards review project, MSHA considered consolidating 30 CFR Parts 55, 56, and 57 into a single Part 58 with the goal of eliminating several hundred identical standards in the Code of Federal Regulations. However, numerous commenters representing surface mining operations requested that MSHA retain a clear separation of standards for surface mines and underground mines. In response to their concerns, the Agency is combining 30 CFR Parts 55 and 56 into a revised Part 56 for metal and nonmetal surface mines. Previously, Part 55 applied to metal and nonmetal open pit mines, and Part 56 applied to sand, gravel, and crushed stone operations. However, the standards appearing in Part 55 were identical to those appearing in Part 56. Thus, all surface mines, whether previously covered by Part 55 or Part 56, will have the same substantive requirements under revised Part 56. Under the recodification, the standards in Part 57 continue to apply to metal and nonmetal underground mines including related surface operations. The purpose and scope statement for each part (§§ 56.1 and 57.1) reflect the types of operations addressed by the standards in the respective parts.

This recodification is promulgated in accordance with section 553(b)(A) of the Administrative Procedure Act which exempts rules of agency organization, procedure, or practice from the statute's notice and comment requirements. This rulemaking is therefore exempted since it does not alter any existing substantive rights, interests, obligations, or responsibilities of any affected party. The recodification eliminates numerous duplicate standards. In addition, it establishes a new format for MSHA's metal and nonmetal standards which conforms to that recommended by the Office of the Federal Register.

Before recodification, the numerical designation of MSHA's metal and nonmetal health and safety standards used hyphenated numbers which are not compatible with the **Federal Register's** electronic coding system. As a convenience to the mining community, each standard has been given a short descriptive heading which also appears in a table of contents at the beginning of each part.

Under this recodification, all defined terms in 30 CFR Parts 55/56/57.2 have been placed in Subpart A. However, the standards for which the review has been completed will have their own definitions self-contained within each subpart.

This recodification is being done at this time to facilitate the placement of the completed Subpart C (formerly known as section .4) fire prevention and control standards. That section is the first of the priority sections under review to be promulgated as a final rule. The fire prevention and control standards are published as a final rule elsewhere in this issue of the **Federal Register** and appear in the recodification. That final rule includes the full explanatory text and preamble to the fire standards along with the complete text of the rule.

While no substantive changes were made to the recodified standards, a few editorial changes do appear. Substantive and additional editorial changes will occur as each group of related standards undergoes a comprehensive review. Full notice and comment procedure will be observed during this process in accordance with section 101 of the the Federal Mine Safety and Health Act of 1977 (Pub. L. 91-173 as amended by Pub. L. 95-164) (30 U.S.C. 811).

The word "mandatory" that preceded each standard has been removed. It is no longer necessary to retain the term before each standard because all of MSHA's standards now impose mandatory requirements.

This notice also corrects two omissions in the July 1, 1984 edition of Title 30, CFR Standards 55.6-57 and 56.6-194 were promulgated as final rules on July 31, 1969 (34 FR 12503). They appear in this recodification as 56.6057 (containers for capped fuses and electric detonators) and 56.6194 (grounding restrictions for pneumatic loading equipment), respectively. In addition, standards 56.8-1, 56.8-4, and 56.10-5 are corrected to read as promulgated on August 17, 1979 (44 FR 48490) with the word "shall." They appear as 56.7801(jet drills), 56.7804 (refueling rotary jet piercing equipment) and 56.10005 (track cable connectors for aerial tramways).

Because the wording of §§ 57.14-45 and 57.14-55 is identical, the recodification combines these two standards into a single standard with general application, § 57.14045 (ventilation and shielding for welding).

For the convenience of the mining community, the following redesignation table cross-references the old and new numbers:

REDESIGNATION TABLE

Old No.	New No.
55/56.1	56.1
55/56.2	56.2
55/56.3-1	56.3001
55/56.3-2	56.3002
55/56.3-3	56.3003
55/56.3-4	56.3004
55/56.3-5	56.3005
55/56.3-6	56.3006
55/56.3-7 [Reserved]	(1)
55/56.3-8	56.3008
55/56.3-9	56.3009
55/56.3-10 and 55/56.3-11 [Reserved]	(1)
55/56.3-12	56.3012
55/56.3-13 through 55/56.3-49 [Reserved]	(1)
55/56.3-50	56.3050
55/56.3-51	56.3051
55/56.3-52 [Reserved]	(1)
55/56.3-53	56.3053
55/56.3-54	56.3054

REDESIGNATION TABLE—Continued

Old No.	New No.
55/56.3-55	56.3055
55/56.3-56	56.3056
55/56.3-57	56.3057
55/56.4-6 [Reserved]	(1)
55/56.4-17 [Reserved]	(1)
55/56.4-30 through 55/56.4-32 [Reserved]	(1)
55/56.4-36 through 55/56.4-38 [Reserved]	(1)
55/56.4-39C through 55/56.4-39Z [Reserved]	(1)
55/56.4-42 through 55/56.4-46 [Reserved]	(1)
55/56.4-49 [Reserved]	(1)
55/56.5-1	56.5001
55/56.5-2	56.5002
55/56.5-3	56.5003
55/56.5-4 [Reserved]	(1)
55/56.5-5	56.5005
55/56.5-6	56.5006
55/56.5-7 through 55/56.5-9 [Reserved]	(1)
55/56.5-10	56.5010
55/56.5-11 through 55/56.5-49 [Reserved]	(1)
55/56.5-50	56.5050
55/56.6 Introductory text	56.6000
55/56.6-1	56.6001
55/56.6-2	56.6002
55/56.6-3 and 55/56.6-4 [Reserved]	(1)
55/56.6-5	56.6005
55/56.6-7	56.6007
55/56.6-8	56.6008
55/56.6-9 and 55/56.6-10 [Reserved]	(1)
55/56.6-11	56.6011
55/56.6-12	56.6012
55/56.6-13 through 55/56.6-19 [Reserved]	(1)
55/56.6-20	56.6020
55/56.6-21 through 55/56.6-39 [Reserved]	(1)
55/56.6-40	56.6040
55/56.6-41	56.6041
55/56.6-42	56.6042
55/56.6-43	56.6043
55/56.6-44	56.6044
55/56.6-45	56.6045
55/56.6-46	56.6046
55/56.6-47	56.6047
55/56.6-48	56.6048
55/56.6-49 [Reserved]	(1)
55/56.6-50	56.6050
55/56.6-51	56.6051
55/56.6-52 [Reserved]	(1)
55/56.6-53	56.6053
55/56.6-54	56.6054
55/56.6-55 [Reserved]	(1)
55/56.6-56	56.6056
55/56.6-57	56.6057
55/56.6-58 through 55/56.6-64 [Reserved]	(1)
55/56.6-65	56.6065
55/56.6-66 through 55/56.6-89 [Reserved]	(1)
55/56.6-90	56.6090
55/56.6-91	56.6091
55/56.6-92	56.6092
55/56.6-93	56.6093
55/56.6-94	56.6094
55/56.6-95 [Reserved]	(1)
55/56.6-96	56.6096
55/56.6-97	56.6097
55/56.6-98	56.6098
55/56.6-99	56.6099
55/56.6-100	56.6100
55/56.6-101	56.6101
55/56.6-102	56.6102
55/56.6-103	56.6103
55/56.6-104	56.6104
55/56.6-105	56.6105
55/56.6-106	56.6106
55/56.6-107	56.6107
55/56.6-108	56.6108
55/56.6-109	56.6109
55/56.6-110	56.6110
55/56.6-111	56.6111
55/56.6-112	56.6112
55/56.6-113	56.6113
55/56.6-114	56.6114
55/56.6-115	56.6115
55/56.6-116	56.6116
55/56.6-117	56.6117
55/56.6-118	56.6118
55/56.6-119	56.6119
55/56.6-120	56.6120
55/56.6-121	56.6121
55/56.6-122	56.6122
55/56.6-123	56.6123
55/56.6-124	56.6124
55/56.6-125	56.6125
55/56.6-126	56.6126
55/56.6-127	56.6127

REDESIGNATION TABLE—Continued

Old No.	New No.
55/56.6-128	56.6128
55/56.6-129	56.6129
55/56.6-130	56.6130
55/56.6-131	56.6131
55/56.6-132	56.6132
55/56.6-133	56.6133
55/56.6-134	56.6134
55/56.6-135	56.6135
55/56.6-136	56.6136
55/56.6-137	56.6137
55/56.6-138	56.6138
55/56.6-139	56.6139
55/56.6-140	56.6140
55/56.6-141 [Reserved]	(1)
55/56.6-142	56.6142
55/56.6-143 through 55/56.6-158 [Reserved]	(1)
55/56.6-159	56.6159
55/56.6-160	56.6160
55/56.6-161	56.6161
55/56.6-162	56.6162
55/56.6-163	56.6163
55/56.6-164	56.6164
55/56.6-165 through 55/56.6-167 [Reserved]	(1)
55/56.6-168	56.6168
55/56.6-169 through 55/56.6-168 [Reserved]	(1)
Introductory text following undesignated heading "Sensitized Ammonium Nitrate Blasting Agents"	56.6001
55/56.6-190 through 55/56.6-192 [Reserved]	(1)
55/56.6-193	56.6193
55/56.6-194	56.6194
55/56.6-195	56.6195
55/56.6-196 and 55/56.6-197 [Reserved]	(1)
55/56.6-198	56.6198
55/56.6-199 [Reserved]	(1)
55/56.6-200	56.6200
55/56.6-201 through 55/56.6-249 [Reserved]	(1)
55/56.6-250	56.6250
55/56.7-1 [Reserved]	(1)
55/56.7-2	56.7002
55/56.7-3	56.7003
55/56.7-4	56.7004
55/56.7-5	56.7005
55/56.7-6 through 55/56.7-7 [Reserved]	(1)
55/56.7-8	56.7006
55/56.7-9	56.7009
55/56.7-10	56.7010
55/56.7-11	56.7011
55/56.7-12	56.7012
55/56.7-13	56.7013
55/56.7-14 through 55/56.7-17 [Reserved]	(1)
55/56.7-18	56.7018
55/56.7-19 through 55/56.7-49 [Reserved]	(1)
55/56.7-50	56.7050
55/56.7-51	56.7051
55/56.7-52	56.7052
55/56.7-53	56.7053
55/56.7-54 through 55/56.7-100 [Reserved]	(1)
55/56.8-1	56.7801
55/56.8-2	56.7802
55/56.8-3	56.7803
55/56.8-4	56.7804
55/56.8-5	56.7805
55/56.8-6	56.7806
55/56.8-7	56.7807
55/56.9-1	56.9001
55/56.9-2	56.9002
55/56.9-3	56.9003
55/56.9-4 [Reserved]	(1)
55/56.9-5	56.9005
55/56.9-6	56.9006
55/56.9-7	56.9007
55/56.9-8 [Reserved]	(1)
55/56.9-9	56.9009
55/56.9-10	56.9010
55/56.9-11	56.9011
55/56.9-12	56.9012
55/56.9-13	56.9013
55/56.9-14	56.9014
55/56.9-15	56.9015
55/56.9-16	56.9016
55/56.9-17	56.9017
55/56.9-18 [Reserved]	(1)
55/56.9-19	56.9019
55/56.9-20	56.9020
55/56.9-21 [Reserved]	(1)
55/56.9-22	56.9022
55/56.9-23	56.9023
55/56.9-24	56.9024
55/56.9-25	56.9025
55/56.9-26	56.9026
55/56.9-27	56.9027

REDESIGNATION TABLE—Continued

Old No.	New No.
55/56.9-28	56.9028
55/56.9-29 [Reserved]	(1)
55/56.9-30	56.9030
55/56.9-31	56.9031
55/56.9-32	56.9032
55/56.9-33 [Reserved]	(1)
55/56.9-34	56.9034
55/56.9-35	56.9035
55/56.9-36	56.9036
55/56.9-37	56.9037
55/56.9-38 [Reserved]	(1)
55/56.9-39	56.9039
55/56.9-40	56.9040
55/56.9-41	56.9041
55/56.9-42	56.9042
55/56.9-43 and 55/56.9-44 [Reserved]	(1)
55/56.9-45	56.9045
55/56.9-46	56.9046
55/56.9-47	56.9047
55/56.9-48	56.9048
55/56.9-49	56.9049
55/56.9-50	56.9050
55/56.9-51	56.9051
55/56.9-52	56.9052
55/56.9-53	56.9053
55/56.9-54	56.9054
55/56.9-55	56.9055
55/56.9-56	56.9056
55/56.9-57	56.9057
55/56.9-58	56.9058
55/56.9-59	56.9059
55/56.9-60	56.9060
55/56.9-61	56.9061
55/56.9-62	56.9062
55/56.9-63	56.9063
55/56.9-64	56.9064
55/56.9-65	56.9065
55/56.9-66	56.9066
55/56.9-67	56.9067
55/56.9-68	56.9068
55/56.9-69	56.9069
55/56.9-70	56.9070
55/56.9-71	56.9071
55/56.9-72	56.9072
55/56.9-73	56.9073
55/56.9-74	56.9074
55/56.9-75 through 55/56.9-82 [Reserved]	(1)
55/56.9-83	56.9083
55/56.9-84 [Reserved]	(1)
55/56.9-85	56.9085
55/56.9-86 [Reserved]	(1)
55/56.9-87	56.9087
55/56.9-88	56.9088
55/56.10-1	56.10001
55/56.10-2	56.10002
55/56.10-3	56.10003
55/56.10-4	56.10004
55/56.10-5	56.10005
55/56.10-6	56.10006
55/56.10-7	56.10007
55/56.10-8	56.10008
55/56.10-9	56.10009
55/56.10-10	56.10010
55/56.11-1	56.11001
55/56.11-2	56.11002
55/56.11-3	56.11003
55/56.11-4	56.11004
55/56.11-5	56.11005
55/56.11-6	56.11006
55/56.11-7	56.11007
55/56.11-8 [Reserved]	(1)
55/56.11-9	56.11009
55/56.11-10	56.11010
55/56.11-11	56.11011
55/56.11-12	56.11012
55/56.11-13	56.11013
55/56.11-14	56.11014
55/56.11-15 [Reserved]	(1)
55/56.11-16	56.11016
55/56.11-17	56.11017
55/56.11-18 through 55/56.11-24 [Reserved]	(1)
55/56.11-25	56.11025
55/56.11-26	56.11026
55/56.11-27	56.11027
55/56.12-1	56.12001
55/56.12-2	56.12002
55/56.12-3	56.12003
55/56.12-4	56.12004
55/56.12-5	56.12005
55/56.12-6	56.12006
55/56.12-7	56.12007
55/56.12-8	56.12008

REDESIGNATION TABLE—Continued

Old No.	New No.
55/56.12-9 [Reserved]	(1)
55/56.12-10	56.12010
55/56.12-11	56.12011
55/56.12-12	56.12012
55/56.12-13	56.12013
55/56.12-14	56.12014
55/56.12-15 [Reserved]	(1)
55/56.12-16	56.12016
55/56.12-17	56.12017
55/56.12-18	56.12018
55/56.12-19	56.12019
55/56.12-20	56.12020
55/56.12-21	56.12021
55/56.12-22	56.12022
55/56.12-23	56.12023
55/56.12-24 [Reserved]	(1)
55/56.12-25	56.12025
55/56.12-26	56.12026
55/56.12-27	56.12027
55/56.12-28	56.12028
55/56.12-29 [Reserved]	(1)
55/56.12-30	56.12030
55/56.12-31 [Reserved]	(1)
55/56.12-32	56.12032
55/56.12-33	56.12033
55/56.12-34	56.12034
55/56.12-35	56.12035
55/56.12-36	56.12036
55/56.12-37	56.12037
55/56.12-38	56.12038
55/56.12-39	56.12039
55/56.12-40	56.12040
55/56.12-41	56.12041
55/56.12-42	56.12042
55/56.12-43 and 55/56.12-44 [Reserved]	(1)
55/56.12-45	56.12045
55/56.12-46 [Reserved]	(1)
55/56.12-47	56.12047
55/56.12-48	56.12048
55/56.12-49 [Reserved]	(1)
55/56.12-50	56.12050
55/56.12-51 and 55/56.12-52 [Reserved]	(1)
55/56.12-53	56.12053
55/56.12-54 through 55/56.12-64 [Reserved]	(1)
55/56.12-65	56.12065
55/56.12-66	56.12066
55/56.12-67	56.12067
55/56.12-68	56.12068
55/56.12-69	56.12069
55/56.12-70 [Reserved]	(1)
55/56.12-71	56.12071
55/56.13-1	56.13001
55/56.13-2 through 55/56.13-9 [Reserved]	(1)
55/56.13-10	56.13010
55/56.13-11	56.13011
55/56.13-12	56.13012
55/56.13-13 through 55/56.13-14 [Reserved]	(1)
55/56.13-15	56.13015
55/56.13-16 [Reserved]	(1)
55/56.13-17	56.13017
55/56.13-18 [Reserved]	(1)
55/56.13-19	56.13019
55/56.13-20	56.13020
55/56.13-21	56.13021
55/56.13-22 through 55/56.13-29 [Reserved]	(1)
55/56.13-30	56.13030
55/56.13-31 through 55/56.13-34 [Reserved]	(1)
55/56.14-1	56.14001
55/56.14-2	56.14002
55/56.14-3	56.14003
55/56.14-4 and 55/56.14-5 [Reserved]	(1)
55/56.14-6	56.14006
55/56.14-7	56.14007
55/56.14-8	56.14008
55/56.14-9	56.14009
55/56.14-10	56.14010
55/56.14-11	56.14011
55/56.14-12 [Reserved]	(1)
55/56.14-13	56.14013
55/56.14-14	56.14014
55/56.14-15 through 55/56.14-24 [Reserved]	(1)
55/56.14-25 [Reserved]	(1)
55/56.14-26	56.14026
55/56.14-27	56.14027
55/56.14-28 [Reserved]	(1)
55/56.14-29	56.14029
55/56.14-30	56.14030
55/56.14-31	56.14031
55/56.14-32	56.14032
55/56.14-33	56.14033
55/56.14-34	56.14034
55/56.14-35	56.14035

REDESIGNATION TABLE—Continued

Old No.	New No.
55/56.14-36	56.14036
55/56.14-37 through 55/56.14-44 [Reserved]	(1)
55/56.14-45	56.14045
55/56.15-1	56.15001
55/56.15-2	56.15002
55/56.15-3	56.15003
55/56.15-4	56.15004
55/56.15-5	56.15005
55/56.15-6	56.15006
55/56.15-7	56.15007
55/56.15-8 through 55/56.15-19 [Reserved]	(1)
55/56.15-20	56.15020
55/56.16-1	56.16001
55/56.16-2	56.16002
55/56.16-3	56.16003
55/56.16-4	56.16004
55/56.16-5	56.16005
55/56.16-6	56.16006
55/56.16-7	56.16007
55/56.16-8 [Reserved]	(1)
55/56.16-9	56.16009
55/56.16-10	56.16010
55/56.16-11	56.16011
55/56.16-12	56.16012
55/56.16-13	56.16013
55/56.16-14	56.16014
55/56.16-15	56.16015
55/56.16-16	56.16016
55/56.17-1	56.17001
55/56.18-1 [Reserved]	(1)
55/56.18-2	56.18002
55/56.18-3 through 18-5 [Reserved]	(1)
55/56.18-6	56.18006
55/56.18-7 and 55/56.18-8 [Reserved]	(1)
55/56.18-9	56.18009
55/56.18-10	56.18010
55/56.18-11 [Reserved]	(1)
55/56.18-12	56.18012
55/56.18-13	56.18013
55/56.18-14	56.18014
55/56.18-15 through 55/56.18-19 [Reserved]	(1)
55/56.18-20	56.18020
55/56.19 introductory text	56.19000
55/56.19-1	56.19001
55/56.19-2	56.19002
55/56.19-3	56.19003
55/56.19-4	56.19004
55/56.19-5	56.19005
55/56.19-6	56.19006
55/56.19-7	56.19007
55/56.19-8	56.19008
55/56.19-9	56.19009
55/56.19-10	56.19010
55/56.19-11	56.19011
55/56.19-12	56.19012
55/56.19-13	56.19013
55/56.19-14	56.19014
55/56.19-17	56.19017
55/56.19-18	56.19018
55/56.19-30	56.19030
55/56.19-35	56.19035
55/56.19-36	56.19036
55/56.19-37	56.19037
55/56.19-38	56.19038
55/56.19-45	56.19045
55/56.19-49	56.19049
55/56.19-50	56.19050
55/56.19-54	56.19054
55/56.19-55	56.19055
55/56.19-56	56.19056
55/56.19-57	56.19057
55/56.19-58	56.19058
55/56.19-61	56.19061
55/56.19-62	56.19062
55/56.19-63	56.19063
55/56.19-65	56.19065
55/56.19-66	56.19066
55/56.19-67	56.19067
55/56.19-68	56.19068
55/56.19-69	56.19069
55/56.19-70	56.19070
55/56.19-71	56.19071
55/56.19-72	56.19072
55/56.19-73	56.19073
55/56.19-74	56.19074
55/56.19-75	56.19075
55/56.19-76	56.19076
55/56.19-77	56.19077
55/56.19-78	56.19078
55/56.19-79	56.19079
55/56.19-80	56.19080
55/56.19-81	56.19081

REDESIGNATION TABLE—Continued

Old No.	New No.
55/56.19-83	56.19083
55/56.19-90	56.19090
55/56.19-91	56.19091
55/56.19-92	56.19092
55/56.19-93	56.19093
55/56.19-94	56.19094
55/56.19-95	56.19095
55/56.19-96	56.19096
55/56.19-100	56.19100
55/56.19-101	56.19101
55/56.19-102	56.19102
55/56.19-103	56.19103
55/56.19-104	56.19104
55/56.19-105	56.19105
55/56.19-106	56.19106
55/56.19-107	56.19107
55/56.19-108	56.19108
55/56.19-109	56.19109
55/56.19-110	56.19110
55/56.19-111	56.19111
55/56.19-120	56.19120
55/56.19-121	56.19121
55/56.19-122	56.19122
55/56.19-129	56.19129
55/56.19-130	56.19130
55/56.19-131	56.19131
55/56.19-132	56.19132
55/56.19-133	56.19133
55/56.19-134	56.19134
55/56.19-135	56.19135
55/56.19a-20	56.19001
55/56.19a-21	56.19021
55/56.19a-22	56.19022
55/56.19a-23	56.19023
55/56.19a-24	56.19024
55/56.19a-25	56.19025
55/56.19a-26	56.19026
55/56.19a-27	56.19027
55/56.19a-28	56.19028
55/56.20-1	56.20001
55/56.20-2	56.20002
55/56.20-3	56.20003
55/56.20-4 [Reserved]	(1)
55/56.20-5	56.20005
55/56.20-6 and 55/56.20-7 [Reserved]	(1)
55/56.20-8	56.20008
55/56.20-9	56.20009
55/56.20-10	56.20010
55/56.20-11	56.20011
55/56.20-12	56.20012
55/56.20-13	56.20013
55/56.20-14	56.20014
56/56.26-1	56.1000
56.4000	56.4000
56.4011	56.4011
56.4100	56.4100
56.4101	56.4101
56.4102	56.4102
56.4103	56.4103
56.4104	56.4104
56.4130	56.4130
56.4200	56.4200
56.4201	56.4201
56.4202	56.4202
56.4203	56.4203
56.4230	56.4230
56.4330	56.4330
56.4331	56.4331
56.4400	56.4400
56.4401	56.4401
56.4402	56.4402
56.4430	56.4430
56.4500	56.4500
56.4501	56.4501
56.4502	56.4502
56.4503	56.4503
56.4530	56.4530
56.4531	56.4531
56.4600	56.4600
56.4601	56.4601
56.4602	56.4602
56.4603	56.4603
56.4604	56.4604
57.1	57.1
57.2	57.2
57.3-1	57.3001
57.3-2	57.3002
57.3-3	57.3003
57.3-4	57.3004
57.3-5	57.3005
57.3-6	57.3006
56/57.3-7 [Reserved]	(1)

REDESIGNATION TABLE—Continued

Old No.	New No.
57.3-8	57.3008
57.3-9	57.3009
57.3-10 and 57.3-11 [Reserved]	(1)
57.3-12	57.3012
57.3-13 through 57.3-19 [Reserved]	(1)
57.3-20	57.3020
57.3-21 [Reserved]	(1)
57.3-22	57.3022
57.3-23 through 57.3-25 [Reserved]	(1)
57.3-26	57.3026
57.3-27 and 57.3-28 [Reserved]	(1)
57.3-29	57.3029
57.3-30 and 57.3-31 [Reserved]	(1)
57.3-33	57.3033
57.3-34 [Reserved]	(1)
57.3-35	57.3035
57.3-36 through 57.3-49 [Reserved]	(1)
57.3-50	57.3050
57.3-51	57.3051
57.3-52 [Reserved]	(1)
57.3-53	57.3053
57.3-54	57.3054
57.3-55	57.3055
57.3-56	57.3056
57.3-57	57.3057
57.3-58	57.3058
57.4-8 [Reserved]	(1)
57.4-17 [Reserved]	(1)
57.4-30 through 57.4-32 [Reserved]	(1)
57.4-36 through 57.4-38 [Reserved]	(1)
57.4-39C through 57.4-39Z [Reserved]	(1)
57.4-44 [Reserved]	(1)
57.4-49 [Reserved]	(1)
57.4-59 and 57.4-60 [Reserved]	(1)
57.4-64 [Reserved]	(1)
57.4-65 [Reserved]	(1)
57.4-67 through 57.4-71 [Reserved]	(1)
57.4-79 through 57.4-84 [Reserved]	(1)
57.5-1	57.5001
57.5-2	57.5002
57.5-3	57.5003
57.5-4 [Reserved]	(1)
57.5-5	57.5005
57.5-6	57.5006
57.5-7 through 57.5-9 [Reserved]	(1)
57.5-10	57.5010
57.5-11 through 57.5-14 [Reserved]	(1)
57.5-15	57.5015
57.5-16	57.5016
57.5-17 [Reserved]	(1)
57.5-18A [Reserved]	(1)
57.5-18C [Reserved]	(1)
57.5-18D	57.8518
57.5-18E [Reserved]	(1)
57.5-18F	57.8519
57.5-18G through 57.5-18Z [Reserved]	(1)
57.5-19A through 57.5-19Z [Reserved]	(1)
57.5-20	57.8520
57.5-21 [Reserved]	(1)
57.5-23 and 57.5-24 [Reserved]	(1)
57.5-25	57.8525
57.5-26 [Reserved]	(1)
57.5-27	57.8527
57.5-28	57.8528
57.5-29	57.8529
57.5-30 [Reserved]	(1)
57.5-31	57.8531
57.5-32	57.8532
57.5-33 [Reserved]	(1)
57.5-34	57.8534
57.5-35A	57.8535
57.5-35B through 57.5-35Z [Reserved]	(1)
57.5-36 [Reserved]	(1)
57.5-37	57.5037
57.5-38	57.5038
57.5-39	57.5039
57.5-40	57.5040
57.5-41	57.5041
57.5-42	57.5042
57.5-43 [Reserved]	(1)
57.5-44	57.5044
57.5-45	57.5045
57.5-46	57.5046
57.5-47	57.5047
57.5-48 and 57.5-49 [Reserved]	(1)
57.5-50	57.5050
57.6 Introductory text	57.6000
57.6-1	57.6001
57.6-2	57.6002
57.6-3 and 57.6-4 [Reserved]	(1)
57.6-5	57.6005
57.6-6 [Reserved]	(1)

REDESIGNATION TABLE—Continued

Old No.	New No.
57.6-7	57.6007
57.6-8	57.6008
57.6-9 and 57.6-10 [Reserved]	(1)
57.6-11	57.6011
57.6-12	57.6012
57.6-13 through 57.6-19 [Reserved]	(1)
57.6-20	57.6020
57.6-21 through 57.6-24 [Reserved]	(1)
57.6-25 through 57.6-26 [Reserved]	(1)
57.6-27	57.6027
57.6-28 [Reserved]	(1)
57.6-29	57.6029
57.6-30	57.6030
57.6-31 through 57.6-39 [Reserved]	(1)
57.6-40	57.6040
57.6-41	57.6041
57.6-42	57.6042
57.6-43	57.6043
57.6-44	57.6044
57.6-45	57.6045
57.6-46	57.6046
57.6-47	57.6047
57.6-48	57.6048
57.6-49 [Reserved]	(1)
57.6-50	57.6050
57.6-51	57.6051
57.6-52 [Reserved]	(1)
57.6-53	57.6053
57.6-54	57.6054
57.6-55 [Reserved]	(1)
57.6-56	57.6056
57.6-57	57.6057
57.6-58 through 57.6-64 [Reserved]	(1)
57.6-65	57.6065
57.6-66 through 57.6-74 [Reserved]	(1)
57.6-75	57.6075
57.6-76	57.6076
57.6-77	57.6077
57.6-78 through 57.6-89 [Reserved]	(1)
57.6-90	57.6090
57.6-91	57.6091
57.6-92	57.6092
57.6-93	57.6093
57.6-94	57.6094
57.6-95 [Reserved]	(1)
57.6-96	57.6096
57.6-97	57.6097
57.6-98	57.6098
57.6-99	57.6099
57.6-100	57.6100
57.6-101	57.6101
57.6-102	57.6102
57.6-103	57.6103
57.6-104	57.6104
57.6-105	57.6105
57.6-106	57.6106
57.6-107	57.6107
57.6-108	57.6108
57.6-109	57.6109
57.6-110	57.6110
57.6-111	57.6111
57.6-112	57.6112
57.6-113	57.6113
57.6-114	57.6114
57.6-115	57.6115
57.6-116	57.6116
57.6-117	57.6117
57.6-118	57.6118
57.6-119	57.6119
57.6-120	57.6120
57.6-121	57.6121
57.6-122	57.6122
57.6-123	57.6123
57.6-124	57.6124
57.6-125	57.6125
57.6-126	57.6126
57.6-127	57.6127
57.6-128	57.6128
57.6-129	57.6129
57.6-130	57.6130
57.6-131	57.6131
57.6-132	57.6132
57.6-133	57.6133
57.6-134	57.6134
57.6-135	57.6135
57.6-136	57.6136
57.6-137	57.6137
57.6-138	57.6138
57.6-139	57.6139
57.6-140	57.6140
57.6-141	57.6141
57.6-142	57.6142

REDESIGNATION TABLE—Continued

Old No.	New No.
57.6-143 through 57.6-158 [Reserved]	(1)
57.6-159	57.6159
57.6-160	57.6160
57.6-161	57.6161
57.6-162	57.6162
57.6-163	57.6163
57.6-164	57.6164
57.6-165 through 57.6-167 [Reserved]	(1)
57.6-168	57.6168
57.6-169 through 57.6-174 [Reserved]	(1)
57.6-175	57.6175
57.6-176 [Reserved]	(1)
57.6-177	57.6177
57.6-178 through 57.6-181 [Reserved]	(1)
57.6-182	57.6182
57.6-183 through 57.6-189 [Reserved]	(1)
Introductory text following undesignated heading "Sensitized Ammonium Nitrate Blasting Agents"	57.6001
57.6-190 through 57.6-192 [Reserved]	(1)
57.6-193	57.6193
57.6-194	57.6194
57.6-195	57.6195
57.6-196 and 57.6-197 [Reserved]	(1)
57.6-198	57.6198
57.6-199 [Reserved]	(1)
57.6-200	57.6200
57.6-201 through 57.6-219 [Reserved]	(1)
57.6-220	57.6220
57.6-221 through 57.6-249 [Reserved]	(1)
57.6-250	57.6250
57.7-1 [Reserved]	(1)
57.7-2	57.7002
57.7-3	57.7003
57.7-4	57.7004
57.7-5	57.7005
57.7-6 through 57.7-7 [Reserved]	(1)
57.7-8	57.7008
57.7-9	57.7009
57.7-10	57.7010
57.7-11	57.7011
57.7-12	57.7012
57.7-13	57.7013
57.7-14 through 57.7-17 [Reserved]	(1)
57.7-18	57.7018
57.7-19 through 57.7-24 [Reserved]	(1)
57.7-25 through 57.7-27 [Reserved]	(1)
57.7-28	57.7028
57.7-29 through 57.7-31 [Reserved]	(1)
57.7-32	57.7032
57.7-33 through 57.7-49 [Reserved]	(1)
57.7-50	57.7050
57.7-51	57.7051
57.7-52	57.7052
57.7-53	57.7053
57.7-54	57.7054
57.7-55 through 57.7-100 [Reserved]	(1)
57.8-1	57.7801
57.8-2	57.7802
57.8-3	57.7803
57.8-4	57.7804
57.8-5	57.7805
57.8-6	57.7806
57.8-7	57.7807
57.9-1	57.9001
57.9-2	57.9002
57.9-3	57.9003
57.9-4 [Reserved]	(1)
57.9-5	57.9005
57.9-6	57.9006
57.9-7	57.9007
57.9-8 [Reserved]	(1)
57.9-9	57.9009
57.9-10	57.9010
57.9-11	57.9011
57.9-12	57.9012
57.9-13	57.9013
57.9-14	57.9014
57.9-15	57.9015
57.9-16	57.9016
57.9-17	57.9017
57.9-18 [Reserved]	(1)
57.9-19	57.9019
57.9-20	57.9020
57.9-21 [Reserved]	(1)
57.9-22	57.9022
57.9-23	57.9023
57.9-24	57.9024
57.9-25	57.9025
57.9-26	57.9026
57.9-27	57.9027
57.9-28	57.9028

REDESIGNATION TABLE—Continued

Old No.	New No.
57.9-29 [Reserved]	(1)
57.9-30	57.9030
57.9-31	57.9031
57.9-32	57.9032
57.9-33 [Reserved]	(1)
57.9-34	57.9034
57.9-35	57.9035
57.9-36	57.9036
57.9-37	57.9037
57.9-38 [Reserved]	(1)
57.9-39	57.9039
57.9-40	57.9040
57.9-41	57.9041
57.9-42	57.9042
57.9-43 and 57.9-44 [Reserved]	(1)
57.9-45	57.9045
57.9-46	57.9046
57.9-47	57.9047
57.9-48	57.9048
57.9-49	57.9049
57.9-50	57.9050
57.9-51	57.9051
57.9-52	57.9052
57.9-53	57.9053
57.9-54	57.9054
57.9-55	57.9055
57.9-56	57.9056
57.9-57	57.9057
57.9-58	57.9058
57.9-59	57.9059
57.9-60	57.9060
57.9-61	57.9061
57.9-62	57.9062
57.9-63	57.9063
57.9-64	57.9064
57.9-65	57.9065
57.9-66	57.9066
57.9-67	57.9067
57.9-68	57.9068
57.9-69	57.9069
57.9-70	57.9070
57.9-71	57.9071
57.9-72	57.9072
57.9-73	57.9073
57.9-74	57.9074
57.9-75 through 57.9-80 [Reserved]	(1)
57.9-81 and 57.9-82 [Reserved]	(1)
57.9-83	57.9083
57.9-84 [Reserved]	(1)
57.9-85	57.9085
57.9-86 [Reserved]	(1)
57.9-87	57.9087
57.9-88	57.9088
57.9-89 through 57.9-94 [Reserved]	(1)
57.9-95 [Reserved]	(1)
57.9-96	57.9096
57.9-97	57.9097
57.9-98	57.9098
57.9-99	57.9099
57.9-100 and 57.9-101 [Reserved]	(1)
57.9-102	57.9102
57.9-103	57.9103
57.9-104	57.9104
57.9-105	57.9105
57.9-106	57.9106
57.9-107	57.9107
57.9-108 and 57.9-109 [Reserved]	(1)
57.9-110	57.9110
57.9-111	57.9111
57.9-112	57.9112
57.9-113	57.9113
57.9-114	57.9114
57.9-115	57.9115
57.9-116	57.9116
57.10-1	57.10001
57.10-2	57.10002
57.10-3	57.10003
57.10-4	57.10004
57.10-5	57.10005
57.10-6	57.10006
57.10-7	57.10007
57.10-8	57.10008
57.10-9	57.10009
57.10-10	57.10010
57.11-1	57.11001
57.11-2	57.11002
57.11-3	57.11003
57.11-4	57.11004
57.11-5	57.11005
57.11-6	57.11006
57.11-7	57.11007
57.11-8 [Reserved]	(1)

REDESIGNATION TABLE—Continued

Old No.	New No.
57.11-9	57.11009
57.11-10	57.11010
57.11-11	57.11011
57.11-12	57.11012
57.11-13	57.11013
57.11-14	57.11014
57.11-15 [Reserved]	(1)
57.11-16	57.11016
57.11-17	57.11017
57.11-18 through 57.11-24 [Reserved]	(1)
57.11-25	57.11025
57.11-26	57.11026
57.11-27	57.11027
57.11-28 through 57.11-34 [Reserved]	(1)
57.11-35 [Reserved]	(1)
57.11-36	57.11036
57.11-37	57.11037
57.11-38	57.11038
57.11-39 [Reserved]	(1)
57.11-40	57.11040
57.11-41	57.11041
57.11-42 through 57.11-49 [Reserved]	(1)
57.11-50	57.11050
57.11-51	57.11051
57.11-52	57.11052
57.11-53	57.11053
57.11-54	57.11054
57.11-55	57.11055
57.11-56	57.11056
57.11-57 [Reserved]	(1)
57.11-58	57.11058
57.11-59	57.11059
57.12-1	57.12001
57.12-2	57.12002
57.12-3	57.12003
57.12-4	57.12004
57.12-5	57.12005
57.12-6	57.12006
57.12-7	57.12007
57.12-8	57.12008
57.12-9 [Reserved]	(1)
57.12-10	57.12010
57.12-11	57.12011
57.12-12	57.12012
57.12-13	57.12013
57.12-14	57.12014
57.12-15 [Reserved]	(1)
57.12-16	57.12016
57.12-17	57.12017
57.12-18	57.12018
57.12-19	57.12019
57.12-20	57.12020
57.12-21	57.12021
57.12-22	57.12022
57.12-23	57.12023
57.12-24 [Reserved]	(1)
57.12-25	57.12025
57.12-26	57.12026
57.12-27	57.12027
57.12-28	57.12028
57.12-29 [Reserved]	(1)
57.12-30	57.12030
57.12-31 [Reserved]	(1)
57.12-32	57.12032
57.12-33	57.12033
57.12-34	57.12034
57.12-35	57.12035
57.12-36	57.12036
57.12-37	57.12037
57.12-38	57.12038
57.12-39	57.12039
57.12-40	57.12040
57.12-41	57.12041
57.12-42	57.12042
57.12-43 and 57.12-44 [Reserved]	(1)
57.12-45	57.12045
57.12-46 [Reserved]	(1)
57.12-47	57.12047
57.12-48	57.12048
57.12-49 [Reserved]	(1)
57.12-50	57.12050
57.12-51 and 57.12-52 [Reserved]	(1)
57.12-53	57.12053
57.12-54 through 57.12-64 [Reserved]	(1)
57.12-65	57.12065
57.12-66	57.12066
57.12-67	57.12067
57.12-68	57.12068
57.12-69	57.12069
57.12-70 [Reserved]	(1)
57.12-71	57.12071
57.12-72 through 57.12-79 [Reserved]	(1)

REDESIGNATION TABLE—Continued

Old No.	New No.
57.12-80	57.12080
57.12-81	57.12081
57.12-82	57.12082
57.12-83	57.12083
57.12-84	57.12084
57.12-85	57.12085
57.12-86	57.12086
57.12-87 [Reserved]	(1)
57.12-88	57.12088
57.13-1	57.13001
57.13-2 through 57.13-9 [Reserved]	(1)
57.13-10	57.13010
57.13-11	57.13011
57.13-12	57.13012
57.13-13 through 57.13-14 [Reserved]	(1)
57.13-15	57.13015
57.13-16 [Reserved]	(1)
57.13-17	57.13017
57.13-18 [Reserved]	(1)
57.13-19	57.13019
57.13-20	57.13020
57.13-21	57.13021
57.13-22 through 57.13-29 [Reserved]	(1)
57.13-30	57.13030
57.13-31 through 57.13-34 [Reserved]	(1)
57.14-1	57.14001
57.14-2	57.14002
57.14-3	57.14003
57.14-4 and 57.14-5 [Reserved]	(1)
57.14-6	57.14006
57.14-7	57.14007
57.14-8	57.14008
57.14-9	57.14009
57.14-10	57.14010
57.14-11	57.14011
57.14-12 [Reserved]	(1)
57.14-13	57.14013
57.14-14	57.14014
57.14-15 through 57.14-24 [Reserved]	(1)
57.14-25 [Reserved]	(1)
57.14-26	57.14026
57.14-27	57.14027
57.14-28 [Reserved]	(1)
57.14-29	57.14029
57.14-30	57.14030
57.14-31	57.14031
57.14-32	57.14032
57.14-33	57.14033
57.14-34	57.14034
57.14-35	57.14035
57.14-36	57.14036
57.14-37 through 57.14-44 [Reserved]	(1)
57.45	57.14045
57.14-46 through 5714-54 [Reserved]	(1)
57.14-55	57.14045
57.15-1	57.15001
57.15-2	57.15002
57.15-3	57.15003
57.15-4	57.15004
57.15-5	57.15005
57.15-6	57.15006
57.15-7	57.15007
57.-15-8 through 57.15-19 [Reserved]	(1)
57.15-20	57.15020
57.15-21 through 15-29 [Reserved]	(1)
57.15-30	57.15030
57.15-31	57.15031
57.16-1	57.16001
57.16-2	57.16002
57.16-3	57.16003
57.16-4	57.16004
57.16-5	57.16005
57.16-6	57.16006
57.16-7	57.16007
57.16-8 [Reserved]	(1)
57.16-9	57.16009
57.16-10	57.16010
57.16-11	57.16011
57.16-12	57.16012
57.16-13	57.16013
57.16-14	57.16014
57.16-15	57.16015
57.16-16	57.16016
57.16-17	57.16017
57.16-18 through 57.16-34 [Reserved]	(1)
57.16-35 [Reserved]	(1)
57.17-1	57.17001
57.17-2 through 17-9 [Reserved]	(1)
57.17-10	57.17010
57.18-1 [Reserved]	(1)
57.18-2	57.18002
57.18-3 through 18-5 [Reserved]	(1)

REDESIGNATION TABLE—Continued

Old No.	New No.
57.18-6	57.18006
57.18-7 and 57.18-8 [Reserved]	(1)
57.18-9	57.18009
57.18-10	57.18010
57.18-11 [Reserved]	(1)
57.18-12	57.18012
57.18-13	57.18013
57.18-14	57.18014
57.18-15 through 57.18-19 [Reserved]	(1)
57.18-20	57.18020
57.18-21 through 57.18-24 [Reserved]	(1)
57.18-25	57.18025
57.18-26 and 57.18-27 [Reserved]	(1)
57.18-28	57.18028
57.19 Introductory text	57.19000
57.19-1	57.19001
57.19-2	57.19002
57.19-3	57.19003
57.19-4	57.19004
57.19-5	57.19005
57.19-6	57.19006
57.19-7	57.19007
57.19-8	57.19008
57.19-9	57.19009
57.19-10	57.19010
57.19-11	57.19011
57.19-12	57.19012
57.19-13	57.19013
57.19-14	57.19014
57.19-17	57.19017
57.19-18	57.19018
57.19-30	57.19030
57.19-35	57.19035
57.19-36	57.19036
57.19-37	57.19037
57.19-38	57.19038
57.19-45	57.19045
57.19-49	57.19049
57.19-50	57.19050
57.19-54	57.19054
57.19-55	57.19055
57.19-56	57.19056
57.19-57	57.19057
57.19-58	57.19058
57.19-61	57.19061
57.19-62	57.19062
57.19-63	57.19063
57.19-65	57.19065
57.19-66	57.19066
57.19-67	57.19067
57.19-68	57.19068
57.19-69	57.19069
57.19-70	57.19070
57.19-71	57.19071
57.19-72	57.19072
57.19-73	57.19073
57.19-74	57.19074
57.19-75	57.19075
57.19-76	57.19076
57.19-77	57.19077
57.19-78	57.19078
57.19-79	57.19079
57.19-80	57.19080
57.19-81	57.19081
57.19-83	57.19083
57.19-90	57.19090
57.19-91	57.19091
57.19-92	57.19092
57.19-93	57.19093
57.19-94	57.19094
57.19-95	57.19095
57.19-96	57.19096
57.19-100	57.19100
57.19-101	57.19101
57.19-102	57.19102
57.19-103	57.19103
57.19-104	57.19104
57.19-105	57.19105
57.19-106	57.19106
57.19-107	57.19107
57.19-108	57.19108
57.19-109	57.19109
57.19-110	57.19110
57.19-111	57.19111
57.19-120	57.19120
57.19-121	57.19121
57.19-122	57.19122
57.19-129	57.19129
57.19-130	57.19130
57.19-131	57.19131
57.19-132	57.19132
57.19-133	57.19133

REDESIGNATION TABLE—Continued

Old No.	New No.
57.19-134	57.19134
57.19-135	57.19135
57.19a-19	57.19019
57.19a-20	57.19001
57.19a-21	57.19021
57.19a-22	57.19022
57.19a-23	57.19023
57.19a-24	57.19024
57.19a-25	57.19025
57.19a-26	57.19026
57.19a-27	57.19027
57.19a-28	57.19028
57.20-1	57.20001
57.20-2	57.20002
57.20-3	57.20003
57.20-4 [Reserved]	(1)
57.20-5	57.20005
57.20-6 and 57.20-7 [Reserved]	(1)
57.20-8	57.20008
57.20-9	57.20009
57.20-10	57.20010
57.20-11	57.20011
57.20-12	57.20012
57.20-13	57.20013
57.20-14	57.20014
57.20-15 through 57.20-19 [Reserved]	(1)
57.20-20	57.20020
57.20-21	57.20021
57.20-22 through 57.20-29 [Reserved]	(1)
57.20-30 [Reserved]	(1)
57.20-31	57.20031
57.20-32	57.20032
57.21 Introductory text	57.21000
57.21-1	57.21001
57.21-2	57.21002
57.21-3 through 57.21.9 [Reserved]	(1)
57.21-10	57.21010
57.21-11	57.21011
57.21-12	57.21012
57.21-13	57.21013
57.21-14 through 57.21-19 [Reserved]	(1)
57.21-20	57.21020
57.21-21	57.21021
57.21-22	57.21022
57.21-23	57.21023
57.21-24	57.21024
57.21-25	57.21025
57.21-26 [Reserved]	(1)
57.21-27	57.21027
57.21-28	57.21028
57.21-29	57.21029
57.21-30	57.21030
57.21-31	57.21031
57.21-32 [Reserved]	(1)
57.21-33	57.21033
57.21-34	57.21034
57.21-35	57.21035
57.21-36	57.21036
57.21-37 [Reserved]	(1)
57.21-38	57.20138
57.21-39	57.21039
57.21-40	57.21040
57.21-41	57.21041
57.21-42	57.21042
57.21-43	57.21043
57.21-44	57.21044
57.21-45	57.21045
57.21-46	57.21046
57.21-47 [Reserved]	(1)
57.21-48	57.21048
57.21-49	57.21049
57.21-50	57.21050
57.21-51	57.21051
57.21-52	57.21052
57.21-53	57.21053
57.21-54 [Reserved]	(1)
57.21-55	57.21055
57.21-56	57.21056
57.21-57	57.21057
57.21-58	57.21058
57.21-59	57.21059
57.21-60 [Reserved]	57.21060
57.21-61	57.21051
57.21-62	57.21062
57.21-63 [Reserved]	(1)
57.21-64	57.21064
57.21-65	57.21065
57.21-66	57.21066
57.21-67	57.21067
57.21-68	57.21068
57.21-69	57.21069
57.21-70 through 57.21-74 [Reserved]	(1)

REDESIGNATION TABLE—Continued

Old No.	New No.
57.21-75 [Reserved]	(1)
57.21-76	57.21076
57.21-77	57.21077
57.21-78	57.21078
57.21-79	57.21079
57.21-80	57.21080
57.21-81 [Reserved]	(1)
57.21-82 through 57.21-89 [Reserved]	(1)
57.21-90	57.21090
57.21-91 through 21-94 [Reserved]	(1)
57.21-95	57.21095
57.21-96	57.20196
57.21-97	57.21097
57.21-98	57.21098
57.21-99	57.21099
57.21-100	57.21100
57.21-101	57.21101
57.26-1	57.1000
57.4000	57.4000
57.4011	57.4011
57.4057	57.4057
57.4100	57.4100
57.4101	57.4101
57.4102	57.4102
57.4103	57.4103
57.4104	57.4104
57.4130	57.4130
57.4131	57.4131
57.4160	57.4160
57.4161	57.4161
57.4200	57.4200
57.4201	57.4201
57.4202	57.4202
57.4203	57.4203
57.4230	57.4230
57.4260	57.4260
57.4261	57.4261
57.4262	57.4262
57.4263	57.4263
57.4330	57.4330
57.4331	57.4331
57.4360	57.4360
57.4361	57.4361
57.4362	57.4362
57.4363	57.4363
57.4400	57.4400
57.4401	57.4401
57.4402	57.4402
57.4430	57.4430
57.4431	57.4431
57.4460	57.4460
57.4461	57.4461
57.4462	57.4462
57.4463	57.4463
57.4500	57.4500
57.4501	57.4501
57.4502	57.4502
57.4503	57.4503
57.4504	57.4504
57.4505	57.4505
57.4530	57.4530
57.4531	57.4531
57.4532	57.4532
57.4533	57.4533
57.4560	57.4560
57.4561	57.4561
57.4600	57.4600
57.4601	57.4601
57.4602	57.4602
57.4603	57.4603
57.4604	57.4604
57.4660	57.4660
57.4760	57.4760
57.4761	57.4761

[1] Remove.

OMB control numbers follow each recordkeeping or reporting provision that has been approved by the Office of Management and Budget in accordance with the Paperwork Reduction Act of 1980 (Pub. L. 96-511).

List of Subjects in 30 CFR Parts 56 and 57

Mine safety and health.

Dated: December 18, 1984.

David A. Zegeer,

Assistant Secretary for Mine Safety and Health.

The standards in Parts 55, 56, and 57, Chapter I, Subchapter N, Title 30 of the Code of Federal Regulations are revised and redesignated as follows:

1. Parts 55 and 56 are redesignated as Part 56 and revised to read as follows:

PART 56—SAFETY AND HEALTH STANDARDS—SURFACE METAL AND NONMETAL MINES

Subpart A—General

Sec.

Subpart B—Ground Control

Subpart C—Fire Prevention and Control

Subpart D—Air Quality and Physical Agents

Subpart E—Explosives

Authority: Secs. 301(a), 301(b)(2), 301(c)(3) and 302(a) of the Federal Mine Safety and Health Amendments Act of 1977, Pub. L. 95-164, 91 Stat. 1317-1319 (30 U.S.C. 961(a), (b)(2), (c)(3) (Supp. I, 1977)), and 29 U.S.C. 557a (Supp. I, 1977); sec. 508 of the Federal Mine Safety and Health Act of 1977, Pub. L. 91-173, as amended by Pub. L. 95-164, 83 Stat. 803 (30 U.S.C. 957 (1976 ed.)); sec. 6 of the Federal Metal and Nonmetallic Mine Safety Act (repealed 1977), Pub. L. 89-577, 80 Stat. 774 (30 U.S.C. 725 (1976 ed.)), (repealed sec. 306(a), Pub. L. 95-164, 91 Stat. 1322, but see sec. 301(b)(1), Pub. L. 95-164, 91 Stat. 1317 (30 U.S.C. 961(b)(1) (Supp. I, 1977)), Pub. L. 96-511, 94 Stat. 2812 (44 U.S.C. 3501 et seq.), unless otherwise noted.

Subpart A—General

§ 56.1 Purpose and scope.

This Part 56 sets forth mandatory safety and health standards for each surface metal or nonmetal mine, including open pit mines, subject to the Federal Mine Safety and Health Act of 1977. The purpose of these standards is the protection of life, the promotion of health and safety, and the prevention of accidents.

§ 56.2 Definitions.

The following definitions apply in this part, except in any subpart preceded by a separate set of definitions:

"American Table of Distances" means the current edition of "The American Table of Distances for Storage of Explosives" published by the Institute of Makers of Explosives.

"Approved" means tested and accepted for a specific purpose by a nationally recognized agency.

"Authorized person" means a person approved or assigned by mine management to perform a specific type of duty or duties or to be at a specific location or locations in the mine.

"Barricaded" means obstructed to prevent the passage of persons, vehicles, or flying materials.

"Berm" means a pile or mound of material capable of restraining a vehicle.

"Blasting agent" means any substance classified as a blasting agent by the Department of Transportation in 49 CFR 173.114a (44 FR 31182, May 31, 1979) which is incorporated by reference. This document is available for inspection at each Metal and Nonmetal Safety and Health Subdistrict Office of the Mine Safety and Health Administration, and may be obtained from the U.S. Government Printing Office, Washington, D.C. 20402.

"Blasting area" means the area near blasting operations in which concussion or flying material can reasonably be expected to cause injury.

"Blasting cap" means a detonator which is initiated by a safety fuse.

"Blasting circuit" means the electrical circuit used to fire one or more electric blasting caps.

"Blasting switch" means a switch used to connect a power source to a blasting circuit.

"Booster" means any unit of explosive or blasting agent used for the purpose of perpetuating or intensifying an initial detonation.

"Capped fuse" means a length of safety fuse to which a blasting cap has been attached.

"Capped primer" means a package or cartridge of explosives which is specifically designed to transmit detonation to other explosives and which contains a detonator.

"Circuit breaker" means a device designed to open and close a circuit by nonautomatic means and to open the circuit automatically on a predetermined overcurrent setting without injury to itself when properly applied within its rating.

"Combustible" means capable of being ignited and consumed by fire.

"Company official" means a member of the company supervisory or technical staff.

"Competent person" means a person having abilities and experience that fully qualify him to perform the duty to which he is assigned.

"Conductor" means a material, usually in the form of a wire, cable, or bus bar, capable of carrying an electric current.

"Delay connector" means a non-electric short interval delay device for use in delaying blasts which are initiated by detonating cord.

"Detonating cord" means a flexible cord containing a solid core of high explosives.

"Detonator" means any device containing a detonating charge that is used to initiate an explosive and includes but is not limited to blasting caps, electric blasting caps and non-electric instantaneous or delay blasting caps.

"Distribution box" means a portable apparatus with an enclosure through which an electric circuit is carried to one or more cables from a single incoming feed line, each cable circuit being connected through individual overcurrent protective devices.

"Electric blasting cap" means a detonator designed for and capable of being initiated by means of an electric current.

"Electrical grounding" means to connect with the ground to make the earth part of the circuit.

"Employee" means a person who works for wages or salary in the service of an employer.

"Employer" means a person or organization which hires one or more persons to work for wages or salary.

"Explosive" means any substance classified as an explosive by the Department of Transportation in 49 CFR 173.53, 173.88 and 173.100 which are incorporated by reference. Title 49 CFR is available for inspection at each Metal and Nonmetal Mine Safety and Health Subdistrict Office of the Mine Safety and Health Administration, and may be obtained from the U.S. Government Printing Office, Washington, D.C. 20402.

"Face or bank" means that part of any mine where excavating is progressing or was last done.

"Flammable" means capable of being easily ignited and of burning rapidly.

"Flash point" means the minimum temperature at which sufficient vapor is released by a liquid or solid to form a flammable vapor-air mixture at atmospheric pressure.

"Highway" means any public street, public alley, or public road.

"High potential" means more than 650 volts.

"Hoist" means a power driven windlass or drum used for raising ore, rock, or other material from a mine, and for lowering or raising persons and material.

"Igniter cord" means a fuse, cordlike in appearance, which burns progressively along its length with an external flame at the zone of burning, and is used for lighting a series of safety fuses in the desired sequence.

"Insulated" means separated from other conducting surfaces by a dielectric substance permanently offering a high resistance to the passage of current and to disruptive discharge through the substance. When any substance is said to be insulated, it is understood to be insulated in a manner suitable for the conditions to which it is subjected. Otherwise, it is, within the purpose of this definition, uninsulated. Insulating covering is one means for making the conductor insulated.

"Insulation" means a dielectric substance offering a high resistance to the passage of current and to a disruptive discharge through the substance.

"Lay" means the distance parallel to the axis of the rope in which a strand makes one complete turn about the axis of the rope.

"Low potential" means 650 volts or less.

"Magazine" means a facility for the storage of explosives, blasting agents, or detonators.

"Major electrical installation" means an assemblage of stationary electrical equipment for the generation, transmission, distribution, or conversion of electrical power.

"Mantrip" means a trip on which persons are transported to and from a work area.

"Mill" includes any ore mill, sampling works, concentrator, and any crushing, grinding, or screening plant used at, and in connection with, an excavation or mine.

"Misfire" means the complete or partial failure of a blasting charge to explode as planned.

"Multipurpose dry-chemical fire extinguisher" means a listed or approved multipurpose dry-chemical fire extinguisher having a minimum rating of 2-A:10-B:C, by Underwriters Laboratories, Inc., and containing a minimum of 4.5 pounds of dry-chemical agent.

"Non-electric delay blasting cap" means a detonator with an integral delay element and capable of being initiated by miniaturized detonating cord.

"Overburden" means material of any nature, consolidated or unconsolidated, that overlies a deposit of useful materials or ores that are to be mined.

"Overload" means that current which will cause an excessive or dangerous temperature in the conductor or conductor insulation.

"Permissible" means a machine, material, apparatus, or device that has been investigated, tested, and approved by the Bureau of Mines or the Mine Safety and Health Administration and maintained in permissible condition.

"Potable water" means water which shall meet the applicable minimum health requirements for drinking water established by the State or community in which the mine is located or by the Environmental Protection Agency in 40 CFR Part 141, pages 169–182 revised as of July 1, 1977. Where no such requirements are applicable, the drinking water provided shall conform with the Public Health Service Drinking Water Standards, 42 CFR Part 72, Subpart J, pages 527–533, revised as of October 1, 1976. Publications to which references are made in this definition are hereby made a part hereof. These incorporated publications are available for inspection at each Metal and Nonmetal Mine Safety and Health Subdistrict Office of the Mine Safety and Health Administration.

"Powder chest" means a substantial, nonconductive portable container equipped with a lid and used at blasting sites for explosives other than blasting agents.

"Primer" means a unit, package, or cartridge of explosives used to initate other explosives or blasting agents, and which contains a detonator.

"Reverse-current protection" means a method or device used on direct-current circuits or equipment to prevent the flow of current in the reverse direction.

"Roll protection" means a framework, safety canopy or similar protection for the operator when equipment overturns.

"Safety can" means an approved container, of not over five gallons capacity, having a spring-closing lid and spout cover.

"Safety fuse" means a flexible cord containing an internal burning medium by which fire is conveyed at a continuous and uniform rate for the purpose of firing blasting caps or a black powder charge.

"Safety switch" means a sectionalizing switch that also provides shunt protection in blasting circuits between the blasting switch and the shot area.

"Scaling" means removal of insecure material from a face or high-wall.

"Secondary safety connection" means a second connection between a conveyance and rope, intended to prevent the conveyance from running away or falling in the event the primary connection fails.

"Shaft" means a vertical or inclined shaft, a slope, incline or winze.

"Short circuit" means an abnormal connection of relatively low resistance, whether made accidentally or intentionally, between two points of different potential in a circuit.

"Slurry" (as applied to blasting). See "Water gel."

"Stray current" means that portion of a total electric current that flows through paths other than the intended circuit.

"Substantial construction" means construction of such strength, material, and workmanship that the object will withstand all reasonable shock, wear, and usage, to which it will be subjected.

"Suitable" means that which fits, and has the qualities or qualifications to meet a given purpose, occasion, condition, function, or circumstance.

"Travelway" means a passage, walk or way regularly used and designated for persons to go from one place to another.

"Trip light" means a light displayed on the opposite end of a train from the locomotive or engine.

"Water gel" or "Slurry" (as applied to blasting) means an explosive or blasting agent containing substantial portions of water.

"Wet drilling" means the continuous application of water through the central hole of hollow drill steel to the bottom of the drill hole.

"Working place" means any place in or about a mine where work is being performed.

Procedures

§ 56.1000 Notification of commencement of operations and closing of mines.

The owner, operator, or person in charge of any metal and nonmetal mine shall notify the nearest Mine Safety and Health Administration and Metal and Nonmetal Mine Safety and Health Subdistrict Office before starting operations, of the approximate or actual date mine operation will commence. The notification shall include the mine name, location, the company name, mailing address, person in charge, and whether operations will be continuous or intermittent.

When any mine is closed, the person in charge shall notify the nearest subdistrict office as provided above and indicate whether the closure is temporary or permanent.

(Approved by the Office of Management and Budget under OMB control number 1219-0092)

Subpart B—Ground Control

§ 56.3001 Wall, bank, and slope stability.

Standards for the safe control of pit walls, including the overall slope of the pit wall, shall be established and followed by the operator. Such standards shall be consistent with prudent engineering design, the nature of the ground and the kind of material and mineral mined, and the ensuring of safe working conditions according to the degree of slope. Mining methods shall be selected which will ensure wall and bank stability, including benching as necessary to obtain a safe overall slope.

§ 56.3002 Loose material around pit and quarry walls.

Loose, unconsolidated material shall be stripped for a safe distance, but in no case less than 10 feet, from the top of pit or quarry walls, and the loose, unconsolidated material shall be sloped to the angle of repose.

§ 56.3003 Bench width and height.

To insure safe operation, the width and height of benches shall be governed by the type of equipment to be used and the operation to be performed.

§ 56.3004 Scaling.

Safe means for scaling pit-banks shall be provided. Hazardous banks shall be scaled before other work is performed in the hazardous bank area.

§ 56.3005 Hazardous ground conditions.

Persons shall not work near or under dangerous banks. Overhanging banks shall be taken down immediately and other unsafe ground conditions shall be corrected promptly, or the areas shall be barricaded and posted.

§ 56.3006 Scaling location.

Persons shall approach from above loose rock and areas to be scaled and shall scale from a safe location.

§ 56.3008 Examination of ground conditions by supervisor or competent person.

The supervisor, or a competent person designated by him, shall examine working areas and faces for unsafe conditions at least at the beginning of each shift and after blasting. Any unsafe condition found shall be corrected before any further work is performed at the immediate area or face at which the unsafe condition exists.

§ 56.3009 Examination of ground conditions by workers.

Persons shall examine their working places before starting work and frequently thereafter, and any unsafe condition shall be corrected.

§ 56.3012 Work between equipment and pit wall or bank.

Persons shall not work between equipment and the pit wall or bank where the equipment may hinder escape from falls or slides of the bank.

§ 56.3050 Secondary breakage.

Material, other than hanging material, to be broken by secondary drilling and blasting, or by any other method shall be positioned or blocked to prevent hazardous movement before persons commence breaking operations. Persons who perform those operations shall work from a location where, if movement of material occurs, those persons will not be endangered.

§ 56.3051 Scaling tools.

Where manual scaling may be required at a work place, a scaling bar of sufficient length to place the user out of danger of falling material shall be provided. The scaling bar shall be blunt on the end held by the user. Picks or other short tools shall not be used for scaling when their use places the user in danger of falling material.

§ 56.3053 Rock bolt anchorage tests.

When rock bolts are used as a means of ground support, anchorage test procedures shall be established and tests shall be conducted to determine the anchorage capacity of rock-bolt installations. Test results shall be in writing and made available to the Secretary or his duly authorized representative.

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§ 56.3054 Rock bolt torque tests.

Rock bolts used as a means of ground support and which require torquing shall be torqued to a value within the range determined from information obtained by tests in the strata in which the rock-bolt assembly is used. In no case shall the applied torque cause a bolt tension that would exceed the yield point or anchorage capacity of the rock-bolt assembly being used.

§ 56.3055 Torque test requirements.

When installing point-anchor rock bolts—

(a) A torque test shall be conducted on at least every fourth installed bolt;

(b) Torque testing shall be conducted immediately after bolt installation;

(c) If the recommended torque has not been achieved, the equipment used to install the bolt shall be adjusted and the next bolt installed shall then be tested; and (d) If the recommended torque has not been achieved on the majority of bolts installed in a working place through equipment adjustment, supplemental support equivalent to longer roof bolts with adequate anchorage, steel or wood sets, or cribs shall be installed.

§ 56.3056 Rock bolt hole diameter.

Rock bolt hole drill bits shall be easily identifiable by sight or feel and diameters shall be within a tolerance of ±0.030 inches of the manufacturer's recommended hole diameter for the anchor used.

§ 56.3057 Rock bolt washers.

If used in rock-bolt assemblies to reduce friction between the bolt head and the bearing plate, washers shall—

(a) Have hardness in the range of 35-45 HRC (Hardness Rockwell C Scale);

(b) Conform to the shape of the bolt head and bearing plate; and

(c) Have sufficient strength to withstand loads up to the yield point of the rock bolt.

Subpart C—Fire Prevention and Control

§ 56.4000 Definitions.

The following definitions apply in this subpart. *Combustible liquids.* Liquids having a flash point at or above 100 °F (37.8 °C). They are divided into the following classes:

Class II liquids—those having flash points at or above 100 °F (37.8 °) and below 140 °F (60 °C).

Class IIIA liquids—those having flash points at or above 140 °F (60 °C) and below 200 °F (93.4 °C).

Class IIIB liquids—those having flash points at or above 200 °F (93.4 °C).

Combustible material. A material that, in the form in which it is used and under the conditions anticipated, will ignite, burn, support combustion, or release flammable vapors when subjected to fire or heat. Wood, paper, rubber, and plastics are examples of combustible materials.

Fire resistance rating. The time, in minutes or hours, that an assembly of materials will retain its protective characteristics or structural integrity upon exposure to fire.

Flammable gas. A gas that will burn in the normal concentrations of oxygen in the air.

Flammable liquid. A liquid that has a flash point below 100 °F (37.8 °C), a vapor pressure not exceeding 40 pounds

per square inch (absolute) at 100 °F (37.8 °C), and is know as a Class I liquid.

Flash point. The minimum temperature at which sufficient vapor is released by a liquid to form a flammable vapor-air mixture near the surface of the liquid.

Multipurpose dry-chemical fire extinguisher. An extinguisher having a rating of at least 2-A:10-B:C and containing a nominal 4.5 pounds or more of dry-chemical agent.

Noncombustible material. A material that, in the form in which it is used and under the conditions anticipated, will not ignite, burn, support combustion, or release flammable vapors when subjected to fire or heat. Concrete, masonry block, brick, and steel are examples of noncombustible materials.

Safety can. A container of not over five gallons capacity that is designed to safely relieve internal pressure when exposed to heat and has a spring-closing lid and spout cover.

Storage tank. A container exceeding 60 gallons in capacity used for the storage of flammable or combustible liquids.

§ 56.4011 Abandoned electric circuits.

Abandoned electric circuits shall be deenergized and isolated so that they cannot become energized inadvertently.

Prohibitions/Precautions/Housekeeping

§ 56.4100 Smoking and use of open flames.

No person shall smoke or use an open flame where flammable or combustible liquids, including greases, or flammable gases are—

(a) Used or transported in a manner that could create a fire hazard; or

(b) Stored or handled.

§ 56.4101 Warning signs.

Readily visible signs prohibiting smoking and open flames shall be posted where a fire or explosion hazard exists.

§ 56.4102 Spillage and leakage.

Flammable or combustible liquid spillage or leakage shall be removed in a timely manner or controlled to prevent a fire hazard.

§ 56.4103 Fueling internal combustion engines.

Internal combustion engines shall be switched off before refueling if the fuel tanks are integral parts of the equipment. This standard does not apply to diesel-powered equipment.

§ 56.4104 Combustible waste.

(a) Waste materials, including liquids, shall not accumulate in quantities that could create a fire hazard.

(b) Until disposed of properly, waste or rags containing flammable or combustible liquids that could create a fire hazard shall be placed in covered metal containers or other equivalent containers with flame containment characteristics.

§ 56.4130 Electric substations and liquid storage facilities.

(a) If a hazard to persons could be created, no combustible materials shall be stored or allowed to accumulate within 25 feet of the following:

(1) Electric substations.

(2) Unburied, flammable or combustible liquid storage tanks.

(3) Any group of containers used for storage of more than 60 gallons of flammable or combustible liquids.

(b) The area within the 25-foot perimeter shall be kept free of dry vegetation.

Firefighting Equipment

§ 56.4200 General requirements.

(a) For fighting fires that could endanger persons, each mine shall have—

(1) Onsite firefighting equipment for fighting fires in their early stages; and

(2) Onsite firefighting equipment for fighting fires beyond their early stages, or the mine shall have made prior arrangements with a local fire department to fight such fires.

(b) Onsite firefighting equipment shall be—

(1) Of the type, size, and quantity that can extinguish fires of any class which could occur as a result of the hazards present; and

(2) Strategically located, readily accessible, plainly marked, and maintained in fire-ready condition.

§ 56.4201 Inspection.

(a) Firefighting equipment shall be inspected according to the following schedules:

(1) Fire extinguishers shall be inspected visually at least once a month to determine that they are fully charged and operable.

(2) At least once every twelve months, maintenance checks shall be made of mechanical parts, the amount and condition of extinguishing agent and expellant, and the condition of the hose, nozzle, and vessel to determine that the fire extinguishers will operate effectively.

(3) Fire extinguishers shall be hydrostatically tested according to Table C-1 or a schedule based on the manufacturer's specifications to determine the integrity of extinguishing agent vessels.

(4) Water pipes, valves, outlets, hydrants, and hoses that are part of the mine's firefighting system shall be visually inspected at least once every three months for damage or deterioration and use-tested at least once every twelve months to determine that they remain functional.

(5) Fire suppression systems shall be inspected at least once every twelve months. An inspection schedule based on the manufacturer's specifications or the equivalent shall be established for individual components of a system and followed to determine that the system remains functional. Surface fire suppression systems are exempt from these inspection requirements if the systems are used solely for the protection of property and no persons would be affected by a fire.

(b) At the completion of each inspection or test required by this standard, the person making the inspection or test shall certify that the inspection or test has been made and the date on which it was made. Certifications of hydrostatic testing shall be retained until the fire extinguisher is retested or permanently removed from service. Other certifications shall be retained for one year.

TABLE C-1—HYDROSTATIC TEST INTERVALS FOR FIRE EXTINGUISHERS

Extinguisher type	Test interval (years)
Soda Acid	5
Cartridge-Operated Water and/or Antifreeze	5
Stored-Pressure Water and/or Antifreeze	5
Wetting Agent	5
Foam	5
AFFF (Aqueous Film Forming Foam)	5
Loaded Stream	5
Dry-Chemical with Stainless Steel Shells	5
Carbon Dioxide	5
Dry-Chemical, Stored Pressure, with Mild Steel Shells, Brazed Brass Shells, or Aluminum Shells	12
Dry-Chemical, Cartridge or Cylinder Operated, with Mild Steel Shells	12
Bromotrifluoromethane—Halon 1301	12
Bromochlorodifluoromethane—Halon 1211	12
Dry-Powder, Cartridge or Cylinder-Operated, with Mild Steel Shells[1]	12

[1] Except for stainless steel and steel used for compressed gas cylinders, all other steel shells are defined as "mild steel" shells.

§ 56.4202 Fire hydrants.

If fire hydrants are part of the mine's firefighting system, the hydrants shall be provided with—

(a) Uniform fittings or readily available adapters for onsite firefighting equipment;

(b) Readily available wrenches or keys to open the valves; and

(c) Readily available adapters capable of connecting hydrant fittings to the hose equipment of any firefighting organization relied upon by the mine.

§ 56.4203 Extinguisher recharging or replacement.

Fire extinguishers shall be recharged or replaced with a fully charged extinguisher promptly after any discharge.

§ 56.4230 Self-propelled equipment.

(a)(1) Whenever a fire or its effects could impede escape from self-propelled equipment, a fire extinguisher shall be on the equipment.

(2) Whenever a fire or its effects would not impede escape from the equipment but could affect the escape of other persons in the area, a fire extinguisher shall be on the equipment or within 100 feet of the equipment.

(b) A fire suppression system may be used as an alternative to fire extinguishers if the system can be manually activated.

(c) Fire extinguishers or fire suppression systems shall be of a type and size that can extinguish fires of any class in their early stages which could originate from the equipment's inherent fire hazards. Fire extinguishers or manual actuators for the suppression system shall be located to permit their use by persons whose escape could be impeded by fire.

Firefighting Procedures/Alarms/Drills

§ 56.4330 Firefighting, evacuation, and rescue procedures.

(a) Mine operators shall establish emergency firefighting, evacuation, and rescue procedures. These procedures shall be coordinated in advance with available firefighting organizations.

(b) Fire alarm procedures or systems shall be established to pomptly warn every person who could be endangered by a fire.

(c) Fire alarm systems shall be maintained in operable condition.

§ 56.4331 Firefighting drills.

Emergency firefighting drills shall be held at least once every six months for persons assigned firefighting responsibilities by the mine operator.

Flammable and Combustible Liquids and Gases

§ 56.4400 Use restrictions.

(a) Flammable liquids shall not be used for cleaning.

(b) Solvents shall not be used near an open flame or other ignition source, near any source of heat, or in an atmosphere that can elevate the temperature of the solvent above the flash point.

§ 56.4401 Storage tank foundations.

Fixed, unburied, flammable or combustible liquid storage tanks shall be securely mounted on firm foundations. Piping shall be provided with flexible connections or other special fittings where necessary to prevent leaks caused by tanks settling.

§ 56.4402 Safety can use.

Small quantities of flammable liquids drawn from storage shall be kept in safety cans labeled to indicate the contents.

§ 56.4430 Storage facilities.

(a) Storage tanks for flammable or combustible liquids shall be—

(1) Capable of withstanding working pressures and stresses and compatible with the type of liquid stored;

(2) Maintained in a manner that prevents leakage;

(3) Isolated or separated from ignition sources to prevent fire or explosion; and

(4) Vented or otherwise constructed to prevent development of pressure or vacuum as a result of filling, emptying, or atmospheric temperature changes. Vents for storage of Class I, II, or IIIA liquids shall be isolated or separated from ignition sources. These pressure relief requirements do not apply to tanks used for storage of Class IIIB liquids that are larger than 12,000 gallons in capacity.

(b) All piping, valves, and fittings shall be—

(1) Capable of withstanding working pressures and stresses;

(2) Compatible with the type of liquid stored; and

(3) Maintained in a manner that prevents leakage.

(c) Fixed, unburied tanks located where escaping liquid could present a hazard to persons shall be provided with—

(1) Containment for the entire capacity of the largest tank; or

(2) Drainage of a remote impoundment area that does not endanger persons. However, storage of only Class IIIB liquids does not require containment or drainage to remote impoundment.

Installation/Construction/Maintenance

§ 56.4500 Heat sources.

Heat sources capable of producing combustion shall be separated from combustible materials if a fire hazard could be created.

§ 56.4501 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.

§ 56.4502 Battery-charging stations.

(a) Battery-charging stations shall be ventilated with a sufficient volume of air to prevent the accumulation of hydrogen gas.

(b) Smoking, use of open flames, or other activities that could create an ignition source shall be prohibited at the battery charging station during battery charging.

(c) Readily visible signs prohibiting smoking or open flames shall be posted at battery-charging stations during battery charging.

§ 56.4503 Conveyor belt slippage.

Belt conveyors within confined areas where evacuation would be restricted in the event of a fire resulting from belt-slippage shall be equipped with a detection system capable of automatically stopping the drive pulley. A person shall attend the belt at the drive pulley when it is necessary to operate the conveyor while temporarily bypassing the automatic function.

§ 56.4530 Exits.

Buildings or structures in which persons work shall have a sufficient number of exits to permit prompt escape in case of fire.

§ 56.4531 Flammable or combustible liquid storage buildings or rooms.

(a) Storage buildings or storage rooms in which flammable or combustible liquids, including grease, are stored and that are within 100 feet of any person's work station shall be ventilated with a sufficient volume of air to prevent the accumulation of flammable vapors.

(b) In addition, the buildings or rooms shall be—

(1) Constructed to meet a fire resistance rating of at least one hour; or

(2) Equipped with an automatic fire suppression system; or

(3) Equipped with an early warning fire detection device that will alert any person who could be endangered by a fire, provided that no person's work station is in the building.

(c) Flammable or combustible liquids in use for day-to-day maintenance and operational activities are not considered in storage under this standard.

Welding/Cutting/Compressed Gases

§ 56.4600 Extinguishing equipment.

(a) When welding, cutting, soldering, thawing, or bending—

(1) With an electric arc or with an open flame where an electrically conductive extinguishing agent could create an electrical hazard, a multipurpose dry-chemical fire extinguisher or other extinguisher with

at least a 2-A:10-B:C rating shall be at the worksite.

(2) With an open flame in an area where no electrical hazard exists, a multipurpose dry-chemical fire extinguisher or equivalent fire extinguishing equipment for the class of fire hazard present shall be at the worksite.

(b) Use of halogenated fire extinguishing agents to meet the requirements of this standard shall be limited to Halon 1211 ($CBrClF_2$) and Halon 1301 ($CBrF_3$). When these agents are used in confined or unventilated areas, precautions based on the manufacturer's use instructions shall be taken so that the gases produced by thermal decompostion of the agents are not inhaled.

§ 56.4601 Oxygen cylinder storage.

Oxygen cylinders shall not be stored in rooms or areas used or designated for storage of flammable or combustible liquids, including grease.

§ 56.4602 Gages and regulators.

Gages and regulators used with oxygen or acetylene cylinders shall be kept clean and free of oil and grease.

§ 56.4603 Closure of valves.

To prevent accidental release of gases from hoses and torches attached to oxygen and acetylene cylinders or to manifold systems, cylinder or manifold system valves shall be closed when—

(a) The cylinders are moved;

(b) The torch and hoses are left unattended; or

(c) The task or series of tasks is completed.

§ 56.4604 Preparation of pipelines or containers.

Before welding, cutting, or applying heat with an open flame to pipelines or containers that have contained flammable or combustible liquids, flammable gases, or explosive solids, the pipelines or containers shall be—

(a) Drained, ventilated, and thoroughly cleaned of any residue;

(b) Vented to prevent pressure build-up during the application of heat; and

(c)(1) Filled with an inert gas or water, where compatible; or

(2) Determined to be free of flammable gases by a flammable gas detection device prior to and at frequent intervals during the application of heat.

Appendix I for Subpart C—National Consensus Standards

Mine operators seeking further information in the area of fire prevention and control may consult the following national consensus standards.

MSHA standard	National consensus standard
§§ 56.4200, 56.4201.	NFPA No. 10—Portable Fire Extinguisher. NFPA No. 11—Low Expansion Foam and Combined Agent Systems. NFPA No. 11A—High Expansion Foam Systems. NFPA No. 12—Carbon Dioxide Extinguishing Systems. NFPA No. 12A—Halon 1301 Extinguishing Systems. NFPA No. 13—Water Sprinkler Systems. NFPA No. 14—Standpipe and Hose Systems. NFPA No. 15—Water Spray Fixed Systems. NFPA No. 16—Foam Water Spray Systems. NFPA No. 17—Dry-Chemical Extinguishing Systems. NFPA No. 121—Mobile Surface Mining Equipment. NFPA No. 291—Testing and Marketing Hydrants. NFPA No. 1962—Care, Use, and Maintenance of Fire Hose, Connections, and Nozzles.
§ 56.4202	NFPA No. 14—Standpipe and Hose Systems. NFPA No. 291—Testing and Marketing Hydrants.
§ 56.4203	NFPA No. 10—Portable Fire Extinguishers.
§ 56.4230	NFPA No. 10—Portable Fire Extinguishers. NFPA No. 121—Mobile Surface Mining Equipment.

Subpart D—Air Quality and Physical Agents

Air Quality

§ 56.5001 Exposure limits for airborne contaminants.

Except as permitted by § 56.5005—

(a) Except as provided in paragraph (b), the exposure to airborne contaminants shall not exceed, on the basis of a time weighted average, the threshold limit values adopted by the American Conference of Governmental Industrial Hygienists, as set forth and explained in the 1973 edition of the Conference's publication, entitled "TLV's Threshold Limit Values for Chemical Substances in Workroom Air Adopted by ACGIH for 1973," pages 1 through 54, which are hereby incorporated by reference and made a part hereof. This publication may be obtained from the American Conference of Governmental industrial Hygienists by writing to the Secretary-Treasurer, P.O Box 1937, Cincinnati, Ohio 45201, or may be examined in any Metal and Nonmetal Mine Safety and Health District or Subdistrict Office of the Mine Safety and Health Administration. Excursions above the listed thresholds shall not be of a greater magnitude than is characterized as permissible by the Conference.

(b) The 8-hour time weighted average airborne concentration of asbestos dust to which employees are exposed shall not exceed 2 fibers per milliliter greater than 5 microns in length, as determined by the membrane filter method at 400-450 magnification (4 millimeter objective) phase contrast illumination. No employees shall be exposed at any time to airborne concentrations of asbestos fibers in excess of 10 fibers longer than 5 micrometers, per milliliter of air, as determined by the membrane filter method over a minimum sampling time of 15 minutes. "Asbestos" is a generic term for a number of hydrated silicates that, when crushed or processed, separate into flexible fibers made up of fibrils. Although there are many asbestos minerals, the term "asbestos" as used herein is limited to the following minerals: chrysotile, amosite, crocidolite, anthophylite asbestos, tremolite asbestos, and actinolite asbestos.

(c) Employees shall be withdrawn from areas where there is present an airborne contaminant given a "C" designation by the Conference and the concentration exceeds the threshold limit value listed for that contaminant.

§ 56.5002 Exposure monitoring.

Dust, gas, mist, and fume surveys shall be conducted as frequently as necessary to determine the adequacy of control measures.

§ 56.5003 Drill dust control.

Holes shall be collared and drilled wet, or other efficient dust control measures shall be used when drilling non-water-soluble material. Efficient dust control measures shall be used when drilling water-soluble materials.

§ 56.5005 Control of exposure to airborne contaminants.

Control of employee exposure to harmful airborne contaminants shall be, insofar as feasible, by prevention of contamination, removal by exhaust ventilation, or by dilution with uncontaminated air. However, where accepted, engineering control measures have not been developed or when necessary by the nature of work involved (for example, while establishing controls or occasional entry into hazardous atmospheres to perform maintenance or investigation), employees may work for reasonable periods of time in concentrations of airborne contaminants exceeding permissible levels if they are protected by appropriate respiratory protective equipment. Whenever respiratory protective equipment is used a program for selection, maintenance, training, fitting, supervision, cleaning, and use shall meet the following miminum requirements:

(a) Mine Safety and Health Administration approved respirators which are applicable and suitable for the purpose intended shall be furnished, and employees shall use the protective equipment in accordance with training and instruction.

(b) A respirator program consistent with the requirements of ANSI Z88.2–1969, published by the American National Standards Institute and entitled "American National Standards Practices for Respiratory Protection ANSI Z88.2–1969," approved August 11, 1969, which is hereby incorporated by reference and made a part hereof. This publication may be obtained from the American National Standards Institute, Inc., 1430 Broadway, New York, New York 10018, or may be examined in any Metal and Nonmetal Mine Safety and Health District or Subdistrict Office of the Mine Safety and Health Administration.

(c) When respiratory protection is used in atmospheres immediately harmful to life, the presence of at least one other person with backup equipment and rescue capability shall be required in the event of failure of the respiratory equipment.

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§ 56.5006 Restricted use of chemicals.

The following chemical substances shall not be used or stored except by competent persons under laboratory conditions approved by a nationally recognized agency acceptable to the Secretary.

(a) Carbon tetrachloride.
(b) Phenol.
(c) 4-Nitrobiphenyl.
(d) Alpha-naphthylamine.
(e) 4,4-Methylene Bis (2-chloroaniline).
(f) Methyl-chloromethyl ether.
(g) 3,3 Dichlorobenzidine.
(h) Bis (chloromethyl) ether.
(i) Beta-napthylamine.
(j) Benzidine.
(k) 4-Aminodiphenyl.
(l) Ethyleneimine.
(m) Beta-propiolactone.
(n) 2-Acetylaminofluorene.
(o) 4-Dimethylaminobenzene, and
(p) N-Nitrosodimethylamine.

§ 56.5010 Abrasive blasting.

Silica sand, or other materials containing more than 1 percent free silica, shall not be used as an abrasive substance in abrasive blasting cleaning operations without requiring full-flow respiratory protection, or equivalent, to all exposed persons.

Physical Agents

§ 56.5050 Exposure limits for noise.

(a) No employee shall be permitted an exposure to noise in excess of that specified in the table below. Noise level measurements shall be made using a sound level meter meeting specifications for type 2 meters contained in American National Standards Institute (ANSI) Standard S1.4–1971, "General Purpose Sound Level Meters," approved April 27, 1971, which is hereby incorporated by reference and made a part hereof, or by a dosimeter with similar accuracy. This publication may be obtained from the American National Standards Institute, Inc. 1430 Broadway, New York, New York 10018, or may be examined in any Metal and Nonmetal Mine Safety and Health District or Subdistrict Office of the Mine Safety and Health Administration.

PERMISSIBLE NOISE EXPOSURES

Duration per day, hours of exposure	Sound level dBA, slow response
8	90
6	92
4	95
3	97
2	100
1½	102
1	105
½	110
¼ or less	115

No exposure shall exceed 115 dBA. Impact or impulsive noises shall not exceed 140 dB, peak sound pressure level.

Note.—When the daily noise exposure is composed of two or more periods of noise exposure at different levels, their combined effect shall be considered rather than the individual effect on each.

If the sum

$$(C_1/T_1)+(C_2/T_2)+\ldots(C_n/T_n)$$

exceeds unity, then the mixed exposure shall be considered to exceed the permissible exposure. C_n indicates the total time of exposure at a specified noise level, and T_n indicates the total time of exposure permitted at that level. Interpolation between tabulated values may be determined by the following formula:

$$\text{Log } T=6.322-0.0602\ SL$$

Where T is the time in hours and SL is the sound level in dBA.

(b) When employees' exposure exceeds that listed in the above table, feasible administrative or engineering controls shall be utilized. If such controls fail to reduce exposure to within permissible levels, personal protection equipment shall be provided and used to reduce sound levels to within the levels of the table.

Subpart E—Explosives

§ 56.6000 Application.

The term "explosives" as used in this subpart includes blasting agents. The standards in this subpart in which the term "explosives" appears are applicable to blasting agents (as well as to other explosives) unless blasting agents are expressly excluded.

Storage

§ 56.6001 Detonators and explosives.

Detonators and explosives other than blasting agents shall be stored in magazines.

§ 56.6002 Separation of detonators from explosives.

Detonators shall not be stored in the same magazine with explosives.

§ 56.6005 Areas around storage facilities.

Areas surrounding magazines and facilities for the storage of blasting agents shall be kept clear of rubbish, brush, dry grass, or trees (other than live trees 10 or more feet tall), for a distance not less than 25 feet in all directions, and other unnecessary combustible materials for a distance of not less than 50 feet.

§ 56.6007 Precautionary practices.

Explosives, detonators, and related materials such as safety fuse and detonating cord shall be—

(a) Stored in a manner to facilitate use of oldest stocks first;

(b) Stored according to brand and grade in such a manner as to facilitate identification;

(c) Stored with their top sides up; and

(d) Stacked in a stable manner but not more than eight feet high.

§ 56.6008 Separation of ANFO blasting agents from other explosives products.

Ammonium nitrate-fuel oil blasting agents shall be physically separated from other explosives, safety fuse, or detonating cord stored in the same magazine and in such a manner that oil does not contaminate the other explosives, safety fuse, or detonating cord.

§ 56.6011 Containers.

Containers of explosives, blasting agents, and detonators shall be closed while being stored.

§ 56.6012 Repair of storage facilities.

Prior to interior repair of facilities for storage of explosives, including blasting agents, all materials stored within the

facility shall be removed and the interior cleaned. Prior to the exterior repair of such facilities, all materials stored within the facility shall be removed if there exists a possibility that such repairs may produce a spark or flame. The explosives removed from storage facilities to be repaired shall be placed either in other storage facilities appropriate for the storage of such materials under this subpart or a safe distance from the facilities under repair where they shall be properly guarded and protected until the repairs have been completed and the materials have been returned to storage within the facilities.

§ 56.6020 Magazine requirements.

Magazines shall be—

(a) Located in accordance with the current American Table of Distances for storage of explosives;

(b) Detached structures located away from powerlines, fuel storage areas, and other possible sources of fire;

(c) Constructed substantially of noncombustible material or covered with fire-resistant material;

(d) Reasonably bullet resistant;

(e) Electrically bonded and grounded if constructed of metal;

(f) Made of nonsparking materials on the inside, including floors;

(g) Provided with adequate and effectively screened ventilation openings near the floor and ceiling;

(h) Kept locked securely when unattended;

(i) Posted with suitable danger signs so located that a bullet passing through the face of a sign will not strike the magazine;

(j) Used exclusively for storage of explosives or detonators and kept free of all extraneous materials;

(k) Kept clean and dry in the interior, and in good repair; and

(l) Unheated, unless heated in a manner that does not create a fire or explosion hazard. Electrical heating devices shall not be used inside a magazine.

Transportation

§ 56.6040 Separation of explosive material.

Explosives and detonators shall be transported in separate vehicles unless separated by 4 inches of hardwood or the equivalent.

§ 56.6041 Haulage by trolley locomotive.

When explosives and detonators are hauled by trolley locomotive, covered, electrically-insulated cars shall be used.

§ 56.6042 Fire protection.

Self-propelled vehicles used to transport explosives or detonators shall be equipped with suitable fire extinguishers.

§ 56.6043 Warning signs.

Vehicles containing explosives or detonators shall be posted with proper warning signs.

§ 56.6044 Parking precautions.

When vehicles containing explosives or detonators are parked, the brakes shall be set, the motive power shut off, and the vehicle shall be blocked securely against rolling.

§ 56.6045 Repair of transport vehicles.

Vehicles containing explosives or detonators shall not be taken to a repair garage or shop for any purpose.

§ 56.6046 Maintenance and operation of transport vehicles.

Vehicles containing explosives or detonators shall be maintained in good condition and shall be operated at a safe speed and in accordance with all safe operating practices.

§ 56.6047 Vehicle construction.

Vehicles used to transport explosives, other than blasting agents, shall have substantially contructed bodies, no sparking metal exposed in the cargo space, and shall be equipped with suitable sides and tail gates; explosives shall not be piled higher than the side or end enclosures.

§ 56.6048 Delivery.

Explosives and blasting agents shall be transported without undue delay, and over routes and at times that expose a minimum number of persons.

§ 56.6050 Materials in cargo space.

Other materials or supplies shall not be placed on or in the cargo space of a conveyance containing explosives, detonating cord or detonators, except for safety fuse and except for properly secured, nonsparking equipment used expressly in the handling of such explosives, detonating cord or detonators.

§ 56.6051 Transport on locomotives.

Explosives or detonators shall not be transported on locomotives.

§ 56.6053 Riding prohibitions.

Only the necessary attendants shall ride on or in vehicles containing explosives or detonators.

§ 56.6054 Transport on mantrips.

Explosives or detonators shall not be transported on mantrips.

§ 56.6056 Containers for delivery.

Substantial nonconductive containers shall be used to carry explosives to blasting sites.

§ 56.6057 Containers for capped fuses and electric detonators.

Nonconductive containers with tight-fitting covers shall be used to transport or carry capped fuses and electric detonators to blasting sites.

§ 56.6065 Vehicle attendance.

Vehicles containing detonators or explosives, other than blasting agents, shall not be left unattended except in blasting areas where loading or charging is in progress.

Use

§ 56.6090 Experience of users and handlers.

Persons who use or handle explosive or detonators shall be experienced persons who understand the hazards involved; trainees shall do such work only under the supervision of and in the immediate presence of experienced persons.

§ 56.6091 Supervision of blasting operations.

Blasting operations shall be under the direct control of authorized persons.

§ 56.6092 Damaged or deteriorated explosives or blasting agents.

Damaged or deteriorated explosives and blasting agents shall be destroyed in a safe manner under the instructions of the explosives or blasting agent manufacturer or its designated agent.

§ 56.6093 Blasthole obstructions.

Boreholes shall be cleared of obstructions before charging.

§ 56.6094 Blasthole charging.

Holes to be blasted shall be charged as near to blasting time as practical and such holes shall be blasted as soon as possible after charging has been completed. In no case shall the time elapsing between the completion of charging to the time of blasting exceed 72 hours unless prior approval has been obtained from the Mine Safety and Health Administration.

§ 56.6096 Separation of explosives from detonators.

Explosives shall be kept separated from detonators until charging is started.

§ 56.6097 Primers.

Primers shall be made up only at the time of use and as close to the blasting area as conditions allow.

§ 56.6098 Primer and detonating cord preparation.

(a) Primers containing a detonator shall be prepared with the detonator contained securely and completely within the explosive charge or within a suitable tunnel or cap well.

(b) When using detonating cord to initiate another explosive, a connection shall be prepared with the detonating cord threaded through, attached securely to, or otherwise in intimate contact with the explosive charge.

§ 56.6099 Implements for punching cartridges.

Only wooden or other nonsparking implements shall be used to punch holes in an explosive cartridge.

§ 56.6100 Tamping poles.

Tamping poles shall be of wood or other material acceptable to the Mine Safety and Health Administration. Couplers of tamping poles shall be of nonsparking materials.

§ 56.6101 Tamping precautions.

Tamping shall not be done directly on a primer.

§ 56.6102 Unused explosives and detonators.

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

§ 56.6103 Blast site security.

Areas in which charged holes are awaiting firing shall be guarded, or barricaded and posted, or flagged against unauthorized entry.

§ 56.6104 Misfire waiting period for safety fuse.

When safety fuse has been used, persons shall not return to misfired holes for at least 30 minutes.

§ 56.6105 Misfire waiting period for electric blasting caps.

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

§ 56.6106 Examination of faces and muck piles.

Faces and muck piles shall be examined by a competent person for undetonated explosives or blasting agents and any undetonated explosives or blasting agents found shall be disposed of safely.

§ 56.6107 Drilling.

Holes shall not be drilled where there is danger of intersecting a charged or misfired hole.

§ 56.6108 Fuse and igniter storage.

Fuse and igniters shall be stored in a cool, dry place away from oils or grease.

§ 56.6109 Damaged initiating material.

Safety fuse, igniter cord, and detonating cord shall not be used if they have been kinked, bent sharply, or otherwise damaged.

§ 56.6110 Preparation of fuse.

Fuses shall be cut and capped in safe, dry locations posted with "No Smoking" signs.

§ 56.6111 Preparation of blasting caps.

Blasting caps shall be crimped to fuses only with implements designed for that specific purpose.

§ 56.6112 Safety fuse—burning rate.

The burning rate of the safety fuse in use at any time shall be measured, posted in conspicuous locations, and brought to the attention of all persons concerned with blasting.

§ 56.6113 Safety fuse—minimum burning time.

When firing from 1 to 15 blastholes with safety fuse ignited individually using hand-held lighters, the fuses shall be of such lengths to provide the minimum burning time specified in the following table for a particular size round:

Number of holes in a round	Minimum burning time, minutes
1	2
2-5	2½
6-10	3½
11-15	5

In no case shall any 40-second-per-foot safety fuse less than 36 inches long or any 30-second-per-foot safety fuse less than 48 inches long be used.

§ 56.6114 Fuse lighting restrictions.

At least two persons shall be present when lighting fuses, and no person shall light more than 15 individual fuses. If more than 15 holes per person are to be fired, igniter cord and connectors or electric blasting shall be used.

§ 56.6115 Detonating cords.

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

§ 56.6116 Fuse lighting devices.

Fuse shall be ignited with hot-wire lighters, lead spitters, igniter cord, or other such devices designed for this purpose. Carbide lights shall not be used to light fuses.

§ 56.6117 Fuse ignition—charge placement.

Fuse shall not be ignited before the primer and the entire charge are securely in place.

§ 56.6118 Safety fuse—timing.

When using safety fuse, where fly rock might damage unlit or burning fuses, timing shall be such that all fuses are burning within the holes before any hole detonates.

§ 56.6119 Compatibility of electric detonators.

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

§ 56.6120 Shunting.

Except when being tested with a blasting galvanometer—

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

(b) Wired rounds shall be kept shunted until they are being connected to the blasting line; and

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

§ 56.6121 Circuit testing.

When blasting electrically, a blasting galvanometer, or other instrument that is specifically designed for testing blasting circuits, shall be used to test—

(a) In surface operations:

(1) Continuity of each electric blasting cap in the borehole prior to the addition of stemming.

(2) Resistance of individual series or the resistance of multiple balanced series to be connected in parallel prior to their connection to the blasting line.

(3) Continunity of blasting lines prior to the connection of electric blasting cap series.

(4) Total blasting circuit resistance prior to connection to the power source.

(b) In underground operations:

(1) Continuity of each electric blasting cap series.

(2) Continuity of blasting lines prior to the connection of electric blasting caps.

§ 56.6122 Blasting line requirements.

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

§ 56.6123 Extraneous electricity—loading practices.

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.

§ 56.6124 Precautions during storms.

When electric detonators are used, charging shall be suspended in surface mining, shaft sinking, and tunneling and persons withdrawn to a safe location upon the approach of an electrical storm.

§ 56.6125 Branch circuits.

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.

§ 56.6126 Deenergizing circuits near blasting caps.

Electric power distribution circuits shall be deenergized within 50 feet of boreholes containing electric blasting caps which can be initiated by conventional power sources or extraneous electricity except that such circuits need not be deenergized between 25 and 50 feet of such boreholes when stray current tests, conducted as frequently as necessary, measure a maximum stray current less than 0.05 ampere through a one-ohm resistor measured at the location of the electric blasting cap.

§ 56.6127 Positive separation of blasting circuits from power source.

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.

§ 56.6128 Control of firing device.

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

§ 56.6129 Grounding restrictions.

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

§ 56.6130 Air gap.

At least a 15-foot air gap shall be provided between the blasting circuit and the electric power source.

§ 56.6131 Firing devices.

Power sources shall be suitable for the number of electric detonators to be fired and for the type of circuits used.

§ 56.6132 Delay connectors.

Delay connectors shall be treated and handled with the same safety precautions as detonators.

§ 56.6133 Duration of current flow.

If any part of a blast is connected in parallel and is to be initiated from powerlines or lighting circuits, the time of current flow shall be limited to a maximum of 25 milliseconds by incorporating an arcing control device in the blasting circuit or by interrupting the circuit with an explosive charge attached to one or both lead lines and initiated by a zero-delay electric blasting cap.

§ 56.6134 Use of nonsparkling implements to open containers.

Tools used for opening metal or nailed wooden containers of explosives or detonators shall be of nonsparking materials.

§ 56.6135 Collaring in bootlegs.

Holes shall not be collared in bootlegs.

§ 56.6136 Black powder restrictions.

Black powder shall not be used for blasting except when a desired result cannot be obtained with another type of explosive such as in quarrying certain types of dimension stone.

§ 56.6137 Black powder handling precautions.

In the use of black blasting powder—

(a) Containers shall not be opened in, or within 50 feet of, any magazine; within any building in which a fuel-fired or exposed-element electric heater is in operation; where electrical or incandescent-particle sparks could result in powder ignition; or within 50 feet of any open flame;

(b) Granular powder shall be transferred from containers only by pouring;

(c) Spills of granular powder shall be cleaned up promptly with nonsparking equipment: contaminated powder shall be put into a container of water and its content disposed of promptly after the granules have disintegrated, or the spill area shall be flushed with a copious amount of water to completely disintegrate the granules;

(d) Containers of powder shall be kept securely closed at all times other than when the powder is being transferred from or into a container;

(e) Containers of powder transported by vehicles shall be in a wholly enclosed cargo space;

(f) Misfires shall be disposed of by: (1) washing the stemming and powder charge from the borehole, and (2) removal and disposal of the initiator as a damaged explosive; and

(g) Boreholes of shots that fire but fail to break or fail to break properly shall not be recharged for at least 12 hours.

§ 56.6138 Hot holes.

Explosives or blasting agents shall not be loaded into drilled or sprung holes that could result in premature detonation from heat.

§ 56.6139 Reentry to blasting areas.

Blasting areas shall not be reentered after firing until concentrations of smoke, dust, and fumes have been reduced to safe limits as required in, and determined by, standards 56.5001 and 56.5002, respectively.

§ 56.6140 Extraneous electricity—blasting circuits and electric blasting caps.

Blasting circuits and electric blasting caps (which are capable of being initiated by conventional power sources) shall be protected from sources of extraneous electricity.

§ 56.6142 Drill stem loading.

Explosives or blasting agents shall not be loaded into boreholes through or with either drill stem equipment or other devices which could be extracted while containing explosives or blasting agents. The use of loading hose, collar sleeves or collar pipes is permitted.

(Sec. 101, Pub. L. 91-173 as amended by Pub. L. 95-164, 91 Stat. 1291 (30 U.S.C. 811), and sec. 301(c)(3), Pub. L. 95-164, 91 Stat. 1318 (30 U.S.C. 961(c)(3))

§ 56.6159 Powder chests.

Powder chests shall be—

(a) Substantially constructed of nonsparking material on the inside;

(b) Posted with suitable warning signs;

(c) Located out of the blast area and out of the line of blasts;

(d) Emptied and their contents returned to the main magazine at the end of each shift unless the powder chest is located within the area continually attended by employees during shift changes;

(e) Separate for detonators and explosives unless separated by 4 inches of hardwood or the equivalent; and

(f) Kept locked when unattended.

§ 56.6160 Protection of personnel at blast site.

Ample warning shall be given before blasts are fired. All persons shall be cleared and removed from the blasting area unless suitable blasting shelters are provided to protect persons endangered by concussion or flyrock from blasting.

§ 56.6161 Burning charges.

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

§ 56.6162 Isolation of blasting circuits.

Lead wires and blasting lines shall not be strung across power conductors, pipelines, railroad tracks, or within 20

feet of bare powerlines. They shall be protected from sources of static or other electrical contact.

§ 56.6163 Detonating cord blasting.

The double-trunkline or loop system shall be used in detonating-cord blasting.

§ 56.6164 Trunklines.

Trunklines, in multiple-row blasts, shall make one or more complete loops, with crossties between loops at intervals of not over 200 feet.

§ 56.6168 Handling of misfires.

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

Sensitized Ammonium Nitrate Blasting Agents

§ 56.6193 Static electricity.

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.

§ 56.6194 Grounding prohibitions.

Pneumatic loading equipment shall not be grounded to waterlines, air lines, rails, or the permanent electrical grounding systems.

§ 56.6195 Conductivity of hoses.

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-countered hose shall not be used because of the potential hazard from stray electric currents.

§ 56.6198 Hole liners.

Plastic tubes shall not be used as hole liners if blasting agents are loaded pneumatically into holes containing an electric detonator.

§ 56.6200 Transport and unloading.

Vehicles used to transport blasting agents shall have substantially constructed bodies, no zinc or copper exposed in the cargo space and shall be freely vented. Blasting agents shall not be piled higher than the side or end enclosures of open-body vehicles. If an enclosed screw conveyor is used to discharge blasting agents from the vehicle, the conveyor shall be protected against excessive internal pressure and excessive frictional heat.

Miscellaneous

§ 56.6250 Smoking and open flames.

Smoking and open flames, except for the use of suitable devices for igniting safety fuse or the use of approved heating devices, shall not be permitted within 50 feet as measured by the line of sight of explosives, blasting agents, or detonators or within 25 feet when out of line of sight and separated by permanent noncombustible barriers in underground active workings.

Subpart F—Drilling and Rotary Jet Piercing

Drilling

§ 56.7002 Equipment defects.

Equipment defects affecting safety shall be corrected before the equipment is used.

§ 56.7003 Drill area inspection.

The drilling area shall be inspected for hazards before starting the drilling operations.

§ 56.7004 Drill mast.

Persons shall not be on a mast while the drill-bit is in operation unless they are provided with a safe platform from which to work and they are required to use safety belts to avoid falling.

§ 56.7005 Augers and drill stems.

Drill crews and others shall stay clear of augers or drill stems that are in motion. Persons shall not pass under or step over a moving stem or auger.

§ 56.7008 Moving the drill.

When a drill is being moved from one drilling area to another, drill steel, tools, and other equipment shall be secured and the mast placed in a safe position.

§ 56.7009 Drill helpers.

If a drill helper assists the drill operator during movement of a drill to a new location, the helper shall be in sight of, or in communication with, the operator at all times.

§ 56.7010 Power failures.

In the event of power failure, drill controls shall be placed in the neutral position until power is restored.

§ 56.7011 Straightening crossed cables.

The drill stem shall be resting on the bottom of the hole or on the platform with the stem secured to the mast before attempts are made to straighten a crossed cable on a reel.

§ 56.7012 Tending drills in operation.

While in operation, drills shall be attended at all times.

§ 56.7013 Covering or guarding drill holes.

Drill holes large enough to constitute a hazard shall be covered or guarded.

§ 56.7018 Hand clearance.

Persons shall not hold the drill steel while collaring holes, or rest their hands on the chuck or centralizer while drilling.

§ 56.7050 Tool and drill steel racks.

Receptacles or racks shall be provided for drill steel and tools stored or carried on drills.

§ 56.7051 Loose objects on the mast or drill platform.

To prevent injury to personnel, tools and other objects shall not be left loose on the mast or drill platform.

§ 56.7052 Drilling positions.

Persons shall not drill from—

(a) Positions which hinder their access to the control levers;

(b) Insecure footing or insecure staging; or

(c) Atop equipment not suitable for drilling.

§ 56.7053 Moving hand-held drills.

Before hand-held drills are moved from one working area to another, air shall be turned off and bled from the hose.

Rotary Jet Piercing

§ 56.7801 Jet drills.

Jet piercing drills shall be provided with—

(a) A system to pressurize the equipment operator's cab, when a cab is provided; and

(b) A protective cover over the oxygen flow indicator.

§ 56.7802 Oxygen hose lines.

Safety chains or other suitable locking devices shall be provided across connections to and between high pressure oxygen hose lines of 1-inch inside diameter or larger.

§ 56.7803 Lighting the burner.

A suitable means of protection shall be provided for the employee when lighting the burner.

§ 56.7804 Refueling.

When rotary jet piercing equipment requires refueling at locations other than fueling stations, a system for fueling without spillage shall be provided.

§ 56.7805 Smoking and open flames.

Persons shall not smoke and open flames shall not be used in the vicinity of the oxygen storage and supply lines. Signs warning against smoking and open flames shall be posted in these areas.

§ 56.7806 Oxygen intake coupling.

The oxygen intake coupling on jet-piercing drills shall be constructed so that only the oxygen hose can be coupled to it.

§ 56.7807 Flushing the combustion chamber.

The combustion chamber of a jet drill stem which has been sitting unoperated in a drill hole shall be flushed with a suitable solvent after the stem is pulled up.

Subpart G—[Reserved]

Subpart H—Loading, Hauling, and Dumping

§ 56.9001 Self-propelled equipment inspection.

Self-propelled equipment that is to be used during a shift shall be inspected by the equipment operator before being placed in operation. Equipment defects affecting safety shall be reported to, and recorded by the mine operator. The records shall be maintained at the mine or nearest mine office for at least 6 months from the date the defects are recorded. Such records shall be made available for inspection by the Secretary of Labor or his duly authorized representative.

[Approved by the Office of Management and Budget under OMB control number 1219-0089]

§ 56.9002 Safety defects.

Equipment defects affecting safety shall be corrected before the equipment is used.

§ 56.9003 Mobile equipment brakes.

Powered mobile equipment shall be provided with adequate brakes.

§ 56.9005 Warning prior to starting or moving equipment.

Operators shall be certain, by signal or other means, that all persons are clear before starting or moving equipment.

§ 56.9006 Conveyor start-up warning.

When the entire length of a conveyor is visible from the starting switch, the operator shall visually check to make certain that all persons are in the clear before starting the conveyor. When the entire length of the conveyor is not visible from the starting switch, a positive audible or visual warning system shall be installed and operated to warn persons that the conveyor will be started.

§ 56.9007 Unguarded conveyors with walkways.

Unguarded conveyors with walkways shall be equipped with emergency stop devices or cords along their full length.

§ 56.9009 Train warnings.

Operators shall sound warning before starting trains and when trains approach crossings, other trains on adjacent tracks, persons, and any place where vision is obscured.

§ 56.9010 Operators' cabs.

Equipment operators' cabs shall not be equipped, altered, or otherwise modified in a manner which impairs operating visibility.

§ 56.9011 Cab windows.

Cab windows shall be of safety glass or equivalent, in good condition and shall be kept clean.

§ 56.9012 Extraneous material in cabs.

Cabs of mobile equipment shall be kept free of extraneous materials.

§ 56.9013 Incline conveyors—backstops or brakes.

Adequate backstops or brakes shall be installed on inclined-conveyor drive units to prevent conveyors from running in reverse if a hazard to personnel would be caused.

§ 56.9014 Transporting persons on conveyors.

No person shall be permitted to ride a power-driven chain, belt, or bucket conveyor, unless the belt is specifically designed for the transportation of persons.

§ 56.9015 Slusher backlash guards and securing.

Unless the operator is otherwise protected, slushers in excess of 10 horsepower shall be provided with backlash guards. All slushers shall be equipped with rollers, and drum covers, and anchored securely before slushing operations are started.

§ 56.9016 Design, installation, and maintenance of rail trackage.

Roadbeds, rails, joints, switches, frogs, and other trackage elements on railroads subject to the control of the operator shall be designed, installed, and maintained in a safe manner consistent with the speed and type of haulage.

§ 56.9017 Operating speeds.

Equipment operating speeds shall be consistent with conditions of roadways, grades, clearance, visibility, traffic, and the type of equipment used.

§ 56.9019 Track guardrails, lead rails, and frogs.

Track guardrails, lead rails, and frogs shall be protected or blocked so as to prevent a person's foot from becoming wedged.

§ 56.9020 Protection against moving or runaway rail equipment.

Postive-acting stopblocks, derail devices, track skates, or other adequate means shall be installed wherever necessary to protect persons from runaway or moving railroad equipment.

§ 56.9022 Berms or guards.

Berms or guards shall be provided on the outer bank of elevated roadways.

§ 56.9023 Control of trackless haulage equipment.

Trackless haulage equipment shall be operated under power control at all times.

§ 56.9024 Control of mobile equipment.

Mobile equipment operators shall have full control of the equipment while it is in motion.

§ 56.9025 Movement of dippers, buckets, loading booms, or suspended loads.

Dippers, buckets, loading booms, or heavy suspended loads shall not be swung over the cabs of haulage vehicles until the drivers are out of the cabs and in safe locations, unless the trucks are designed specifically to protect the drivers from falling material.

§ 56.9026 Air valves for pneumatic equipment.

A quick-close type air valve shall be provided on each piece of pneumatic-powered loading, hauling, and dumping equipment. The valve shall be closed except when the equipment is being operated.

§ 56.9027 Notification to the equipment operator.

When an operator is present, persons shall notify him before getting on or off equipment.

§ 56.9028 Switch throws.

Switch throws shall be installed so as to provide adequate clearance for switchmen.

§ 56.9030 Suspended loads.

Persons shall not work or pass under the buckets or booms of loaders in operation.

§ 56.9031 Securing equipment during travel.

When traveling between work areas, the equipment shall be secured in the travel position.

§ 56.9032 Securing movable parts.

Dippers, buckets, scraper blades, and similar movable parts shall be secured or lowered to the ground when not in use.

§ 56.9034 Minimizing spillage.

Haulage equipment shall be loaded in a manner to minimize spillage during haulage.

§ 56.9035 Movement of independently operating rail equipment.

Movement of two or more pieces of rail equipment operating independently on the same track shall be suitably controlled for safe operation.

§ 56.9036 Parking procedures for electrically-powered mobile equipment.

Electrically-powered mobile equipment shall not be left unattended unless the master switch is in the off position, all operating controls are in the neutral position, and the brakes are set or other equivalent precautions are taken against rolling.

§ 56.9037 Parking procedures for mobile equipment.

Mobile equipment shall not be left unattended unless the brakes are set. Mobile equipment with wheels or tracks, when parked on a grade, shall be either blocked or turned into a bank or rib; and the bucket or blade lowered to the ground to prevent movement.

§ 56.9039 Getting on or off moving equipment.

Persons shall not get on or off moving equipment, except that trainmen may get on or off of slowly moving trains.

§ 56.9040 Transporting persons—prohibitions.

Persons shall not be transported—

(a) In or on dippers, forks, clamshells, beds of trucks unless special provisions are made for their safety, or buckets except shaft buckets;

(b) On top of loaded haulage equipment;

(c) Outside of the cabs and beds of mobile equipment, except trains;

(d) Between cars of trains; or

(e) In conveyances equipped with unloading devices unless means are provided to prevent accidental starting of the unloading mechanism.

§ 56.9041 Riding trains or locomotives.

Only authorized persons shall be permitted to ride on trains or locomotives and they shall ride in a safe position.

§ 56.9042 Rocker-bottom and bottom-dump railcars.

Rocker-bottom or bottom-dump railcars shall be equipped with locking devices.

§ 56.9045 Loading and securing equipment for haulage.

Equipment which is to be hauled shall be loaded and protected so as to prevent sliding or spillage.

§ 56.9046 Backpoling.

Backpoling of trolleys shall be avoided wherever possible; but when necessary, backpoling shall be done only at slow speeds.

§ 56.9047 Securing parked railcars.

Parked railcars, unless held effectively by brakes, shall be blocked securely.

§ 56.9048 Brakes on railcars.

Railroad cars with braking systems, when in use, shall be equipped with effective brake shoes.

§ 56.9049 Oversize-load warning.

When in the dark or under conditions of limited visibility, all vehicles carrying loads which project beyond the sides or more than four feet beyond the rear of the vehicles shall display a warning light at the end of the projection; or in the light, a warning flag not less than 12 inches square shall be displayed at the end of the projection.

§ 56.9050 Clearance on adjacent tracks.

Railcars shall not be left on side tracks unless ample clearance is provided for traffic on adjacent tracks.

§ 56.9051 Travel precautions around railcars.

Persons shall not go over, under, or between cars unless the train is stopped and the motorman has been notified and the notice acknowledged.

§ 56.9052 Brakeman signals.

Inability of a motorman to clearly recognize his brakeman's signals when the train is under the direction of the brakeman shall be construed by the motorman as a stop signal.

§ 56.9053 Removal of hazards to moving equipment.

Water, debris or spilled material which create hazards to moving equipment shall be removed.

§ 56.9054 Restraining devices at dumping locations.

Berms, bumper blocks, safety hooks, or similar means shall be provided to prevent overtravel and overturning at dumping locations.

§ 56.9055 Dumping near unstable ground.

Where there is evidence that the ground at a dumping place may fail to support the weight of a vehicle, loads shall be dumped back from the edge of the bank.

§ 56.9056 Track dead ends.

Where necessary, bumper blocks or the equivalent shall be provided at track dead ends.

§ 56.9057 Anchoring stationary sizing devices.

Grizzlies, grates, and other stationary sizing devices shall be anchored securely.

§ 56.9058 Truck spotters.

If truck spotters are used, they shall be well in the clear while trucks are backing into dumping positions and dumping; lights shall be used at night to direct trucks.

§ 56.9059 Rail crossings.

Public and permanent railroad crossings shall be posted with warning signs or signals, or shall be guarded when trains are passing and shall be planked or otherwise filled between the rails.

§ 56.9060 Restricted overhead clearance.

Where overhead clearance is restricted, warning devices shall be installed and the restricted area shall be conspicuously marked.

§ 56.9061 Trimming of stockpile and muckpile faces.

Stockpile and muckpile faces shall be trimmed to prevent hazards to personnel.

§ 56.9062 Loading large rocks.

Rocks too large to be handled safely shall be broken before loading.

§ 56.9063 Construction of ramps and dumping facilities.

Ramps and dumping facilities shall—

(a) Be of substantial construction; and

(b) Have suitable width, clearance, and headroom to accommodate the equipment using the facilities.

§ 56.9064 Chute design.

Chute-loading installations shall be designed so that the persons pulling chutes are not required to be in a hazardous position while loading cars.

§ 56.9065 Coupling or uncoupling railcars.

Cars shall not be coupled, or uncoupled, manually from the inside of curves unless the railroad and cars are

so designed to eliminate any hazard from manual coupling.

§ 56.9066 Movement of rail equipment on adjacent tracks.

When a locomotive on one track is used to move equipment on a different track, a suitable chain, cable, or drawbar shall be used.

§ 56.9067 Transporting persons—overcrowding.

Facilities used to transport persons to and from work areas shall not be overcrowded.

§ 56.9068 Warning devices for parked equipment.

Lights, flares, or other warning devices shall be posted when parked equipment creates a hazard to vehicular traffic.

§ 56.9069 Tire repair and inflation.

Tires shall be deflated before repairs on them are started and adequate means shall be provided to prevent wheel locking rims from creating a hazard during tire inflation.

§ 56.9070 Precautions for towing.

A tow bar of substantial construction or other suitable means of control shall be used to tow heavy equipment. A substantial safety chain or wire rope shall be used in conjunction with any primary rigging.

§ 56.9071 Traffic rules.

Traffic rules including speed, signals, and warning signs shall be standardized at each mine and posted.

§ 56.9072 Freeing hangups.

Persons attempting to free hangups shall be experienced persons who understand the hazards involved.

§ 56.9073 Tagging defective equipment.

Defective equipment, removed from service as unsafe to operate, shall be tagged to prohibit further use until repairs are completed.

§ 56.9074 Dust Control.

Dust shall be suitably controlled at muck piles, material transfer points, crushers, and on haulage roads where hazards to personnel may be created as a result of impaired visibility.

§ 56.9083 Rail equipment clearance.

Where possible, at least 30 inches continuous clearance from the farthest projection of moving railroad equipment shall be provided on at least one side of the tracks; all places where it is not possible to provide 30-inch clearance shall be marked conspicuously.

§ 56.9085 Tools, materials, and equipment in mantrips.

Tools, materials, and equipment shall not be transported with persons in vehicles, railcars, and other conveyances unless means have been provided to make such transportation safe.

§ 56.9087 Audible warning devices and back-up alarms.

Heavy duty mobile equipment shall be provided with audible warning devices. When the operator of such equipment has an obstructed view to the rear, the equipment shall have either an automatic reverse signal alarm which is audible above the surrounding noise level or an observer to signal when it is safe to back up.

§ 56.9088 Roll-over protective structures (ROPS) and seat belts.

(a) Excluding equipment that is operated by remote control, all self-propelled track-type (crawler mounted) or wheeled (rubber-tired) scrapers; front-end loaders; dozers; tractors, including industrial and agricultural tractors but not including over-the-road type tractors (the type that pull trailers or vans on highways); and motor graders; and wheeled prime movers (a tractor of the type and kind normally used as the mode of power for rubber-tired scrapers); all as used in metal and non-metal mining operations, with or without attachments, shall be used in such mining only when equipped with (1) roll-over protective structures (ROPS) in accordance with the requirements of paragraphs (b) through (g) of this standard, as applicable, and (2) seat belts meeting the requirements of the Society of Automotive Engineers (SAE), Motor Vehicle Seat Belts Assemblies—SAE J4c, approved November 1955, revised July 1965; Seat Belt Hardware Test Procedures—SAE J140a, approved April 1970, revised February 1973; Seat Belt Hardware Performance Requirements—SAE J141; Operator Protection for Wheel Type Agricultural and Industrial Tractors—SAE J333a, approved April 1968; revised July 1970, conforms to ASAE S305; and Seat Belts for Construction Equipment—SAE J386 approved March 1968; and, in accordance with paragraphs (b), (c), and (e) of this standard, as applicable.

(b) Except as provided in paragraph (e) all self-propelled equipment described in paragraph (a) of this standard and manufactured on or after the effective date of this standard shall be equipped with (1) ROPS meeting the requirements of paragraph (d), and (2) seat belts meeting the requirements of SAE J4c, J140a, J141, J333a, and J386 specified in paragraph (a) of this standard.

(c) All self-propelled equipment described in paragraph (a) of this standard manufactured prior to the effective date of this standard and after June 30, 1969, shall be equipped with ROPS meeting the requirements of paragraphs (d) through (g) of this standard as appropriate, and seat belts, no later than the dates specified below:

(1) Equipment manufactured between July 1, 1971, and the effective date of this standard shall be equipped with ROPS and seat belts no later than 6 months after the effective date of this standard.

(2) Equipment manufactured between July 1, 1970, and June 30, 1971, shall be equipped with ROPS and seat belts no later than 10 months after the effective date of this standard.

(3) Equipment manufactured between July 1, 1969, and June 30, 1970, shall be equipped with ROPS and seat belts no later than 16 months after the effective date of this standard.

(4) Nothing in this standard shall preclude the issuance of an order because of imminent danger.

(d) Except as provided in paragraph (e) of this standard, self-propelled equipment described in paragraph (a) of this standard shall be deemed in compliance with the ROPS requirements of this standard if the ROPS meet the following requirements:

(1) The ROPS complies with the Society of Automotive Engineers, SAE Recommended Practice, Critical Zone—Characteristics and Dimensions for Operators of Construction and Industrial Machinery—SAE J397, approved July 1969, or Deflection Limiting Volume for Laboratory Evaluation of Roll-Over Protective Structures (ROPS) and Falling Object Protective Structures (FOPS) of Construction and Industrial Vehicles—SAE J397a, approved July 1969, revised January 1972, editorial change July 1973; and, as appropriate, the ROPS and installation of the ROPS meet the requirements of either SAE Recommended Practice, Performance Criteria for Roll-Over Protective Structures (ROPS) for Earthmoving, Construction, Logging, and Industrial Vehicles—SAE J1040, approved April 1974, or any of the following applicable SAE standards or recommended practices:

(i) Minimum Performance Criteria for Roll-Over Protective Structure for Rubber-Tired, Self-Propelled Scrapers—SAE J320a, approved November 1967, revised July 1969, editorial change June 1970; or

(ii) Minimum Performance Criteria for Roll-Over Protective Structures for

Prime Movers—SAE J320b, approved November 1967, revised January 1972, editorial change September 1972; or

(iii) Minimum Performance Criteria for Roll-Over Protective Structure for Rubber-Tired Front End Loaders and Rubber-Tired Dozers—SAE J394, approved July 1969, editorial change July 1970, or Minimum Performance Criteria for Roll-Over Protective Structures for Wheeled Front-End Loaders and Wheeled Dozers—SAE J394a, approved July 1969, revised March 1972, editorial change September 1972; or

(iv) Minimum Performance Criteria for Roll-Over Structures for Crawler Tractors and Crawler-Type Loaders—SAE J395, approved July 1969, editorial change July 1970, or Minimum Performance Criteria for Roll-Over Protective Structures for Track-Type Tractors and Track-Type Front-End Loaders—SAE J395a, approved July 1969, revised January 1972, editorial change September 1972; or

(v) Minimum Performance Criteria for Roll-Over Protective Structure for Motor Graders—SAE J396, approved 1969, editorial change July 1970, or Minimum Performance Criteria for Roll-Over Protective Structures for Motor Graders—SAE J396a, approved July 1969, revised March 1972, editorial change September 1972; or

(vi) Operator Protection for Wheel Type Agricultural and Industrial Tractors—SAE J333a, approved April 1968, revised July 1970, conforms to ASAE S305; and Protective Frame Test Procedure and Performance Requirements—SAE J334a, approved April 1968, revised July 1970, conforms to ASAE S306.

(2) The ROPS is installed on the equipment in accordance with the recommendations of the ROPS manufacturer. If the installation includes bolts and nuts, the bolts and nuts used to attach the ROPS to the equipment frame and to connect structural parts of the ROPS shall be SAE Grade 5 or 8 (SAE J429g and J995b).

(e) All self-propelled equipment described in paragraph (a) of the standard, manufactured prior to the effective date of this standard, shall be deemed in compliance with the standard if ROPS and seat belt installations meet the ROPS and seat belt requirements of the State of California; or the U.S. Army Corps of Engineers; or the Bureau of Reclamation; or MSHA coal mine regulations of the U.S. Department of Labor; or the Occupational Safety and Health Administration of the U.S. Department of Labor. The requirements in effect are:

(1) State of California: Title 8 of the California Administrative Code: Construction Safety Orders, Article 10, "Haulage and Earth Moving," 1591 (i) and 1596 (Register 70, No. 40—10–3–70); General Industry Safety Orders, Article 25, "Industrial Trucks, Tractors, Haulage Vehicles, and Earth Moving Equipment," 3650–55 (Register 72, No. 6—2–5–72); and Logging and Sawmill Safety Orders, Article 7, "Tractor Yarding," 5243 (Register 69, No. 10—3–8–69), all issued by the Division of Industrial Safety, State of California.

(2) U.S. Army Corps of Engineers: Manuals—Corps of Engineers, U.S. Army Safety-General Safety Requirements, EM–385–1–1 (March 1967), or Change 1, March 27, 1972.

(3) Bureau of Reclamation, U.S. Department of the Interior: Section 9, "Machinery and Mechanized Equipment," Safety and Health Regulations for Construction, Part II—Bureau of Reclamation (September 1971).

(4) Mine Safety and Health Administration, U.S. Department of Labor: Section 77.403a, Part 77, Title 30, Code of Federal Regulations, Mandatory Safety Standards, Surface Coal Mines and Surface Work Areas of Underground Coal Mines, promulgated in the **Federal Register** (39 FR 24006–24009).

(5) Occupational Safety and Health Administration, U.S. Department of Labor: Sections 1926.1001 and 1926.1002, Title 29, Code of Federal Regulations—Safety and Health Regulations for Construction, promulgated in the **Federal Register** (37 FR 27585–27590), and republished in the **Federal Register** (39 FR 22880–22886).

(f) Any alteration, repair, or welding of the ROPS and ROPS-to-vehicle frame mounts shall be performed only with prior approval and with instructions from the ROPS manufacturer or under the instructions of a registered professional engineer; and the manufacturer, or engineer, as the case may be, shall decide what qualifications the welders involved in this operation must have.

(g) Each ROPS shall have the following information permanently affixed to the structure:

(1) Manufacturer's or fabricator's name and address; and

(2) ROPS model number, if any; and

(3) Make and model numbers of the equipment on which the ROPS is designed to fit.

(4) For equipment already in existence when this standard goes into effect, a satisfactory substitute for the above-required information will be a certificate from either the manufacturer of the ROPS or a registered professional engineer to the effect that the ROPS does meet the performance standards and is appropriate for the piece of equipment upon which it is installed.

(h) Publications to which references are made in this standard are hereby incorporated by reference and made a part hereof. The incorporated publications are available at each Metal and Nonmetal Mine Safety and Health Subdistrict Office, MSHA. State of California safety orders are available from the State of California Office of Procurement, Documents Section, Post Office Box 20191, Sacramento, California 95820. The U.S. Army Corps of Engineers, Safety-General Safety Requirements are available from the U.S. Government Printing Office, Washington, D.C. 20402. Bureau of Reclamation Safety and Health Regulations for Construction are available from the Bureau of Reclamation, Division of Safety, Engineering and Research Center, Denver, Colorado 80225. SAE documents are available from the Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, Pennsylvania 15096.

Subpart I—Aerial Tramways

§ 56.10001 Filling buckets.

Buckets shall not be overloaded, and feed shall be regulated to prevent spillage.

§ 56.10002 Inspection and maintenance.

Inspection and maintenance of carriers (including loading and unloading mechanisms), ropes and supports, and brakes shall be performed by competent persons according to the recommendations of the manufacturer.

§ 56.10003 Correction of defects.

Any hazardous defects shall be corrected before the equipment is used.

§ 56.10004 Brakes.

Positive-action-type brakes and devices which apply the brakes automatically in the event of a power failure shall be provided on aerial tramways.

§ 56.10005 Track cable connections.

Track cable connections shall not obstruct the passage of carriage wheels.

§ 56.10006 Tower guards.

Towers shall be suitably protected from swaying buckets.

§ 56.10007 Falling object protection.

Guard nets or other suitable protection shall be provided where tramways pass over roadways, walkways, or buildings.

§ 56.10008 Riding tramways.

Persons other than maintenance persons shall not ride aerial tramways unless the following features are provided:

(a) Two independent brakes, each capable of holding the maximum load;

(b) Direct communication between terminals;

(c) Power drives with emergency power available in case of primary power failure; and

(d) Buckets equipped with positive locks to prevent accidental tripping or dumping.

§ 56.10009 Riding loaded buckets.

Persons shall not ride loaded buckets.

§ 56.10010 Starting precautions.

Where possible, aerial tramways shall not be started until the operator has ascertained that everyone is in the clear.

Subpart J—Travelways

§ 56.11001 Safe access.

Safe means of access shall be provided and maintained to all working places.

§ 56.11002 Handrails and toeboards.

Crossovers, elevated walkways, elevated ramps, and stairways shall be of substantial construction provided with handrails, and maintained in good condition. Where necessary, toeboards shall be provided.

§ 56.11003 Construction and maintenance of ladders.

Ladders shall be of substantial construction and maintained in good condition.

§ 56.11004 Portable rigid ladders.

Portable rigid ladders shall be provided with suitable bases and placed securely when used.

§ 56.11005 Fixed ladder anchorage and toe clearance.

Fixed ladders shall be anchored securely and installed to provide at least 3 inches of toe clearance.

§ 56.11006 Fixed ladder landings.

Fixed ladders shall project at least 3 feet above landings, or subtantial handholds shall be provided above the landings.

§ 56.11007 Wooden components of ladders.

Wooden components of ladders shall not be painted except with a transparent finish.

§ 56.11009 Walkways along conveyors.

Walkways with outboard railings shall be provided wherever persons are required to walk alongside elevated conveyor belts. Inclined railed walkways shall be nonskid or provided with cleats.

§ 56.11010 Stairstep clearance.

Vertical clearance above stair steps shall be a minimum of seven feet, or suitable warning signs or similar devices shall be provided to indicate an impaired clearance.

§ 56.11011 Use of ladders.

Persons using ladders shall face the ladders and have both hands free for climbing and descending.

§ 56.11012 Protection for openings around travelways.

Openings above, below, or near travelways through which persons or materials may fall shall be protected by railings, barriers, or covers. Where it is impractical to install such protective devices, adequate warning signals shall be installed.

§ 56.11013 Conveyor crossovers.

Crossovers shall be provided where it is necessary to cross conveyors.

§ 56.11014 Crossing moving conveyors.

Moving conveyors shall be crossed only at designated crossover points.

§ 56.11016 Snow and ice on walkways and travelways.

Regularly used walkways and travelways shall be sanded, salted, or cleared of snow and ice as soon as practicable.

§ 56.11017 Inclined fixed ladders.

Fixed ladders shall not incline backwards.

§ 56.11025 Railed landings, backguards, and other protection for fixed ladders.

Fixed ladders, except on mobile equipment, shall be offset and have substantial railed landings at least every 30 feet unless backguards or equivalent protection, such as safety belts and safety lines, are provided.

§ 56.11026 Protection for inclined fixed ladders.

Fixed ladders 70 degrees to 90 degrees from the horizontal and 30 feet or more in length shall have backguards, cages or equivalent protection, starting at a point not more than seven feet from the bottom of the ladders.

§ 56.11027 Scaffolds and working platforms.

Scaffolds and working platforms shall be of substantial construction and provided with handrails and maintained in good condition. Floor boards shall be laid properly and the scaffolds and working platforms shall not be overloaded. Working platforms shall be provided with toeboards when necessary.

Subpart K—Electricity

§ 56.12001 Circuit overload protection.

Circuits shall be protected against excessive overload by fuses or circuit breakers of the correct type and capacity.

§ 56.12002 Controls and switches.

Electric equipment and circuits shall be provided with switches or other controls. Such switches or controls shall be of approved design and construction and shall be properly installed.

§ 56.12003 Trailing cable overload protection.

Individual overload protection or short circuit protection shall be provided for the trailing cables of mobile equipment.

§ 56.12004 Electrical conductors.

Electrical conductors shall be of a sufficient size and current-carrying capacity to ensure that a rise in temperature resulting from normal operations will not damage the insulating materials. Electrical conductors exposed to mechanical damage shall be protected.

§ 56.12005 Protection of power conductors from mobile equipment.

Mobile equipment shall not run over power conductors, nor shall loads be dragged over power conductors, unless the conductors are properly bridged or protected.

§ 56.12006 Distribution boxes.

Distribution boxes shall be provided with a disconnecting device for each branch circuit. Such disconnecting devices shall be equipped or designed in such a manner that it can be determined by visual observation when such a device is open and that the circuit is deenergized, the distribution box shall be labeled to show which circuit each device controls.

§ 56.12007 Junction box connection procedures.

Trailing cable and power-cable connections to junction boxes shall not be made or broken under load.

§ 56.12008 Insulation and fittings for power wires and cables.

Power wires and cables shall be insulated adequately where they pass into or out of electrical compartments. Cables shall enter metal frames of motors, splice boxes, and electrical

compartments only through proper fittings. When insulated wires, other than cables, pass through metal frames, the holes shall be substantially bushed with insulated bushings.

§ 56.12010 Isolation or insulation of communication conductors.

Telephone and low-potential signal wire shall be protected, by isolation or suitable insulation, or both, from contacting energized power conductors or any other power source.

§ 56.12011 High-potential electrical conductors.

High-potential electrical conductors shall be covered, insulated, or placed to prevent contact with low potential conductors.

§ 56.12012 Bare signal wires.

The potential on bare signal wires accessible to contact by persons shall not exceed 48 volts.

§ 56.12013 Splices and repairs of power cables.

Permanent splices and repairs made in power cables, including the ground conductor where provided, shall be—

(a) Mechanically strong with electrical conductivity as near as possible to that of the original;

(b) Insulated to a degree at least equal to that of the original, and sealed to exclude moisture; and

(c) Provided with damage protection as near as possible to that of the original, including good bonding to the outer jacket.

§ 56.12014 Handling energized power cables.

Power cables energized to potentials in excess of 150 volts, phase-to-ground, shall not be moved with equipment unless sleds or slings, insulated from such equipment, are used. When such energized cables are moved manually, insulated hooks, tongs, ropes, or slings shall be used unless suitable protection for persons is provided by other means. This does not prohibit pulling or dragging of cable by the equipment it powers when the cable is physically attached to the equipment by suitable mechanical devices, and the cable is insulated from the equipment in conformance with other standards in this part.

§ 56.12016 Work on electrically-powered equipment.

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.

§ 56.12017 Work on power circuits.

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 the person who installed them or by authorized personnel.

§ 56.12018 Identification of power switches.

Principal power switches shall be labeled to show which units they control, unless identification can be made readily by location.

§ 56.12019 Access to stationary electrical equipment or switchgear.

Where access is necessary, suitable clearance shall be provided at stationary electrical equipment or switchgear.

§ 56.12020 Protection of persons at switchgear.

Dry wooden platforms, insulating mats, or other electrically nonconductive material shall be kept in place at all switchboards and power-control switches where shock hazards exist. However, metal plates on which a person normally would stand and which are kept at the same potential as the grounded, metal, non-current-carrying parts of the power switches to be operated may be used.

§ 56.12021 Danger signs.

Suitable danger signs shall be posted at all major electrical installations.

§ 56.12022 Authorized persons at major electrical installations.

Areas containing major electrical installations shall be entered only by authorized persons.

§ 56.12023 Guarding electrical connections and resistor grids.

Electrical connections and resistor grids that are difficult or impractical to insulate shall be guarded, unless protection is provided by location.

§ 56.12025 Grounding circuit enclosures.

All metal enclosing or encasing electrical circuits shall be grounded or provided with equivalent protection. This requirement does not apply to battery-operated equipment.

§ 56.12026 Grounding transformer and switchgear enclosures.

Metal fencing and metal buildings enclosing transformers and switchgear shall be grounded.

§ 56.12027 Grounding mobile equipment.

Frame grounding or equivalent protection shall be provided for mobile equipment powered through trailing cables.

§ 56.12028 Testing grounding systems.

Continuity and resistance of grounding systems shall be tested immediately after installation, repair, and modification; and annually thereafter. A record of the resistance measured during the most recent tests shall be made available on a request by the Secretary or his duly authorized representative.

§ 56.12030 Correction of dangerous conditions.

When a potentially dangerous condition is found it shall be corrected before equipment or wiring is energized.

§ 56.12032 Inspection and cover plates.

Inspection and cover plates on electrical equipment and junction boxes shall be kept in place at all times except during testing or repairs.

§ 56.12033 Hand-held electric tools.

Hand-held electric tools shall not be operated at high potential voltages.

§ 56.12034 Guarding around lights.

Portable extension lights, and other lights that by their location present a shock or burn hazard, shall be guarded.

§ 56.12035 Weatherproof lamp sockets.

Lamp sockets shall be of a weatherproof type where they are exposed to weather or wet conditions that may interfere with illumination or create a shock hazard.

§ 56.12036 Fuse removal or replacement.

Fuses shall not be removed or replaced by hand in an energized circuit, and they shall not otherwise be removed or replaced in an energized circuit unless equipment and techniques especially designed to prevent electrical shock are provided and used for such purpose.

§ 56.12037 Fuses in high-potential circuits.

Fuse tongs or hot line tools shall be used when fuses are removed or replaced in high-potential circuits.

§ 56.12038 Attachment of trailing cables.

Trailing cables shall be attached to machines in a suitable manner to protect the cable from damage and to prevent strain on the electrical connections.

§ 56.12039 Protection of surplus trailing cables.

Surplus trailing cables to shovels, cranes and similar equipment shall be—

(a) Stored in cable boats;

(b) Stored on reels mounted on the equipment; or

(c) Otherwise protected from mechanical damage.

§ 56.12040 Installation of operating controls.

Operating controls shall be installed so that they can be operated without danger of contact with energized conductors.

§ 56.12041 Design of switches and starting boxes.

Switches and starting boxes shall be of safe design and capacity.

§ 56.12042 Track bonding.

Both rails shall be bonded or welded at every joint and rails shall be crossbonded at least every 200 feet if the track serves as the return trolley circuit. When rails are moved, replaced, or broken bonds are discovered, they shall be rebonded within three working shifts.

§ 56.12045 Overhead powerlines.

Overhead high-potential powerlines shall be installed as specified by the National Electrical Code.

§ 56.12047 Guy wires.

Guy wires of poles supporting high-voltage transmission lines shall meet the requirements for grounding or insulator protection of the National Electrical Safety Code, Part 2, entitled "Safety Rules for the Installation and Maintenance of Electric Supply and Communication Lines" (also referred to as National Bureau of Standards Handbook 81, November 1, 1961) and Supplement 2 thereof issued March 1968, which are hereby incorporated by reference and made a part hereof. These publications and documents may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, or may be examined in any Metal and Nonmetal Mine Safety and Health District or Subdistrict Office of the Mine Safety and Health Administration.

§ 56.12048 Communication conductors on power poles.

Telegraph, telephone, or signal wires shall not be installed on the same crossarm with power conductors. When carried on poles supporting powerlines, they shall be installed as specified by the National Electrical Code.

§ 56.12050 Installation of trolley wires.

Trolley wires shall be installed at least seven feet above rails where height permits, and aligned and supported to suitably control sway and sag.

§ 56.12053 Circuits powered from trolley wires.

Ground wires for lighting circuits powered from trolley wires shall be connected securely to the ground-return circuit.

§ 56.12065 Short circuit and lightning protection.

Powerlines, including trolley wires, and telephone circuits shall be protected against short circuits and lightning.

§ 56.12066 Guarding trolley wires and bare powerlines.

Where metallic tools or equipment can come in contact with trolley wires or bare powerlines, the lines shall be guarded or deenergized.

§ 56.12067 Installation of transformers.

Transformers shall be totally enclosed, or shall be placed at least 8 feet above the ground, or installed in a transformer house, or surrounded by a substantial fence at least 6 feet high and at least 3 feet from any energized parts, casings, or wiring.

§ 56.12068 Locking transformer enclosures.

Transformer enclosures shall be kept locked against unauthorized entry.

§ 56.12069 Lightning protection for telephone wires and ungrounded conductors.

Each ungrounded power conductor or telephone wire that leads underground and is directly exposed to lightning shall be equipped with suitable lightning arrestors of approved type within 100 feet of the point where the circuit enters the mine. Lightning arrestors shall be connected to a low resistance grounding medium on the surface and shall be separated from neutral grounds by a distance of not less than 25 feet.

§ 56.12071 Movement or operation of equipment near high-voltage power lines.

When equipment must be moved or operated near energized high-voltage powerlines (other than trolley lines) and the clearance is less than 10 feet, the lines shall be deenergized or other precautionary measures shall be taken.

Subpart L—Compressed Air and Boilers

§ 56.13001 General requirements for boilers and pressure vessels.

All boilers and pressure vessels shall be constructed, installed, and maintained in accordance with the standards and specifications of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code.

§ 56.13010 Reciprocating-type air compressors.

(a) Reciprocating-type air compressors rated over 10 horsepower shall be equipped with automatic temperature-actuated shutoff mechanisms which shall be set or adjusted to the compressor when the normal operating temperature is exceeded by more than 25 percent.

(b) However, this standard does not apply to reciprocating-type air compressors rated over 10 horsepower if equipped with fusible plugs that were installed in the compressor discharge lines before November 15, 1979, and designed to melt at temperatures at least 50 degrees below the flash point of the compressors' lubricating oil.

§ 56.13011 Air receiver tanks.

Air receiver tanks shall be equipped with one or more automatic pressure-relief valves. The total relieving capacity of the relief valves shall prevent pressure from exceeding the maximum allowable working pressure in a receiver tank by not more than 10 percent. Air receiver tanks also shall be equipped with indicating pressure gages which accurately measure the pressure within the air receiver tanks.

§ 56.13012 Compressor air intakes.

Compressor air intakes shall be installed to ensure that only clean, uncontaminated air enters the compressors.

§ 56.13015 Inspection of compressed-air receivers and other unfired pressure vessels.

(a) Compressed-air receivers and other unfired pressure vessels shall be inspected by inspectors holding a valid National Board Commission and in accordance with the applicable chapters of the National Board Inspection Code, a Manual for Boiler and Pressure Vessel Inspectors, 1979. This code is incorporated by reference and made a part of this standard. It may be examined at any Metal and Nonmetal

Mine Safety and Health District Office of the Mine Safety and Health Administration, and may be obtained from the publisher, the National Board of Boiler and Pressure Vessel Inspector, 1055 Crupper Avenue, Columbus, Ohio 43229.

(b) Records of inspections shall be kept in accordance with requirements of the National Board Inspection Code, and the records shall be made available to the Secretary or his authorized representative.

§ 56.13017 Compressor discharge pipes.

Compressor discharge pipes where carbon build-up may occur shall be cleaned periodically as recommended by the manufacturer, but no less frequently than once every two years.

§ 56.13019 Pressure system repairs.

Repairs involving the pressure system of compressors, receivers, or compressed-air-powered equipment shall not be attempted until the pressure has been bled off.

§ 56.13020 Use of compressed air.

At no time shall compressed air be directed toward a person. When compressed air is used, all necessary precautions shall be taken to protect persons from injury.

§ 56.13021 High-pressure hose connections.

Except where automatic shutoff valves are used, safety chains or other suitable locking devices shall be used at connections to machines of high-pressure hose lines of ¾-inch inside diameter or larger, and between high-pressure hose lines of ¾-inch inside diameter or larger, where a connection failure would create a hazard.

§ 56.13030 Boilers.

(a) Fired pressure vessels (boilers) shall be equipped with water level gauges, pressure gauges, automatic pressure-relief valves, blowdown piping, and other safety devices approved by the American Society of Mechanical Engineers to protect against hazards from overpressure, flameouts, fuel interruptions and low water level, all as required by the appropriate sections, chapters and appendices listed in paragraphs (b) (1) and (2) of this section.

(b) These gauges, devices and piping shall be designed, installed, operated, maintained, repaired, altered, inspected, and tested by inspectors holding a valid National Board Commission and in accordance with the following listed sections, chapters and appendices:

(1) The ASME Boiler and Pressure Vessel Code, 1977, Published by the American Society of Mechanical Engineers.

Section and Title
I Power Boilers.
II Material Specifications—Part A—Ferrous.
II Material Specifications—Part B—Non-ferrous.
II Material Specifications—Part C—Welding Rods, Electrodes, and Filler Metals.
IV Heating Boilers
V Nondestructive Examination
VI Recommended Rules for Care and Operation of Heating Boilers
VII Recommended Rules for Care of Power Boilers

(2) The National Board Inspection Code, a Manual for Boiler and Pressure Vessel Inspectors, 1979, published by the National Board of Boiler and Pressure Vessel Inspectors.

Chapter and Title
I Glossary of Terms
II Inspection of Boilers and Pressure Vessels
III Repairs and Alterations to Boiler and Pressure Vessels by Welding
IV Shop Inspection of Boilers and Pressure Vessels
V Inservice Inspection of Pressure Vessels by Authorized Owner-User Inspection Agencies

Appendix and Title
A Safety and Safety Relief Valves
B Non-ASME Code Boilers and Pressure Vessels
C Storage of Mild Steel Covered Arc Welding Electrodes
D–R National Board "R" (Repair) Symbol Stamp
D–VR National Board "VR" (Repair of Safety and Safety Relief Valve) Symbol Stamp
D–VR1 Certificate of Authorization for Repair Symbol Stamp for Safety and Safety Relief Valves
D–VR2 Outline of Basic Elements of Written Quality Control System for Repairers of ASME Safety and Safety Relief Valves
D–VR3 Nameplate Stamping for "VR"
E Owner-user Inspection Agencies
F Inspection Forms

(c) Records of inspections and repairs shall be kept in accordance with the requirements of the ASME Boiler and Pressure Vessel Code and the National Board Inspection Code. The records shall be made available to the Secretary or his authorized representative.

(d) Sections of the ASME Boiler and Pressure Vessel Code, 1977, listed in paragraph (b)(1) of this section, and chapters and appendices of the National Board Inspection Code, 1979, listed in paragraph (b)(2) of this section, are incorporated by reference and made a part of this standard. These publications may be obtained from the publishers, the American Society of Mechanical Engineers, 345 East Forty-seventh Street, New York, N.Y. 10017, and the National Board of Boiler and Pressure Vessel Inspectors, 1055 Crupper Avenue, Columbus, Ohio 43229. The publications may be examined at any Metal and Nonmetal Mine Safety and Health District Office of the Mine Safety and Health Administration.

Subpart M—Machinery and Equipment

Guards

§ 56.14001 Moving machine parts.

Gears; sprockets; chains; drive, head, tail, and takeup pulleys; flywheels; couplings; shafts; sawblades; fan inlets; and similar exposed moving machine parts which may be contacted by persons, and which may cause injury to persons, shall be guarded.

§ 56.14002 Guarding overhead belts.

Overhead belts shall be guarded if the whipping action from a broken belt would be hazardous to persons below.

§ 56.14003 Conveyors.

Guards at conveyor-drive, conveyor-head, and conveyor-tail pulleys shall extend a distance sufficient to prevent a person from accidentally reaching behind the guard and becoming caught between the belt and the pulley.

§ 56.14006 Placement of guards during machinery operation.

Except when testing the machinery, guards shall be securely in place while machinery is being operated.

§ 56.14007 Construction and maintenance.

Guards shall be of substantial construction and properly maintained.

§ 56.14008 Stationary grinding machines.

Stationary grinding machines other than special bit grinders shall be equipped with—

(a) Peripheral hoods (less than 90° throat openings) capable of withstanding the force of a bursting wheel;

(b) Adjustable tool rests set as close as practical to the wheel; and

(c) Safety washers.

§ 56.14009 Grinding wheels.

Grinding wheels shall be operated within the specifications of the manufacturer of the wheel.

§ 56.14010 Hand-held power tools.

Hand-held power tools, other than rock drills; shall be equipped with controls requiring constant hand or finger pressure to operate the tools or shall be equipped with friction or other equivalent safety devices.

§ 56.14011 Flying or falling objects.

Guards, shields, or other suitable protection shall be provided in areas where flying or falling materials present a hazard to personnel.

§ 56.14013 Falling object protection.

Fork-lift trucks, front-end loaders, and bulldozers shall be provided with substantial canopies when necessary to protect the operator.

§ 56.14014 Eye protection with grinding wheels.

Face shields or goggles, in good condition, shall be worn when operating a grinding wheel.

Methods and Procedures

§ 56.14026 Removal of unsafe equipment or machinery.

Unsafe equipment or machinery shall be removed from service immediately.

§ 56.14027 Machinery and equipment operators.

Operation of machinery or equipment shall be assigned only to competent persons.

§ 56.14029 Machinery repairs and maintenance.

Repairs or maintenance shall not be performed on machinery until the power is off and the machinery is blocked against motion, except where machinery motion is necessary to make adjustments.

§ 56.14030 Blocking equipment in raised position.

Persons shall not work on or from a piece of mobile equipment in a raised position until it has been blocked in place securely. This does not preclude the use of equipment specifically designed as elevated mobile work platforms.

§ 56.14031 Shifting drive belts.

Drive belts shall not be shifted while in motion unless the machines are provided with mechanical shifters.

§ 56.14032 Guiding and hand feeding chains, ropes, and belts.

Belts, chains, and ropes shall not be guided onto power-driven moving pulleys, sprockets, or drums with the hands except on slow-moving equipment especially designed for hand feeding.

§ 56.14033 Manual cleaning of conveyor pulleys.

Pulleys of conveyors shall not be cleaned manually while the conveyor is in motion.

§ 56.14034 Applying belt dressing.

Belt dressing shall not be applied manually while belts are in motion unless an aerosol-type dressing is used.

§ 56.14035 Machinery lubrication.

Machinery shall not be lubricated while in motion where a hazard exists, unless equipped with extended fittings or cups.

§ 56.14036 Use of tools and equipment.

Tools and equipment shall not be used beyond the design capacity intended by the manufacturer, where such use may create a hazard to personnel.

§ 56.14045 Ventilation and shielding for welding.

Welding operations shall be shielded and well ventilated.

Subpart N—Personal Protection

§ 56.15001 First-aid materials.

Adequate first-aid materials, including stretchers and blankets, shall be provided at places convenient to all working areas. Water or neutralizing agents shall be available where corrosive chemicals or other harmful substances are stored, handled, or used.

§ 56.15002 Hard hats.

All persons shall wear suitable hard hats when in or around a mine or plant where falling objects may create a hazard.

§ 56.15003 Protective footwear.

All persons shall wear suitable protective footwear when in or around an area of a mine or plant where a hazard exists which could cause an injury to the feet.

§ 56.15004 Eye protection.

All persons shall wear safety glasses, goggles, or face shields or other suitable protective devices when in or around an area of a mine or plant where a hazard exists which could cause injury to unprotected eyes.

§ 56.15005 Safety belts and lines.

Safety belts and lines shall be worn when persons work where there is danger of falling; a second person shall tend the lifeline when bins, tanks, or other dangerous areas are entered.

§ 56.15006 Protective equipment and clothing for hazards and irritants.

Special protective equipment and special protective clothing shall be provided, maintained in a sanitary and reliable condition and used whenever hazards of process or environment, chemical hazards, radiological hazards, or mechanical irritants are encountered in a manner capable of causing injury or impairment.

§ 56.15007 Protective equipment or clothing for welding, cutting, or working with molten metal.

Protective clothing or equipment and face shields, or goggles shall be worn when welding, cutting, or working with molten metal.

§ 56.15020 Life jackets and belts.

Life jackets or belts shall be worn where there is danger from falling into water.

Subpart O—Materials Storage and Handling

§ 56.16001 Stacking and storage of materials.

Supplies shall not be stacked or stored in a manner which creates tripping or fall-of-material hazards.

§ 56.16002 Bins, hoppers, silos, tanks, and surge piles.

(a) Bins, hoppers, silos, tanks, and surge piles, where loose unconsolidated materials are stored, handled or transferred shall be—

(1) Equipped with mechanical devices or other effective means of handling materials so that during normal operations persons are not required to enter or work where they are exposed to entrapment by the caving or sliding of materials; and

(2) Equipped with supply and discharge operating controls. The controls shall be located so that spills or overruns will not endanger persons.

(b) Where persons are required to move around or over any facility listed in this standard, suitable walkways or passageways shall be provided.

(c) Where persons are required to enter any facility listed in this standard for maintenance or inspection purposes, ladders, platforms, or staging shall be provided. No person shall enter the facility until the supply and discharge of materials have ceased and the supply and discharge equipment is locked out. Persons entering the facility shall wear a safety belt or harness equipped with a lifeline suitably fastened. A second person, similarly equipped, shall be stationed near where the lifeline is fastened and shall constantly adjust it or keep it tight as needed, with minimum slack.

§ 56.16003 Storage of hazardous materials.

Materials that can create hazards if accidentally liberated from their containers shall be stored in a manner that minimizes the dangers.

§ 56.16004 Containers for hazardous materials.

Hazardous materials shall be stored in containers of a type approved for such use by recognized agencies; such containers shall be labeled appropriately.

§ 56.16005 Securing gas cylinders.

Compressed and liquid gas cylinders shall be secured in a safe manner.

§ 56.16006 Protection of gas cylinder valves.

Valves on compressed gas cylinders shall be protected by covers when being transported or stored, and by a safe location when the cylinders are in use.

§ 56.16007 Taglines, hitches, and slings.

(a) Taglines shall be attached to loads that may require steadying or guidance while suspended.

(b) Hitches and slings used to hoist materials shall be suitable for the particular material handled.

§ 56.16009 Suspended loads.

Persons shall stay clear of suspended loads.

§ 56.16010 Dropping materials from overhead.

To protect personnel, material shall not be dropped from an overhead elevation until the drop area is first cleared of personnel and the area is then either guarded or a suitable warning is given.

§ 56.16011 Riding hoisted loads or on the hoist hook.

Persons shall not ride on loads being moved by cranes or derricks, nor shall they ride the hoisting hooks unless such method eliminates a greater hazard.

§ 56.16012 Storage of incompatible substances.

Chemical substances, including concentrated acids and alkalies, shall be stored to prevent inadvertent contact with each other or with other substances, where such contact could cause a violent reaction or the liberation of harmful fumes or gases.

§ 56.16013 Working with molten metal.

Suitable warning shall be given before molten metal is poured and before a container of molten metal is moved.

§ 56.16014 Operator-carrying overhead cranes.

Operator-carrying overhead cranes shall be provided with—

(a) Bumpers at each end of each rail;

(b) Automatic switches to halt uptravel of the blocks before they strike the hoist;

(c) Effective audible warning signals within easy reach of the operator; and

(d) A means to lock out the disconnect switch.

§ 56.16015 Work or travel on overhead crane bridges.

No person shall work from or travel on the bridge of an overhead crane unless the bridge is provided with substantial footwalks with toeboards and railings the length of the bridge.

§ 56.16016 Lift trucks.

Fork and other similar types of lift trucks shall be operated with the—

(a) Upright tilted back to steady and secure the load;

(b) Load in the upgrade position when ascending or descending grades in excess of 10 percent;

(c) Load not raised or lowered enroute except for minor adjustments; and

(d) Load-engaging device downgrade when traveling unloaded on all grades.

Subpart P—Illumination

§ 56.17001 Illumination of surface working areas.

Illumination sufficient to provide safe working conditions shall be provided in and on all surface structures, paths, walkways, stairways, switch panels, loading and dumping sites, and work areas.

Subpart Q—Safety Programs

§ 56.18002 Examination of working places.

(a) A competent person designated by the operator shall examine each working place at least once each shift for conditions which may adversely affect safety or health. The operator shall promptly initiate appropriate action to correct such conditions.

(b) A record that such examinations were conducted shall be kept by the operator for a period of one year, and shall be made available for review by the Secretary or his authorized representative.

(c) In addition, conditions that may present an imminent danger which are noted by the person conducting the examination shall be brought to the immediate attention of the operator who shall withdraw all persons from the area affected (except persons referred to in section 104(c) of the Federal Mine Safety and Health Act of 1977) until the danger is abated.

§ 56.18006 New employees.

New employees shall be indoctrinated in safety rules and safe work procedures.

§ 56.18009 Designation of person in charge.

When persons are working at the mine, a competent person designated by the mine operator shall be in attendance to take charge in case of an emergency.

§ 56.18010 First aid training.

Selected supervisors shall be trained in first aid. First aid training shall be made available to all interested employees.

§ 56.18012 Emergency telephone numbers.

Emergency telephone numbers shall be posted at appropriate telephones.

§ 56.18013 Emergency communications system.

A suitable communication system shall be provided at the mine to obtain assistance in the event of an emergency.

§ 56.18014 Emergency medical assistance and transportation.

Arrangements shall be made in advance for obtaining emergency medical assistance and transportation for injured persons.

§ 56.18020 Working alone.

No employee shall be assigned, or allowed, or be required to perform work alone in any area where hazardous conditions exist that would endanger his safety unless he can communicate with others, can be heard, or can be seen.

Subpart R—Personnel Hoisting

§ 56.19000 Application.

(a) The hoisting standards in this subpart apply to those hoists and appurtenances used for hoising persons. However, where persons may be endangered by hoists and appurtenances used solely for handling ore, rock, and materials, the appropriate standards should be applied.

(b) Standards 56.19021 through 56.19028 apply to wire ropes in service used to hoist persons with an incline hoist on the surface.

(c) Emergency hoisting facilities should conform to the extent possible to safety requirements for other hoists, and should be adequate to remove the persons from the mine with a minimum of delay.

Hoists

§ 56.19001 Rated capacities.

Hoists shall have rated capacities consistent with the loads handled and the recommended safety factors of the ropes used.

§ 56.19002 Anchoring.

Hoists shall be anchored securely.

§ 56.19003 Driving mechanism connections.

Belt, rope, or chains shall not be used to connect driving mechanisms to man hoists.

§ 56.19004 Brakes.

Any hoist used to hoist persons shall be equipped with a brake or brakes which shall be capable of holding its fully loaded cage, skip, or bucket at any point in the shaft.

§ 56.19005 Locking mechanism for clutch.

The operating mechanism of the clutch of every man-hoist drum shall be provided with a locking mechanism, or interlocked electrically or mechanically with the brake to prevent accidental withdrawal of the clutch.

§ 56.19006 Automatic hoist braking devices.

Automatic hoists shall be provided with devices that automatically apply the brakes in the event of power failure.

§ 56.19007 Overtravel and overspeed devices.

All man hoists shall be provided with devices to prevent overtravel. When utilized in shafts exceeding 100 feet in depth, such hoists shall also be provided with overspeed devices.

§ 56.19008 Friction hoist synchronizing mechanisms.

Where creep or slip may alter the effective position of safety devices, friction hoists shall be equipped with synchronizing mechanisms that recalibrate the overtravel devices and position indicators.

§ 56.19009 Position indicator.

An accurate and reliable indicator of the position of the cage, skip, bucket, or cars in the shaft shall be provided.

§ 56.19010 Location of hoist controls.

Hoist controls shall be placed or housed so that the noise from machinery or other sources will not prevent hoistmen from hearing signals.

§ 56.19011 Drum flanges.

Flanges on drums shall extend radially a minimum of 4 inches or three rope diameters beyond the last wrap, whichever is the lesser.

§ 56.19012 Grooved drums.

Where grooved drums are used, the grooves shall be of suitable size and pitch for the ropes used.

§ 56.19013 Diesel- and other fuel-injection-powered hoists.

Where any diesel or similar fuel-injection engine is used to power a hoist, the engine shall be equipped with a damper or other cutoff in its air intake system. The control handle shall be clearly labeled to indicate that its intended function is for emergency stopping only.

§ 56.19014 Friction hoist overtravel protection.

In a friction hoist installation, tapered guides or other approved devices shall be installed above and below the limits of regular travel of the conveyance and arranged to prevent overtravel in the event of failure of other devices.

§ 56.19017 Emergency braking for electric hoists.

Each electric hoist shall be equipped with a manually-operable switch that will initiate emergency braking action to bring the conveyance and the counterbalance safely to rest. This switch shall be located within reach of the hoistman in case the manual controls of the hoist fail.

§ 56.19018 Overtravel by-pass switches.

When an overtravel by-pass switch is installed, the switch shall function so as to allow the conveyance to be moved through the overtravel position when the switch is held in the close position by the hoistman. The overtravel by-pass switch shall return automatically to the open position when released by the hoistman.

Wire Ropes

Authority: 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).

§ 56.19021 Minimum rope strength.

At installation, the nominal strength (manufacturer's published catalog strength) of wire ropes used for hoisting shall meet the minimum rope strength values obtained by the following formulas in which "L" equals the maximum suspended rope length in feet:

(a) *Winding drum ropes* (all constructions, including rotation resistant).

For rope lengths less than 3,000 feet:
Minimum Value = Static Load × (7.0–0.001L)
For rope lengths 3,000 feet or greater:
Minimum Value = Static Load × 4.0

(b) *Friction drum ropes.*

For rope lengths less than 4,000 feet:
Minimum Value = Static Load × (7.0–0.0005L)
For rope lengths 4,000 feet or greater:
Minimum Value = Static Load × 5.0

(c) *Tail ropes* (balance ropes).

Minimum Value = Weight of Rope × 7.0

§ 56.19022 Initial measurement.

After initial rope stretch but before visible wear occurs, the rope diameter of newly installed wire ropes shall be measured at least once in every third interval of active length and the measurements average to establish a baseline for subsequent measurements. A record of the measurements and the date shall be made by the person taking the measurements. This record shall be retained until the rope is retired from service.

(Approved by the Office of Management and Budget under OMB control number 1219-0034)

§ 56.19023 Examinations.

(a) At least once every fourteen calendar days, each wire rope in service shall be visually examined along its entire active length for visible structural damage, corrosion, and improper lubrication or dressing. In addition, visual examination for wear and broken wires shall be made at stress points, including the area near attachments, where the rope rests on sheaves, where the rope leaves the drum, at drum crossovers, and at change-of-layer regions. When any visible condition that results in a reduction of rope strength is present, the affected portion of the rope shall be examined on a daily basis.

(b) Before any person is hoisted with a newly installed wire rope or any wire rope that has not been examined in the previous fourteen calendar days, the wire rope shall be examined in accordance with paragraph (a) of this section.

(c) At least once every six months, nondestructive tests shall be conducted of the active length of the rope, or rope diameter measurements shall be made—

(1) Wherever wear is evident;

(2) Where the hoist rope rests on sheaves at regular stopping points;

(3) Where the hoist rope leaves the drum at regular stopping points; and

(4) At drum crossover and change-of-layer regions.

(d) At the completion of each examination required by paragraph (a) of this section, the person making the examination shall certify, by signature and date, that the examination has been made. If any condition listed in paragraph (a) of this section is present, the person conducting the examination shall make a record of the condition and the date. Certifications and records of examinations shall be retained for one year.

(e) The person making the measurements or nondestructive tests as required by paragraph (c) of this section shall record the measurements or test results and the date. This record shall be retained until the rope is retired from service.

[Approved by the Office of Management and Budget under OMB control number 1219-0034]

§ 56.19024 Retirement criteria.

Unless damage or deterioration is removed by cutoff, wire ropes shall be removed from service when any of the following conditions occurs:

(a) The number of broken wires within a rope lay length, excluding filler wires, exceeds either—

(1) Five percent of the total number of wires; or

(2) Fifteen percent of the total number of wires within any strand.

(b) On a regular lay rope, more than one broken wire in the valley between strands in one rope lay length.

(c) A loss of more than one-third of the original diameter of the outer wires.

(d) Rope deterioriation from corrosion.

(e) Distortion of the rope structure.

(f) Heat damage from any source.

(g) Diameter reduction due to wear that exceeds six percent of the baseline diameter measurement.

(h) Loss of more than ten percent of rope strength as determined by nondestructive testing.

§ 56.19025 Load end attachments.

(a) Wire rope shall be attached to the load by a method that develops at least 80 percent of the nominal strength of the rope.

(b) Except for terminations where use of other materials is a design feature, zinc (spelter) shall be used for socketing wire ropes. Design feature means either the manufacturer's original design or a design approved by a registered professional engineer.

(c) Load end attachment methods using splices are prohibited.

§ 56.19026 Drum end attachment.

(a) For drum end attachment, wire rope shall be attached—

(1) Securely by clips after making one full turn around the drum spoke;

(2) Securely by clips after making one full turn around the shaft, if the drum is fixed to the shaft; or

(3) By properly assembled anchor bolts, clamps, or wedges, provided that the attachment is a design feature of the hoist drum. Design feature means either the manufacturer's original design or a design approved by a registered professional engineer.

(b) A minimum of three full turns of wire rope shall be on the drum when the rope is extended to its maximum working length.

§ 56.19027 End attachment retermination.

Damaged or deteriorated wire rope shall be removed by cutoff and the rope reterminated where there is—

(a) More than one broken wire at an attachment;

(b) Improper installation of an attachment;

(c) Slippage at an attachment; or

(d) Evidence of deterioration from corrosion at an attachment.

§ 56.19028 End attachment replacement.

Wire rope attachments shall be replaced when cracked, deformed, or excessively worn.

§ 56.19030 Safety device attachments.

Safety device attachments to hoist ropes shall be selected, installed, and maintained according to manufacturers' specifications to minimize internal corrosion and weakening of the hoist rope.

Headframes and Sheaves

§ 56.19035 Headframe design.

All headframes shall be constructed with suitable design considerations to allow for all dead loads, live loads, and wind loads.

§ 56.19036 Headframe height.

Headframes shall be high enough to provide clearance for overtravel and safe stopping of the conveyance.

§ 56.19037 Fleet angles.

Fleet angles on hoists installed after November 15, 1979, shall not be greater than one and one-half degrees for smooth drums or two degrees for grooved drums.

§ 56.19038 Platforms around elevated head sheaves.

Platforms with toeboards and handrails shall be provided around elevated head sheaves.

Conveyances

§ 56.19045 Metal bonnets.

Man cages and skips used for hoisting or lowering employees or other persons in any vertical shaft or any incline-shaft with an angle of inclination of forty-five degrees from the horizontal, shall be covered with a metal bonnet.

§ 56.19049 Hoisting persons in buckets.

Buckets shall not be used to hoist persons except during shaft sinking operations, inspection, maintenance, and repairs.

§ 56.19050 Bucket requirements.

Buckets used to hoist persons during vertical shaft sinking operations shall—

(a) Be securely attached to a crosshead when traveling in either direction between the lower and upper crosshead parking locations;

(b) Have overhead protection when the shaft depth exceeds 50 feet;

(c) Have sufficient depth or a suitably designed platform to transport persons safely in a standing position; and

(d) Have devices to prevent accidental dumping where the bucket is supported by a bail attached to its lower half.

§ 56.19054 Rope guides.

Where rope guides are used in shafts other than in shaft sinking operations, the rope guides shall be a type of lock coil construction.

Hoisting Procedures

§ 56.19055 Availability of hoist operator for manual hoists.

When a manually operated hoist is used, a qualified hoistman shall remain within hearing of the telephone or signal device at all times while any person is underground.

§ 56.19056 Availability of hoist operator for automatic hoists.

When automatic hoisting is used, a competent operator of the hoist shall be readily available at or near the hoisting device while any person is underground.

§ 56.19057 Hoist operator's physical fitness.

No person shall operate a hoist unless within the preceding 12 months he has had a medical examination by a qualified, licensed physician who shall certify his fitness to perform this duty. Such certification shall be available at the mine.

§ 56.19058 Experienced hoist operators.

Only experienced hoistmen shall operate the hoist except in cases of emergency and in the training of new hoistmen.

§ 56.19061 Maximum hoisting speeds.

The safe speed for hoisting persons shall be determined for each shaft, and this speed shall not be exceeded. Persons should not be hoisted at a speed faster than 2,500 feet per minute, except in an emergency.

§ 56.19062 Maximum acceleration and deceleration.

Maximum normal operating acceleration and deceleration shall not exceed 6 feet per second per second. During emergency braking, the

deceleration shall not exceed 16 feet per second per second.

§ 56.19063 Persons allowed in hoist room.

Only authorized persons shall be in hoist rooms.

§ 56.19065 Lowering conveyances by the brakes.

Conveyances shall not be lowered by the brakes alone except during emergencies.

§ 56.19066 Maximum riders in a conveyance.

In shafts inclined over 45 degrees, the operator shall determine and post in the conveyance or at each shaft station the maximum number of persons permitted to ride in a hoisting conveyance at any one time. Each person shall be provided a minimum of 1.5 square feet of floor space.

§ 56.19067 Trips during shift changes.

During shift changes, an authorized person shall be in charge of each trip in which persons are hoisted.

§ 56.19068 Orderly conduct in conveyances.

Persons shall enter, ride, and leave conveyances in an ordinary manner.

§ 56.19069 Entering and leaving conveyances.

Persons shall not enter or leave conveyances which are in motion or after a signal to move the conveyance has been given to the hoistman.

§ 56.19070 Closing cage doors or gates.

Cage doors or gates shall be closed while persons are being hoisted; they shall not be opened until the cage has come to a stop.

§ 56.19071 Riding in skips or buckets.

Persons shall not ride in skips or buckets with muck, supplies, materials, or tools other than small hand tools.

§ 56.19072 Skips and cages in same compartment.

When combinations of cages and skips are used in the same compartment, the cages shall be enclosed to protect personnel from flying material and the hoist speed reduced to man-speed as defined in standard 56.19061, but not to exceed 1,000 feet per minute. Muck shall not be hoisted with personnel during shift changes.

§ 56.19073 Hoisting during shift changes.

Rock or supplies shall not be hoisted in the same shaft as persons during shift changes, unless the compartments and dumping bins are partitioned to prevent spillage into the cage compartment.

§ 56.19074 Riding the bail, rim, bonnet, or crosshead.

Persons shall not ride the bail, rim, bonnet, or crosshead of any shaft conveyance except when necessary for inspection and maintenance, and then only when suitable protection for persons is provided.

§ 56.19075 Use of open hooks.

Open hooks shall not be used to hoist buckets or other conveyances.

§ 56.19076 Maximum speeds for hoisting persons in buckets.

When persons are hoisted in buckets, speeds shall not exceed 500 feet per minute and shall not exceed 200 feet per minute when within 100 feet of the intended station.

§ 56.19077 Lowering buckets.

Buckets shall be stopped about 15 feet from the shaft bottom to await a signal from one of the crew on the bottom for further lowering.

§ 56.19078 Hoisting buckets from the shaft bottom.

All buckets shall be stopped after being raised about 3 feet above the shaft bottom. A bucket shall be stabilized before a hoisting signal is given to continue hoisting the bucket to the crosshead. After a hoisting signal is given, hoisting to the crosshead shall be at a minimum speed. the signaling device shall be attended constantly until a bucket reaches the guides. When persons are hoisted, The signaling devices shall be attended until the crosshead has been engaged.

§ 56.19079 Blocking mine cars.

Where mine cars are hoisted by cage or skip, means for blocking cars shall be provided at all landings and also on the cage.

§ 56.19080 Hoisting tools, timbers, and other materials.

When tools, timbers, or other materials are being lowered or raised in a shaft by means of a bucket, skip, or cage, they shall be secured or so placed that they will not strike the sides of the shaft.

§ 56.19081 Conveyances not in use.

When conveyances controlled by a hoist operator are not in use, they shall be released and the conveyances shall be raised or lowered a suitable distance to prevent persons from boarding or loading the conveyances.

§ 56.19083 Overtravel backout device.

A manually operated device shall be installed on each electric hoist that will allow the conveyance or counterbalance to be removed from an over-travel position. Such device shall not release the brake, or brakes, holding the overtravelled conveyance or counterbalance until sufficient drive motor torque has been developed to assure movement of the conveyance or counterbalance in the correct direction only.

Signaling

§ 56.19090 Dual signaling systems.

There shall be at least two effective approved methods of signaling between each of the shaft stations and the hoist room, one of which shall be a telephone or speaking tube.

§ 56.19091 Signaling instructions to hoist operator.

Hoist operators shall accept hoisting instructions only by the regular signaling system unless it is out of order. In such an event, and during other emergencies, the hoist operator shall accept instructions to direct movement of the conveyances only from authorized persons.

§ 56.19092 Signaling from conveyances.

A method shall be provided to signal the hoist operator from cages or other conveyances at any point in the shaft.

§ 56.19093 Standard signal code.

A standard code of hoisting signals shall be adopted and used at each mine. The movement of a shaft conveyance on a "one bell" signal is prohibited.

§ 56.19094 Posting signal code.

A legible signal code shall be posted prominently in the hoist house within easy view of the hoistman, and at each place where signals are given or received.

§ 56.19095 Location of signal devices.

Hoisting signal devices shall be positioned within easy reach of persons on the shaft bottom or constantly attended by a person stationed on the lower deck of the sinking platform.

§ 56.19096 Familiarity with signal code.

Any person responsible for receiving or giving signals for cages, skips, and mantrips when persons or materials are being transported shall be familiar with the posted signaling code.

Shafts

§ 56.19100 Shaft landing gates.

Shaft landings shall be equipped with substantial safety gates so constructed that materials will not go through or under them; gates shall be closed except when loading or unloading shaft conveyances.

§ 56.19101 Stopblocks and derail switches.

Positive stopblocks or a derail switch shall be installed on all tracks leading to a shaft collar or landing.

§ 56.19102 Shaft guides.

A means shall be provided to guide the movement of a shaft conveyance.

§ 56.19103 Dumping facilities and loading pockets.

Dumping facilities and loading pockets shall be constructed so as to minimize spillage into the shaft.

§ 56.19104 Clearance at shaft stations.

Suitable clearance at shaft stations shall be provided to allow safe movement of persons, equipment, and materials.

§ 56.19105 Landings with more than one shaft entrance.

A safe means of passage around open shaft compartments shall be provided on landings with more than one entrance to the shaft.

§ 56.19106 Shaft sets.

Shaft sets shall be kept in good repair and clean of hazardous material.

§ 56.19107 Precautions for work in compartment affected by hoisting operation.

Hoistmen shall be informed when persons are working in a compartment affected by that hoisting operation and a "Men Working in Shaft" sign shall be posted at the hoist.

§ 56.19108 Posting warning signs during shaft work.

When persons are working in a shaft "Men Working in Shaft" signs shall be posted at all devices controlling hoisting operations that may endanger such persons.

§ 56.19109 Shaft inspection and repair.

Shaft inspection and repair work in vertical shafts shall be performed from substantial platforms equipped with bonnets or equivalent overhead protection.

§ 56.19110 Overhead protection for shaft deepening work.

A substantial bulkhead or equivalent protection shall be provided above persons at work deepening a shaft.

§ 56.19111 Shaft-sinking ladders.

Substantial fixed ladders shall be provided from the collar to as near the shaft bottom as practical during shaft-sinking operations, or an escape hoist powered by an emergency power source shall be provided. When persons are on the shaft bottom, a chain ladder, wire rope ladder, or other extension ladders shall be used from the fixed ladder or lower limit of the escape hoist to the shaft bottom.

Inspection and Maintenance

§ 56.19120 Procedures for inspection, testing, and maintenance.

A systematic procedure of inspection, testing, and maintenance of shafts and hoisting equipment shall be developed and followed. If it is found or suspected that any part is not functioning properly, the hoist shall not be used until the malfunction has been located and repaired or adjustments have been made.

§ 56.19121 Recordkeeping.

At the time of completion, the person performing inspections, tests, and maintenance of hoisting equipment required in standard 56.19120 shall certify, by signature and date, that they have been done. A record of any part that is not functioning properly shall be made and dated. Certifications and records shall be retained for one year.

(Approved by the Office of Management and Budget under OMB control number 1219-0034)

(Sec. 101, Pub. L. 91-173 as amended by Pub. L. 95-164, 91 Stat. 1291 (30 U.S.C. 811).

§ 56.19122 Replacement parts.

Parts used to repair hoists shall have properties that will ensure the proper and safe function of the hoist.

§ 56.19129 Examinations and tests at beginning of shift.

Hoistmen shall examine their hoists and shall test overtravel, deadman controls, position indicators, and braking mechanisms at the beginning of each shift.

§ 56.19130 Conveyance shaft test.

Before hoisting persons and to assure that the hoisting compartments are clear of obstructions, empty hoist conveyances shall be operated at least one round trip after—

(a) Any hoist or shaft repairs or related equipment repairs that might restrict or obstruct conveyance clearance;

(b) Any oversize or overweight material or equipment trips that might restrict or obstruct conveyance clearance;

(c) Blasting in or near the shaft that might restrict or obstruct conveyance clearance; or

(d) Remaining idle for one shift or longer.

§ 56.19131 Hoist conveyance connections.

Hoist conveyance connections shall be inspected at least once during any 24-hour period that the conveyance is used for hoisting persons.

§ 56.19132 Safety catches.

(a) A performance drop test of hoist conveyance safety catches shall be made at the time of installation, or prior to installation, in a mockup of the actual installation. The test shall be certified to in writing by the manufacturer or by a registered professional engineer performing the test.

(b) After installation and before use, and at the beginning of any seven day period during which the conveyance is to be used, the conveyance shall be suitably rested and the hoist rope slackened to test for the unrestricted functioning of the safety catches and their activating mechanisms.

(c) The safety catches shall be inspected by a competent person at the beginning of any 24-hour period that the conveyance is to be used.

§ 56.19133 Shaft.

Shafts that have not been inspected within the past 7 days shall not be used until an inspection has been conducted by a competent person.

§56.19134 Sheaves.

Sheaves in operating shafts shall be inspected weekly and kept properly lubricated.

§ 56.19135 Rollers in inclined shafts.

Rollers used in operating inclined shafts shall be lubricated, properly aligned, and kept in good repair.

Subpart S—Miscellaneous

§ 56.20001 Intoxicating beverages and narcotics.

Intoxicating beverages and narcotics shall not be permitted or used in or around mines. Persons under the influence of alcohol or narcotics shall not be permitted on the job.

§ 56.20002 Potable water.

(a) An adequate supply of potable drinking water shall be provided at all active working areas.

(b) The common drinking cup and containers from which drinking water must be dipped or poured are prohibited.

(c) Where single service cups are supplied, a sanitary container for unused cups and a receptable for used cups shall be provided.

(d) When water is cooled by ice, the ice shall either be of potable water or shall not come in contact with the water.

(e) Potable water outlets shall be posted.

(f) Potable water systems shall be constructed to prevent backflow or backsiphonage of non-potable water.

§ 56.20003 Housekeeping.

At all mining operations—

(a) Workplaces, passageways, storerooms, and service rooms shall be kept clean and orderly;

(b) The floor of every workplace shall be maintained in a clean and, so far as possible, dry condition. Where wet processes are used, drainage shall be maintained, and false floors, platforms, mats, or other dry standing places shall be provided where practicable; and

(c) Every floor, working place, and passageway shall be kept free from protruding nails, splinters, holes, or loose boards, as practicable.

§ 56.20005 Carbon tetrachloride.

Carbon tetrachloride shall not be used.

§ 56.20008 Toilet facilities.

(a) Toilet facilities shall be provided at locations that are compatible with the mine operations and that are readily accessible to mine personnel.

(b) The facilities shall be kept clean and sanitary. Separate toilet facilities shall be provided for each sex except where toilet rooms will be occupied by no more than one person at a time and can be locked from the inside.

§ 56.20009 Tests for explosive dusts.

Dusts suspected of being explosive shall be tested for explosibility. If tests prove positive, appropriate control measures shall be taken.

§ 56.20010 Retaining dams.

If failure of a water or silt retaining dam will create a hazard, it shall be of substantial construction and inspected at regular intervals.

§ 56.20011 Barricades and warning signs.

Areas where health or safety hazards exist that are not immediately obvious to employees shall be barricaded, or warning signs shall be posted at all approaches. Warning signs shall be readily visible, legible, and display the nature of the hazard and any protective action required.

§ 56.20012 Labeling of toxic materials.

Toxic materials used in conjunction with or discarded from mining or milling of a product shall be plainly marked or labeled so as to positively identify the nature of the hazard and the protective action required.

§ 56.20013 Waste receptacles.

Receptacles with covers shall be provided at suitable locations and used for the disposal of waste food and associated materials. They shall be emptied frequently and shall be maintained in a clean and sanitary condition.

§ 56.20014 Prohibited areas for food and beverages.

No person shall be allowed to consume or store food or beverages in a toilet room or in any area exposed to a toxic material.

2. Part 57 is revised to read as follows:

PART 57—SAFETY AND HEALTH STANDARDS—UNDERGROUND METAL AND NONMETAL MINES

Subpart A—General

Sec.
57.1 Purpose and scope.
57.2 Definitions.

Procedures

57.1000 Notification of commencement of operations and closing of mines.

Subpart B—Ground Control

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57.3001 Wall, bank, and slope stability.
57.3002 Loose material around pit and quarry walls.
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57.3004 Scaling.
57.3005 Hazardous ground conditions.
57.3006 Scaling location.
57.3008 Examination of ground conditions by supervisor or competent person.
57.3009 Examination of ground conditions by workers.
57.3012 Work between equipment and pit wall or bank.

Underground Only

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57.3022 Examination of ground conditions and ground control practices.
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57.4604 Preparation of pipelines or containers.

Authority: Secs. 301(a), 301(b)(2), 301(c)(3) and 302(a) of the Federal Mine Safety and Health Amendments Act of 1977, Pub. L. 95–164, 91 Stat. 1317–1319 (30 U.S.C. 961(a), (b)(2), (c)(3) (Supp. I, 1977)), and 29 U.S.C. 557a (Supp. I, 1977); sec. 508 of the Federal Mine Safety and Health Act of 1977, Pub. L. 91–173, as amended by Pub. L. 95–164, 83 Stat. 803 (30 U.S.C. 957 (1976 ed.)); sec. 6 of the Federal Metal and Nonmetallic Mine Safety Act (repealed 1977), Pub. L. 89–577, 80 Stat. 774 (30 U.S.C. 725 (1976 ed.)), (repealed sec. 306(a), Pub. L. 95–164, 91 Stat. 1322, but see sec. 301(b)(1), Pub. L. 95–164, 91 Stat. 1317 (30 U.S.C. 961(b)(1) (Supp. I, 1977)), Pub. L. 96–511, 94 Stat. 2812 (44 U.S.C. 3501 et seq.), unless otherwise noted.

Subpart A—General

§ 57.1 Purpose and scope.

This Part 57 sets forth mandatory safety and health standards for each underground metal or nonmetal mine, including related surface operations, subject to the Federal Mine Safety and Health Act of 1977. The purpose of these standards is the protection of life, the

promotion of health and safety, and the prevention of accidents.

§ 57.2 Definitions.

The following definitions apply in this part, except in any subpart preceded by a separate set of definitions:

"Abandoned mine" means all work has stopped on the mine premises and an office with a responsible person in charge is no longer maintained at the mine.

"Abandoned workings" means deserted mine areas in which further work is not intended.

"Active workings" means areas at, in, or around a mine or plant where men work or travel.

"American Table of Distances" means the current edition of "The American Table of Distances for Storage of Explosives" published by the Institute of Makers of Explosives.

"Approved" means tested and accepted for a specific purpose by a nationally recognized agency.

"Authorized person" means a person approved or assigned by mine management to perform a specific type of duty or duties or to be at a specific location or locations in the mine.

"Auxiliary fan" means a fan used to a deliver air to working place off the main airstream; generally used with ventilation tubing.

"Barricaded" means obstructed to prevent the passage of persons, vehicles, or flying materials.

"Berm" means a pile or mound of material capable of restraining a vehicle.

"Blasting agent" means any substance classified as a blasting agent by the Department of Transportation in 49 CFR 173.114(a) (44 FR 31182, May 31, 1979) which is incorporated by reference. This document is available for inspection at each Metal and Nonmetal Mine Safety and Health Subdistrict Office of the Mine Safety and Health Administration, and may be obtained from the U.S. Government Printing Office, Washington, D.C. 20402.

"Blasting area" means the area near blasting operations in which concussion or flying material can reasonably be expected to cause injury.

"Blasting cap" means a detonator which is initiated by a safety fuse.

"Blasting circuit" means the electrical circuit used to fire one or more electric blasting caps.

"Blasting switch" means a switch used to connect a power source to a blasting circuit.

"Booster fan" means a fan installed in the main airstream or a split of the main airstream to increase airflow through a section or sections of a mine.

"Booster" means any unit of explosive or blasting agent used for the purpose of perpetuating or intensifying an initial detonation.

"Capped fuse" means a length of safety fuse to which a blasting cap has been attached.

"Capped primer" means a package or cartridge of explosives which is specifically designed to transmit detonation to other explosives and which contains a detonator.

"Circuit breaker" means a device designed to open and close a circuit by nonautomatic means and to open the circuit automatically on a predetermined overcurrent setting without injury to itself when properly applied within its rating.

"Combustible" means capable of being ignited and consumed by fire.

"Company official" means a member of the company supervisory or technical staff.

"Competent person" means a person having abilities and experience that fully qualify him to perform the duty to which he is assigned.

"Conductor" means a material, usually in the form of a wire, cable, or bus bar, capable of carrying an electric current.

"Delay connector" means a nonelectric short interval delay device for use in delaying blasts which are initiated by detonating cord.

"Detonating cord" means a flexible cord containing a solid core of high explosives.

"Detonator" means any device containing a detonating charge that is used to initiate an explosive and includes but is not limited to blasting caps, electric blasting caps and nonelectric instantaneous or delay blasting caps.

"Distribution box" means a portable apparatus with an enclosure through which an electric circuit is carried to one or more cables from a single incoming feed line; each cable circuit being connected through individual overcurrent protective devices.

"Electric blasting cap" means a detonator designed for and capable of being initiated by means of an electric current.

"Electrical grounding" means to connect with the ground to make the earth part of the circuit.

"Employee" means a person who works for wages or salary in the service of an employer.

"Employer" means a person or organization which hires one or more persons to work for wages or salary.

"Escapeway" means a passageway by which persons may leave a mine.

"Explosive" means any substance classified as an explosive by the Department of Transportation in 49 CFR 173.53, 173.88 and 173.100 which are incorporated by reference. Title 49 CFR is available for inspection at each Metal and Nonmetal Mine Safety and Health Subdistrict Office of the Mine Safety and Health Administration, and may be obtained from the U.S. Government Printing Office, Washington, D.C. 20402.

"Face or bank" means that part of any mine where excavating is progressing or was last done.

"Fire door" means an openable closure for a passageway, shaft, or other mine opening to serve as barrier to fire, the effects of fire, and air leakage. A fire door shall be constructed of materials and assembled so as to be equivalent to a door having a fire resistance rating of 1½ hours or greater, and on exposure to fire on one side for 30 minutes, the temperature on the unexposed side shall not exceed 250°F, as determined by a nationally recognized testing agency in accordance with "Standard Method of Fire Tests of Door Assemblies", National Fire Protection Association (NFPA) Code No. 252. 1972, or equivalent. The framework assembly of a fire door and the surrounding bulkhead, if any, shall be at least equivalent to the fire door in fire and air-leakage resistance, and in physical strength. NFPA Code No. 252 is hereby incorporated by reference and made a part hereof. This publication may be examined in any Metal and Nonmetal Mine Health and Safety Subdistrict Office, Mine Safety and Health Administration, or may be obtained from the National Fire Protection Association, 470 Atlantic Avenue, Boston, Mass. 02210.

"Flammable" means capable of being easily ignited and of burning rapidly.

"Flash point" means the minimum temperature at which sufficient vapor is released by a liquid or solid to form a flammable vapor-air mixture at atmospheric pressure.

"Highway" means any public street, public alley or public road.

"High potential" means more than 650 volts.

"Hoist" means a power driven windlass or drum used for raising ore, rock, or other material from a mine, and for lowering or raising persons and material.

"Igniter cord" means a fuse, cordlike in appearance, which burns progressively along its length with an external flame at the zone of burning, and is used for lighting a series of safety fuses in the desired sequence.

"Insulated" means separated from other conducting surfaces by a dielectric substance permanently offering a high resistance to the passage of current and to disruptive discharge through the substance. When any substance is said to be insulated, it is understood to be insulated in a manner suitable for the conditions to which it is subjected. Otherwise, it is, within the purpose of this definition, uninsulated. Insulating covering is one means for making the conductor insulated.

"Insulation" means a dielectric substance offering a high resistance to the passage of current and to a disruptive discharge through the substance.

"Lay" means the distance parallel to the axis of the rope in which a strand makes one complete turn about the axis of the rope

"Low potential" means 650 volts or less.

"Magazine" means a facility for the storage of explosives, blasting agents, or detonators.

"Main fan" means a fan that controls the entire airflow of the mine, or the airflow of one of the major air circuits.

"Major electrical installation" means an assemblage of stationary electrical equipment for the generation, transmission, distribution, or conversion of electrical power.

"Mantrip" means a trip on which persons are transported to and from a work area.

"Mill" includes any ore mill, sampling works, concentrator, and any crushing, grinding, or screening plant used at, and in connection with, an excavation or mine.

"Mine opening" means any opening or entrance from the surface into a mine.

"Misfire" means the complete or partial failure of a blasting charge to explode as planned.

"Multipurpose dry-chemical fire extinguisher" means a listed or approved multipurpose dry-chemical fire extinguisher having a minimum rating of 2-A:10-B:C, by Underwriters Laboratories, Inc., and containing a minimum of 4.5 pounds of dry-chemical agent.

"Non-electric delay blasting cap" means a detonator with an integral delay element and capable of being initiated by miniaturized detonating cord.

"Overburden" means material of any nature, consolidated or unconsolidated, that overlies a deposit of useful materials or ores that are to be mined.

"Overload" means that current which will cause an excessive or dangerous temperature in the conductor or conductor insulation.

"Permissible" means a machine, material, apparatus, or device which has been investigated, tested, and approved by the Bureau of Mines or the Mine Safety and Health Administration, and is maintained in permissible condition.

"Potable water" means water which shall meet the applicable minimum health requirements for drinking water established by the State or community in which the mine is located or by the Environmental Protection Agency in 40 CFR Part 141, pages 169–182 revised as of July 1, 1977. Where no such requirements are applicable, the drinking water provided shall conform with the Public Health Service Drinking Water Standards, 42 CFR Part 72, Subpart J, pages 527–533, revised as of October 1, 1976. Publications to which references are made in this definition are hereby made a part hereof. These incorporated publications are available for inspection at each Metal and Nonmetal Mine Safety and Health Subdistrict Office of the Mine Safety and Health Administration.

"Powder chest" means a substantial, nonconductive portable container equipped with a lid and used at blasting sites for explosives other than blasting agents.

"Primer" means a unit, package, or cartridge of explosives used to initiate other explosives or blasting agents, and which contains a detonator.

"Reverse-current protection" means a method or device used on direct-current circuits or equipment to prevent the flow of current in a reverse direction.

"Roll protection" means a framework, safety canopy or similar protection for the operator when equipment overturns.

"Safety can" means an approved container, of not over 5 gallons capacity, having a spring-closing lid and spout cover.

"Safety fuse" means a flexible cord containing an internal burning medium by which fire is conveyed at a continuous and uniform rate for the purpose of firing blasting caps or a black powder charge.

"Safety switch" means a sectionalizing switch that also provides shunt protection in blasting circuits between the blasting switch and the shot area.

"Scaling" means removal of insecure material from a face or highwall.

"Secondary safety connection" means a second connection between a conveyance and rope, intended to prevent the conveyance from running away or falling in the event the primary connection fails.

"Shaft" means a vertical or inclined shaft, a slope, incline, or winze.

"Short circuit" means an abnormal connection of relatively low resistance, whether made accidentally or intentionally, between two points of difference potential in a circuit.

"Slurry" (as applied to blasting). See "Water gel."

"Stray current" means that portion of a total electric current that flows through paths other than the intended circuit.

"Substantial construction" means construction of such strength, material, and workmanship that the object will withstand all reasonable shock, wear, and usage to which it will be subjected.

"Suitable" means that which fits, and has the qualities or qualifications to meet a given purpose, occasion, condition, function, or circumstance.

"Travelway" means a passage, walk or way regularly used and designated for persons to go from one place to another.

"Trip light" means a light displayed on the opposite end of a train from the locomotive or engine.

"Water gel" or "Slurry" (as applied to blasting) means an explosive or blasting agent containing substantial portions of water.

"Wet drilling" means the continuous application of water through the central hole of hollow drill steel to the bottom of the drill hole.

"Working level" (WL) means any combination of the short-lived radon daughters in one liter of air that will result in ultimate emission of 1.3×10^5 MeV (million electron volts) of potential alpha energy, and exposure to these radon daughters over a period of time is expressed in terms of "working level months" (WLM). Inhalation of air containing a radon daughter concentration of 1 WL for 173 hours results in an exposure of 1 WLM."

"Working place" means any place in or about a mine where work is being performed.

Procedures

§ 57.1000 Notification of commencement of operations and closing of mines.

The owner, operator, or person in charge of any metal and nonmetal mine shall notify the nearest Mine Safety and Health Administration Metal and Nonmental Mine Safety and Health Subdistrict Office before starting operations, of the approximate or actual date mine operation will commence. The notification shall include the mine name, location, the company name, mailing address, person in charge, and whether operations will be continuous or intermittent. When any mine is closed, the person in charge shall notify the

nearest subdistrict office as provided above and indicate whether the closure is temporary or permanent.

(Approved by the Office of Management and Budget under OMB control number 1219-0092)

Subpart B—Ground Control

Surface Only

§ 57.3001 Wall, bank, and slope stability.

Standards for the safe control of pit walls, including the overall slope of the pit wall, shall be established and followed by the operator. Such standards shall be consistent with prudent engineering design, the nature of the ground and the kind of material and mineral mined, and the ensuring of safe working conditions according to the degree of slope. Mining methods shall be selected which will ensure wall and bank stability, including benching as necessary to obtain a safe overall slope.

§ 57.3002 Loose material around pit and quarry walls.

Loose, unconsolidated materials shall be stripped for a safe distance, but in no case less than 10 feet, from the top of pit or quarry walls, and the loose, unconsolidated material shall be sloped to the angle of repose.

§ 57.3003 Bench width and height.

To ensure safe operation, the width and height of benches shall be governed by the type of equipment to be used and the operation to be performed.

§ 57.3004 Scaling.

Safe means for scaling pit-banks shall be provided. Hazardous banks shall be scaled before other work is performed in the hazardous bank area.

§ 57.3005 Hazardous ground conditions.

Persons shall not work near or under dangerous banks. Overhanging banks shall be taken down immediately and other unsafe ground conditions shall be corrected promptly, or the areas shall be barricaded and posted.

§ 57.3006 Scaling location.

Persons shall approach from above loose rock and areas to be scaled and shall scale from a safe location.

§ 57.3008 Examination of ground conditions by supervisor or competent person.

The supervisor, or a competent person designated by him, shall examine working areas and faces for unsafe conditions at least at the beginning of each shift and after blasting. Any unsafe condition found shall be corrected before any further work is performed at the immediate area or face at which the unsafe condition exists.

§ 57.3009 Examination of ground conditions by workers.

Persons shall examine their working places before starting work and frequently thereafter, and any unsafe condition shall be corrected.

§ 57.3012 Work between equipment and pit wall or bank.

Persons shall not work between equipment and the pit wall or bank where the equipment may hinder escape from falls or slides of the bank.

Underground Only

§ 57.3020 Ground support use.

Ground support shall be used if the operating experience of the mine, or any particular area of the mine, indicates that it is required. If it is required, support, including timbering, rock bolting, or other methods shall be consistent with the nature of the ground and the mining method used.

§ 57.3022 Examination of ground conditions and ground control practices.

Miners shall examine and test the back, face, and rib of their working places at the beginning of each shift and frequently thereafter. Supervisors shall examine the ground conditions during daily visits to insure that proper testing and ground control practices are being followed. Loose ground shall be taken down or adequately supported before any other work is done. Ground conditions along haulageways and travelways shall be examined periodically and scaled or supported as necessary.

§ 57.3026 Timbering.

Timbers used for support of ground in active workings shall be set, blocked, or blocked and wedged so that a tight fit is achieved. Damaged, loosened, or dislodged timbers which create a hazardous condition shall be promptly repaired or replaced.

§ 57.3029 Shaft support.

Shaft pillars or other support systems shall have sufficient strength to support operating shafts.

§ 57.3033 Torquing tools.

Calibrated torque meters or torque wrenches shall be available at mines where rock bolts are used for ground control. Periodic tests shall be made to determine the torque meter or torque wrench accuracy. Periodic testing of torque wrenches means when repaired or at least annually, and whenever a torque wrench is suspected of being inaccurate or damaged.

§ 57.3035 Rock bursts.

Operators of mines that have experienced rock bursts within the mine shall develop a comprehensive rock burst detection plan applicable to current conditions in that mine within 90 days after promulgation of this standard or, thereafter, within 90 days after a rock burst has been experienced. This plan shall be updated from time to time as conditions and available technology warrant. This comprehensive rock burst detection plan shall be available to the Secretary or his duly authorized representative, and to mine employees.

Surface and Underground

§ 57.3050 Secondary breakage.

Material, other than hanging material, to be broken by secondary drilling and blasting, or by any other method shall be positioned or blocked to prevent hazardous movement before persons commence breaking operations. Persons who perform those operations shall work from a location where, if movement of material occurs, those persons will not be endangered.

§ 57.3051 Scaling tools.

Where manual scaling may be required at a work place, a scaling bar of sufficient length to place the user out of danger of falling material shall be provided. The scaling bar shall be blunt on the end held by the user. Picks or other short tools shall not be used for scaling when their use places the user in danger of falling material.

§ 57.3053 Rock bolt anchorage tests.

When rock bolts are used as a means of ground support, anchorage test procedures shall be established and tests shall be conducted to determine the anchorage capacity of rock-bolt installations. Test results shall be in writing and made available to the Secretary or his duly authorized representative.

(Approved by the Office of Management and Budget under OMB control number 1219-0066)

§ 57.3054 Rock bolt torque tests.

Rock bolts used as a means of ground support and which require torquing shall be torqued to a value within the range determined from information obtained by tests in the strata in which the rock-bolt assembly is used. In no case shall the applied torque cause a bolt tension that would exceed the yield point or anchorage capacity of the rock-bolt assembly being used.

§ 57.3055 Torque test requirements.

When installing point-anchor rock bolts—

(a) A torque test shall be conducted on at least every fourth installed bolt;

(b) Torque testing shall be conducted immediately after bolt installation;

(c) If the recommended torque has not been achieved, the equipment used to install the bolt shall be adjusted and the next bolt installed shall then be tested; and

(d) If the recommended torque has not been achieved on the majority of bolts installed in a working place through equipment adjustment, supplemental support equivalent to longer roof bolts with adequate anchorage, steel or wood sets, or cribs shall be installed.

§ 57.3056 Rock bolt hole diameter.

Rock bolt hole drill bits shall be easily identifiable by sight or feel and diameters shall be within a tolerance of ±0.030 inches of the manufacturer's recommended hole diameter for the ancher used.

§ 57.3057 Rock bolt washers.

If used in rock-bolt assemblies to reduce friction between the bolt head and the bearing plate, washers shall—

(a) Have hardness in the range of 35–45 HRC (Hardness Rockwell C Scale);

(b) Conform to the shape of the bolt head and bearing plate; and

(c) Have sufficient strength to withstand loads up to the yield point of the rock bolt.

§ 57.3058 Rock bolting sequence.

When rock bolts are needed for ground support, they shall be installed as soon as praticable after an area is exposed.

Subpart C—Fire Prevention and Control

§ 57.4000 Definitions.

The following definitions apply in this subpart.

Booster fan. A fan installed in the main airstream or a split of the main airstream to increase airflow through a section or sections of a mine.

Combustible liquids. Liquids having a flash point at or above 100 °F (37.8 °C). They are divided into the following classes:

Class II liquids—those having flash points at or above 100 °F (37.8 °C) and below 140 °F (60 °C).

Class IIIA liquids—those having flash points at or above 140 °F (60 °C) and below 200 °F (93.4 °C).

Class IIIB liquids—those having flash points at or above 200 °F (93.4 °C).

Combustible material. A material that, in the form in which it is used and under the conditions anticipated, will ignite, burn, support combustion, or release flammable vapors when subjected to fire or heat. Wood, paper, rubber, and plastics are examples of combustible materials.

Escapeway. A designated passageway by which persons can leave an underground mine.

Fire resistance rating. The time, in minutes or hours, that an assembly of materials will retain its protective characteristics or structural integrity upon exposure to fire.

Flame spread rating. The numerical designation that indicates the extent flame will spread over the surface of a material during a specified period of time.

Flammable gas. A gas that will burn in the normal concentrations of oxygen in the air.

Flammable liquid. A liquid that has a flash point below 100 °F (37.8 °C), a vapor pressure not exceeding 40 pounds per square inch (absolute) at 100 °F (37.8 °C), and is known as a Class I liquid.

Flash point. The minimum temperature at which sufficient vapor is released by a liquid to form a flammable vapor-air mixture near the surface of the liquid.

Main fan. A fan that controls the entire airflow of an underground mine or the airflow of one of the major air circuits of the mine.

Mine opening. Any opening or entrance from the surface into an underground mine.

Multipurpose dry-chemical fire extinguisher. An extinguisher having a rating of at least 2-A:10-B:C and containing a nominal 4.5 pounds or more of dry-chemical agent.

Noncombustible material. A material that, in the form in which it is used and under the conditions anticipated, will not ignite, burn, support combustion, or release flammable vapors when subjected to fire or heat. Concrete, masonry block, brick, and steel are examples of noncombustible materials.

Safety can. A container of not over five gallons capacity that is designed to safely relieve internal pressure when exposed to heat and has a spring-closing lid and spout cover.

Storage tank. A container exceeding 60 gallons in capacity used for the storage of flammable or combustible liquids.

§ 57.4011 Abandoned electric circuits.

Abandoned electric circuits shall be deenergized and isolated so that they cannot become energized inadvertently.

§ 57.4057 Underground trailing cables.

Underground trailing cables shall be flame-resistant in accordance with 30 CFR 18.65.

Prohibitions/Precautions/Housekeeping

§ 57.4100 Smoking and use of open flames.

No person shall smoke or use an open flame where flammable or combustible liquids, including greases, or flammable gases are—

(a) Used or transported in a manner that could create a fire hazard; or

(b) Stored or handled.

§ 57.4101 Warning signs.

Readily visible signs prohibiting smoking and open flames shall be posted where a fire or explosion hazard exists.

§ 57.4102 Spillage and leakage.

Flammable or combustible liquid spillage or leakage shall be removed in a timely manner or controlled to prevent a fire hazard.

§ 57.4103 Fueling internal combustion engines.

Internal combustion engines shall be switched off before refueling if the fuel tanks are integral parts of the equipment. This standard does not apply to diesel-powered equipment.

§ 57.4104 Combustible waste.

(a) Waste materials, including liquids, shall not accumulate in quantities that could create a fire hazard.

(b) Waste or rags containing flammable or combustible liquids that could create a fire hazard shall be placed in the following containers until disposed of properly:

(1) Underground—covered metal containers.

(2) On the surface—covered metal containers or equivalent containers with flame containment characteristics.

§ 57.4130 Surface electric substations and liquid storage facilities.

The requirements of this standard apply to surface areas only.

(a) If a hazard to persons could be created, no combustible materials shall be stored or allowed to accumulate within 25 feet of the following:

(1) Electric substations.

(2) Unburied, flammable or combustible liquid storage tanks.

(3) Any group of containers used for storage of more than 60 gallons of flammable or combustible liquids.

(b) The area within the 25-foot perimeter shall be kept free of dry vegetation.

§ 57.4131 Surface fan installations and mine openings.

(a) On the surface, no more than one day's supply of combustible materials shall be stored within 100 feet of mine openings or within 100 feet of fan installations used for underground ventilation.

(b) the one-day supply shall be kept at least 25 feet away from any mine opening except during transit into the mine.

(c) Dry vegetation shall not be permitted within 25 feet of mine openings.

§ 57.4160 Underground electric substations and liquid storage facilities.

The requirements of this standard apply to underground areas only.

(a) Areas within 25 feet of the following shall be free of combustible materials:

(1) Electric substations.

(2) Unburied, combustible liquid storage tanks.

(3) Any group of containers used for storage of more than 60 gallons of combustible liquids.

(b) This standard does not apply to installed wiring or timber that is coated with at least one inch of shotcrete, one-half inch of gunite, or other noncombustible materials with equivalent fire protection characteristics.

§ 57.4161 Use of fire underground.

Fires shall not be lit underground, except for open-flame torches. Torches shall be attended at all times while lit.

Firefighting Equipment

§ 57.4200 General requirements.

(a) For fighting fires that could endanger persons, each mine shall have—

(1) Onsite firefighting equipment for fighting fires in their early stages; and

(2) Onsite firefighting equipment for fighting fires beyond their early stages, or the mine shall have made prior arrangements with a local fire department to fight such fires.

(b) Onsite firefighting equipment shall be—

(1) Of the type, size, and quantity that can extinguish fires of any class which would occur as a result of the hazards present; and

(2) Strategically located, readily accessible, plainly marked, and maintained in fire-ready condition.

§ 57.4201 Inspection.

(a) Firefighting equipment shall be inspected according to the following schedules:

(1) Fire extinguishers shall be inspected visually at least once a month to determine that they are fully charged and operable.

(2) At least once every twelve months, maintenance checks shall be made of mechanical parts, the amount and condition of extinguishing agent and expellant, and the condition of the hose, nozzle, and vessel to determine that the fire extinguishers will operate effectively.

(3) Fire extinguishers shall be hydrostatically tested according to Table C–1 or a schedule based on the manufacturer's specifications to determine the integrity of extinguishing agent vessels.

(4) Water pipes, valves, outlets, hydrants, and hoses that are part of the mine's firefighting system shall be visually inspected at least once every three months for damage or deterioration and use-tested at least once every twelve months to determine that they remain functional.

(5) Fire suppression systems shall be inspected at least once every twelve months. An inspection schedule based on the manufacturer's specifications or the equivalent shall be established for individual components of a system and followed to determine that the system remains functional. Surface fire suppression systems are exempt from these inspection requirements if the systems are used solely for the protection of property and no persons would be affected by a fire.

(b) At the completion of each inspection or test required by this standard, the person making the inspection or test shall certify that the inspection or test has been made and the date on which it was made. Certifications of hydrostatic testing shall be retained until the fire extinguisher is retested or permanently removed from service. Other certifications shall be retained for one year.

TABLE C–1—HYDROSTATIC TEST INTERVALS FOR FIRE EXTINGUISHERS

Extinguisher type	Test interval (years)
Soda Acid	5
Cartridge-Operated Water and/or Antifreeze	5
Stored-Pressure Water and/or Antifreeze	5
Wetting Agent	5
Foam	5
AFFF (Aqueous Film Forming Foam)	5
Loaded Stream	5
Dry-Chemical with Stainless Steel Shells	5
Carbon Dioxide	5
Dry-Chemical, Stored Pressure, with Mild Steel Shells, Brazed Brass Shells, or Aluminum Shells	12
Dry-Chemical, Cartridge or Cylinder Operated, with Mild Steel Shells	12
Bromotrifluoromethane-Halon 1301	12
Bromochlorodifluoromethane-Halon 1211	12
Dry-Powder, Cartridge or Cylinder-Operated, with Mild Steel Shells [1]	12

[1] Except for stainless steel and steel used for compressed gas cylinders, all other steel shells are defined as "mild steel" shells.

§ 57.4202 Fire hydrants.

If fire hydrants are part of the mine's firefighting system, the hydrants shall be provided with—

(a) Uniform fittings or readily available adapters for onsite firefighting equipment;

(b) Readily available wrenches or keys to open the valves; and

(c) Readily available adapters capable of connecting hydrant fittings to the hose equipment of any firefighting organization relied upon by the mine.

§ 57.4203 Extinguisher recharging or replacement.

Fire extinguishers shall be recharged or replaced with a fully charged extinguisher promptly after any discharge.

§ 57.4230 Surface self-propelled equipment.

(a)(1) Whenever a fire or its effects could impede escape from self-propelled equipment, a fire extinguisher shall be on the equipment.

(2) Whenever a fire or its effects would not impede escape from the equipment but could affect the escape of other persons in the area, a fire extinguisher shall be on the equipment or within 100 feet of the equipment.

(b) A fire suppression system may be used as an alternative to fire extinguishers if the system can be manually activated.

(c) Fire extinguishers or fire suppression systems shall be of a type and size that can extinguish fires of any class in their early stages which could originate from the equipment's inherent fire hazards. Fire extinguishers or manual actuators for the suppression system shall be located to permit their use by persons whose escape could be impeded by fire.

§ 57.4260 Underground self-propelled equipment.

(a) Whenever self-propelled equipment is used underground, a fire extinguisher shall be on the equipment. This standard does not apply to compressed-air powered equipment without inherent fire hazards.

(b) A fire suppression system may be used as an alternative to fire extinguishers if the system can be manually actuated.

(c) Fire extinguishers or fire suppression systems shall be of a type and size that can extinguish fires of any class in their early stages which could originate from the equipment's inherent fire hazards. The fire extinguishers or the manual actuator for the suppression system shall be readily accessible to the equipment operator.

§ 57.4261 Shaft-station waterlines.

Waterline outlets that are located at underground shaft stations and are part of the mine's fire protection system shall have at least one fitting located for, and capable of, immediate connection to firefighting equipment.

§ 57.4262 Underground transformer stations, combustible liquid storage and dispensing areas, pump rooms, compressor rooms, and hoist rooms.

Transformer stations, storage and dispensing areas for combustible liquids, pump rooms, compressor rooms, and hoist rooms shall be provided with fire protection of a type, size, and quantity that can extinguish fires of any class in their early stages which could occur as a result of the hazards present.

§ 57.4263 Underground belt conveyors.

Fire protection shall be provided at the head, tail, drive, and take-up pulleys of underground belt conveyors. Provisions shall be made for extinguishing fires along the beltline. Fire protection shall be of a type, size, and quantity that can extinguish fires of any class in their early stages which could occur as a result of the fire hazards present.

Firefighting Procedures/Alarms/Drills

§ 57.4330 Surface firefighting, evacuation, and rescue procedures.

(a) Mine operators shall establish emergency firefighting, evacuation, and rescue procedures for the surface portions of their operations. These procedures shall be coordinated in advance with available firefighting organizations.

(b) Fire alarm procedures or systems shall be established to promptly warn every person who could be endangered by a fire.

(c) Fire alarm systems shall be maintained in operable condition.

§ 57.4331 Surface firefighting drills.

Emergency firefighting drills shall be held at least once every six months for persons assigned surface firefighting responsibilities by the mine operator.

§ 57.4360 Underground alarm systems.

(a) Fire alarm systems capable of promptly warning every person underground, except as provided in paragraph (b), shall be provided and maintained in operating condition.

(b) If persons are assigned to work areas beyond the warning capabilities of the system, provisions shall be made to alert them in a manner to provide for their safe evacuation in the event of a fire.

§ 57.4361 Underground evacuation drills.

(a) At least once every six months, mine evacuation drills shall be held to assess the ability of all persons underground to reach the surface or other designated points of safety within the time limits of the self-rescue devices that would be used during an actual emergency.

(b) The evacuation drills shall—

(1) Be held for each shift at some time other than a shift change and involve all persons underground;

(2) Involve activation of the fire alarm system; and

(3) Include evacuation of all persons from their work areas to the surface or to designated central evacuation points.

(c) At the completion of each drill, the mine operator shall certify the date and the time the evacuation began and ended. Certifications shall be retained for at least one year after each drill.

§ 57.4362 Underground rescue and firefighting operations.

Following evacuation of a mine in a fire emergency, only persons wearing and trained in the use of mine rescue apparatus shall participate in rescue and firefighting operations in advance of the fresh air base.

§ 57.4363 Underground evacuation instruction.

(a) At least once every twelve months, all persons who work underground shall be instructed in the escape and evacuation plans and procedures and fire warning signals in effect at the mine.

(b) Whenever a change is made in escape and evacuation plans and procedures for any area of the mine, all persons affected shall be instructed in the new plans or procedures.

(c) Whenever persons are assigned to work in areas other than their regularly assigned areas, they shall be instructed about the escapeway for that area at the time of such assignment. However, persons who normally work in more than one area of the mine shall be instructed at least once every twelve months about the location of escapeways for all areas of the mine in which they normally work or travel.

(d) At the completion of any instruction given under this standard, the mine operator shall certify the date that the instruction was given. Certifications shall be retained for at least one year.

Flammable and Combustible Liquids and Gases

§ 57.4400 Use restrictions.

(a) Flammable liquids shall not be used for cleaning.

(b) Solvents shall not be used near an open flame or other ignition source, near any source of heat, or in an atmosphere that can elevate the temperature of the solvent above the flash point.

§ 57.4401 Storage tank foundations.

Fixed, unburied, flammable or combustible liquid storage tanks shall be securely mounted on firm foundations. Piping shall be provided with flexible connections or other special fittings where necessary to prevent leaks caused by tanks settling.

§ 57.4402 Safety can use.

Small quantities of flammable liquids drawn from storage shall be kept in safety cans labeled to indicate the contents.

§ 57.4430 Surface storage facilities.

The requirements of this standard apply to surface areas only.

(a) Storage tanks for flammable or combustible liquids shall be—

(1) Capable of withstanding working pressures and stresses and compatible with the type of liquid stored;

(2) Maintained in a manner that prevents leakage;

(3) Isolated or separated from ignition sources to prevent fire or explosion; and

(4) Vented or otherwise constructed to prevent development of pressure or vacuum as a result of filling, emptying, or atmospheric temperature changes. Vents for storage of Class I, II, or IIIA liquids shall be isolated or separated from ignition sources. These pressure relief requirements do not apply to tanks used for storage of Class IIIB liquids that are larger than 12,000 gallons in capacity.

(b) All piping, valves, and fittings shall be—

(1) Capable of withstanding working pressures and stresses;

(2) Compatible with the type of liquid stored; and

(3) Maintained in a manner that prevents leakage.

(c) Fixed, unburied tanks located where escaping liquid could present a hazard to persons shall be provided with—

(1) Containment for the entire capacity of the largest tank; or

(2) Drainage to a remote impoundment area that does not endanger persons. However, storage of only Class IIIB liquids does not require containment or drainage to remote impoundment.

§ 57.4431 Surface storage restrictions.

(a) On the surface, no unburied flammable or combustible liquids or flammable gases shall be stored within 100 feet of the following:

(1) Mine openings or structures attached to mine openings.

(2) Fan installations for underground ventilation.

(3) Hoist houses.

(b) Under this standard, the following may be present in the hoist house in quantities necessary for the day-to-day maintenance of the hoist machinery.

(1) Flammable liquids in safety cans or in other containers placed in tightly closed cabinets. The safety cans and cabinets shall be kept away from any heat source, and each cabinet shall be labeled "flammables."

(2) Combustible liquids in closed containers. The cointainers shall be kept away from any heat source and the hoist operator's work station.

§ 57.4460 Storage of flammable liquids underground.

(a) Flammable liquids shall not be stored underground, except—

(1) Small quantities stored in tightly closed cabinets away from any heat source. The small quantities shall be stored in safety cans or in non-glass containers of a capacity equal to or less than a safety can. Each cabinet shall be labeled "flammables."

(2) Acetylene and liquefied protroleum gases stored in containers designed for that specific purpose.

(b) Gasoline shall not be stored underground in any quantity.

§ 57.4461 Gasoline use restrictions underground.

If gasoline is used underground to power internal combustion engines—

(a) The mine shall be nongassy and shall have multiple horizontal or inclined roadways from the surface large enough to accommodate vehicular traffic;

(b) All roadways and other openings shall connect with another opening every 100 feet by a passage large enough to accommodate any vehicle in the mine or alternate routes shall provide equivalent escape capabilities; and

(c) No roadway or other opening shall be supported or lined with wood or other combustible materials.

§ 57.4462 Storage of combustible liquids underground.

The requirements of this standard apply to underground areas only.

(a) Combustible liquids, including oil or grease, shall be stored in non-glass containers or storage tanks. The containers or storage tanks shall be—

(1) Capable of withstanding working pressures and stresses and compatible with the type of liquid stored;

(2) Maintained in a manner that prevents leakage;

(3) Located in areas free of combustible materials or in areas where any exposed combustible materials are coated with one inch of shotcrete, one-half inch of gunite, or other noncombustible material with equivalent fire protection characteristics; and

(4) Separated from explosives or blasting agents, shaft stations, and ignition sources including electric equipment that could create sufficient heat or sparks to pose a fire hazard. Separation shall be sufficient to prevent the occurrence or minimize the spread of fire.

(b) Storage tanks shall be vented or otherwise constructed to prevent development of pressure or vacuum as a result of filling, emptying, or atmospheric temperature changes. Vents for storage of Class II or IIIA liquids shall be isolated or separated from ignition sources.

(c) At permanent storage areas for combustible liquids, means shall be provided for confinement or removal of the contents of the largest storage tank in the event of tank rupture.

(d) All piping, valves, and fittings shall be—

(1) Capable of withstanding working pressures and stresses;

(2) Compatible with the type of liquid stored; and

(3) Maintained in a manner which prevents leakage.

§ 57.4463 Liquefied petroleum gas use underground.

Use of liquefied petroleum gases underground shall be limited to maintenance work.

Installation/Construction/Maintenance

§ 57.4500 Heat sources.

Heat sources capable of producing combustion shall be separated from combustible materials if a fire hazard could be created.

§ 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.

§ 57.4502 Battery-charging stations.

(a) Battery-charging stations shall be ventilated with a sufficient volume of air to prevent the accumulation of hydrogen gas.

(b) Smoking, use of open flames, or other activities that could create an ignition source shall be prohibited at the battery charging station during battery charging.

(c) Readily visible signs prohibiting smoking or open flames shall be posted at battery-charging stations during battery charging.

§ 57.4503 Conveyor belt slippage.

(a) Surface belt conveyors within confined areas where evacuation would be restricted in the event of a fire resulting from belt-slippage shall be equipped with a detection system capable of automatically stopping the drive pulley.

(b) Underground belt conveyors shall be equipped with a detection system capable of automatically stopping the drive pulley if slippage could cause ignition of the belt.

(c) A person shall attend the belt at the drive pulley when it is necessary to operate the conveyor while temporarily bypassing the automatic function.

§ 57.4504 Fan installations.

(a) Fan houses, fan bulkheads for main and booster fans, and air ducts connecting main fans to underground openings shall be constructed of noncombustible materials.

(b) Areas within 25 feet of main fans or booster fans shall be free of combustible materials, except installed wiring, ground and track support, headframes, and direct-fired heaters. Other timber shall be coated with one inch of shotcrete, one-half inch of gunite, or other noncombustible materials.

§ 57.4505 Fuel lines to underground areas.

Fuel lines into underground storage or dispensing areas shall be drained at the completion of each transfer of fuel unless the following requirements are met:

(a) The valve at the supply source shall be kept closed when fuel is not being transferred.

(b) The fuel line shall be—

(1) Capable of withstanding working pressures and stresses;

(2) Located to prevent damage; and

(3) Located in areas free of combustible materials or in areas where any exposed combustible materials are coated with one inch of shotcrete, one-half inch of gunite, or other

noncombustible material with equivalent fire protection characteristics.

(c) Provisions shall be made for control or containment of the entire volume of the fuel line so that leakage will not create a fire hazard.

§ 57.4530 Exits for surface buildings and structures.

Surface buildings or structures in which persons work shall have a sufficient number of exits to permit prompt escape in case of fire.

§ 57.4531 Surface flammable or combustible liquid storage buildings or rooms.

(a) Surface storage buildings or storage rooms in which flammable or combustible liquids, including grease, are stored and that are within 100 feet of any person's work station shall be ventilated with a sufficient volume of air to prevent the accumulation of flammable vapors.

(b) In addition, the buildings or rooms shall be—

(1) Constructed to meet a fire resistance rating of at least one hour; or

(2) Equipped with an automatic fire supression system; or

(3) Equipped with an early warning fire detection device that will alert any person who could be endangered by a fire, provided that no person's work station is in the building.

(c) Flammable or combustible liquids in use for day-to-day maintenance and operational activities are not considered in storage under this standard.

§ 57.4532 Blacksmith shops.

Blacksmith shops located on the surface shall be—

(a) At least 100 feet from fan installations used for intake air and mine openings;

(b) Equipped with exhaust vents over the forge and ventilated to prevent the accumulation of the products of combustion; and

(c) Inspected for smoldering fires at the end of each shift.

§ 57.4533 Mine opening vicinity.

Surface buildings or other similar structures within 100 feet of mine openings used for intake air or within 100 feet of mine openings that are designated escapeways in exhaust air shall be—

(a) Constructed of noncombustible materials; or

(b) Constructed to meet a fire resistance rating of no less than one hour; or

(c) Provided with an automatic fire suppression system; or

(d) Covered on all combustible interior and exterior structural surfaces with noncombustible material or limited combustible material, such as five-eighth inch, type "X" gypsum wallboard.

§ 57.4560 Mine entrances.

For at least 200 feet inside the mine portal or collar, timber used for ground support in intake openings and in exhaust openings that are designated as escapeways under Subpart J, "Travelways and Escapeways," shall be—

(a) Provided with a fire suppression system, other than fire extinguishers and water hoses, capable of controlling a fire in its early stages; or

(b) Covered with shotcrete, gunite, or other material with equivalent fire protection characteristics; or

(c) Coated with fire-retardant paint or other material to reduce its flame spread rating to 25 or less and maintained in that condition.

§ 57.4561 Stationary diesel equipment underground.

Stationary diesel equipment underground shall be—

(a) Supported on a noncombustible base; and

(b) Provided with a thermal sensor that automatically stops the engine if overheating occurs.

Welding/Cutting/Compressed Gases

§ 57.4600 Extinguishing equipment.

(a) When welding, cutting, soldering, thawing, or bending—

(1) With an electric arc or with an open flame where an electrically conductive extinguishing agent could create an electrical hazard, a multipurpose dry-chemical fire extinguisher or other extinguisher with at least a 2–A:10–B:C rating shall be at the worksite.

(2) With an open flame in an area where no electrical hazard exists, a multipurpose dry-chemical fire extinguisher or equivalent fire extinguishing equipment for the class of fire hazard present shall be at the worksite.

(b) Use of halogenated fire extinguishing agents to meet the requirements of this standard shall be limited to Halon 1211 ($CBrClF_2$) and Halon 1301 ($CBrF_3$). When these agents are used in confined or unventilated areas, precautions based on the manufacturer's use instructions shall be taken so that the gases produced by thermal decomposition of the agents are not inhaled.

§ 57.4601 Oxygen cylinder storage.

Oxygen cylinders shall not be stored in rooms or areas used or designated for storage of flammable or combustible liquids, including grease.

§ 57.4602 Gages and regulators.

Gages and regulators used with oxygen or acetylene cylinders shall be kept clean and free of oil and grease.

§ 57.4603 Closure of valves.

To prevent accidental release of gases from hoses and torches attached to oxygen and acetylene cylinders or to manifold systems, cylinder or manifold system valves shall be closed when—

(a) The cylinders are moved;

(b) The torch and hoses are left unattended; or

(c) The task or series of tasks is completed.

§ 57.4604 Preparation of pipelines or containers.

Before welding, cutting, or applying heat with an open flame to pipelines or containers that have contained flammable or combustible liquids, flammable gases, or explosive solids, the pipelines or containers shall be—

(a) Drained, ventilated, and thoroughly cleaned of any residue;

(b) Vented to prevent pressure build-up during the application of heat; and

(c)(1) Filled with an inert gas or water, where compatible; or

(2) Determined to be free of flammable gases by a flammable gas detection device prior to and at frequent intervals during the application of heat.

§ 57.4660 Work in shafts, raises, or winzes and other activities involving hazard areas.

During performance of an activity underground described in Table C–2 or when falling sparks or hot metal from work performed in a shaft, raise, or winze could pose a fire hazard—

(a) A multipurpose dry-chemical fire extinguisher shall be at the worksite to supplement the fire extinguishing equipment required by § 57.4600; and

(b) At least one of the following actions shall be taken:

(1) Wet down the area before and after the operation, taking precaution against any hazard of electrical shock.

(2) Isolate any combustible material with noncombustible material.

(3) Shield the activity so that hot metal and sparks cannot cause a fire.

(4) Provide a second person to watch for and extinguish any fire.

TABLE C-2

Activity	Distance	Fire hazard
Welding or cutting with an electric arc or open flame Using an open flame to bend or heat materials Thawing pipes electrically, except with heat tape	Within 35 feet of—	More than 1 gallon of combustible liquid, unless in a closed, metal container. More than 50 pounds of non-fire-retardant wood. More than 10 pounds of combustible plastics.
Soldering or thawing with an open flame	Within 10 feet of—	Materials in a shaft, raise, or winze that could be ignited by hot metal or sparks.

(5) Cover or bulkhead the opening immediately below and adjacent to the activity with noncombustible material to prevent sparks or hot metal from falling down the shaft, raise, or winze. This alternative applies only to activities involving a shaft, raise, or winze.

(c) The affected area shall be inspected during the first hour after the operation is completed. Additional inspections shall be made or other fire prevention measures shall be taken if a fire hazard continues to exist.

Ventilation Control Measures

§ 57.4760 Shaft mines.

(a) Shaft mines shall be provided with at least one of the following means to control the spread of fire, smoke, and toxic gases underground in the event of a fire: control doors, reversal of mechanical ventilaton, or effective evacuation procedures. Under this standard, "shaft mine" means a mine in which any designated escapeway includes a mechanical hoisting device or a ladder ascent.

(1) *Control doors.* If used as an alternative, control doors shall be—

(i) Installed at or near shaft stations of intake shafts and any shaft designated as an escapeway under § 57.11053 or at other locations that provide equivalent protection;

(ii) Constructed and maintained according to Table C-3;

(iii) Provided with a means of remote closure at landings of timbered intake shafts unless a person specifically designated to close each door in the event of a fire can reach the door within three minutes;

(iv) Closed or opened only according to predetermined conditions and procedures;

(v) Constructed so that once closed they will not reopen as a result of a differential in air pressure;

(vi) Constructed so that they can be opened from either side by one person, or be provided with a personnel door that can be opened from either side; and

(vii) Clear of obstructions.

(2) *Mechanical ventilation reversal.* If used as an alternative, reversal of mechanical ventilation shall—

(i) Provide at all times at least the same degree of protection to persons underground as would be afforded by the installation of control doors;

(ii) Be accomplished by a main fan. If the main fan is located underground—

(A) The cable or conductors supplying power to the fan shall be routed through areas free of fire hazards; or

(B) The main fan shall be equipped with a second, independent power cable or set of conductors from the surface. The power cable or conductors shall be located so that an underground fire disrupting power in one cable or set of conductors will not affect the other; or

(C) A second fan capable of accomplishing ventilation reversal shall be available for use in the event of failure of the main fan;

(iii) Provide rapid air reversal that allows persons underground time to exit in fresh air by the second escapeway or find a place or refuge; and

(iv) Be done according to predetermined conditions and procedures.

(3) *Evacuation.* If used as an alternative, effective evacuation shall be demonstrated by actual evacuation of all persons underground to the surface in ten minutes or less through routes that will not expose persons to heat, smoke, or toxic fumes in the event of a fire.

(b) If the destruction of any bulkhead on an inactive level would allow fire contaminants to reach an escapeway, that bulkhead shall be constructed and maintained to provide at least the same protection as required for control doors under Table C-3.

TABLE C-3—CONTROL DOOR CONSTRUCTION

Location	Minimum required construction
At least 50 feet from: timbered areas, exposed combustible rock, and any other combustible material [1]	Control door that meets the requirements for a ventilation door in conformance with 30 CFR 57.5031.
Within 50 feet but no closer than 20 feet of: timbered areas, exposed combustible rock, or other combustible material [1] Within 20 feet of: any timbered areas or combustible rock, provided that the timber and combustible rock within the 20 foot distance are coated with one inch of shotcrete, one-half inch of gunite, or other material with equivalent fire protection characteristics and no other combustible material [1] is within that distance	Control door that serves as a barrier to the effects of fire and air leakage. The control door shall provide protection at least equivalent to a door constructed of no less than one-quarter inch of plate steel with channel or angle-iron reinforcement to minimize warpage. The framework assembly of the door and the surrounding bulkhead, if any, shall be at least equivalent to the door in fire and air-leakage resistance, and in physical strength.
Within 20 feet of: timbered areas, exposed combustible rock, or other combustible material [1]	Control door that serves as a barrier to fire, the effects of fire, and air-leakage. The door shall provide protection at least equivalent to a door constructed of two layers of wood, each a minimum of three-quarters of an inch in thickness. The wood grain of one layer shall be perpendicular to the wood grain of the other layer. The wood construction shall be covered on all sides and edges with no less than twenty-four gauge sheet steel. The framework assembly of the door and the surrounding bulkhead, if any, shall be at least equivalent to the door in fire and air-leakage resistance, and in physical strength. Roll-down steel doors with a fire-resistance rating of 1½ hours or greater, but without an insulation core, are acceptable if an automatic sprinkler or deluge system is installed that provides even coverage of the door on both sides.

[1] In this table, "combustible material" does not refer to installed wiring or track support.

§ 57.4761 Underground shops.

To confine or prevent the spread of toxic gases from a fire originating in an underground shop where maintenance work is routinely done on mobile equipment, one of the following measures shall be taken: use of control doors or bulkheads, routing of the mine shop air directly to an exhaust system, reversal of mechanical ventilation, or use of an automatic fire suppression system in conjunction with an alternate escape route. The alternative used shall at all times provide at least the same degree of safety as control doors or bulkheads.

(a) *Control doors or bulkheads.* If used as an alternative, control doors or bulkheads shall meet the following requirements:

(1) Each control door or bulkhead shall be constructed to serve as a barrier to fire, the effects of fire, and air leakage at each opening to the shop.

(2) Each control door shall be—

(i) Constructed so that, once closed, it will not reopen as a result of a differential in air pressure;

(ii) Constructed so that it can be opened from either side by one person or be provided with a personnel door that can be opened from either side;

(iii) Clear of obstructions; and

(iv) Provided with a means of remote or automatic closure unless a person specifically designated to close the door in the event of a fire can reach the door within three minutes.

(3) If located 20 feet or more from exposed timber or other combustible material, the control doors or bulkheads shall provide protection at least equivalent to a door constructed of no less than one-quarter inch of plate steel with channel or angle-iron reinforcement to minimize warpage. The framework assembly of the door and the surrounding bulkhead, if any, shall be at least equivalent to the door in fire and air-leakage resistance, and in physical strength.

(4) If located less than 20 feet from exposed timber or other combustibles, the control door or bulkhead shall provide protection at least equivalent to a door constructed of two layers of wood, each a minimum of three-quarters of an inch in thickness. The wood-grain of one layer shall be perpendicular to the wood-grain of the other layer. The wood construction shall be covered on all sides and edges with no less than 24-gauge sheet steel. The framework assembly of the door and the surrounding bulkhead, if any, shall be at least equivalent to the door in fire and air-leakage resistance, and in physical strength. Roll-down steel doors with a fire-resistance rating of 1½ hours or greater, but without an insulation core, are acceptable provided that an automatic sprinkler or deluge system is installed that provides even coverage of the door on both sides.

(b) *Routing air to exhaust system.* If used as an alternative, routing the mine shop exhaust air directly to an exhaust system shall be done so that no person would be exposed to toxic gases in the event of a shop fire.

(c) *Mechanical ventilation reversal.* If used as an alternative, reversal of mechanical ventilation shall—

(1) Be accomplished by a main fan. If the main fan is located underground—

(i) The cable or conductors supplying power to the fan shall be routed through areas free of fire hazards; or

(ii) The main fan shall be equipped with a second, independent power cable or set of conductors from the surface. The power cable or conductors shall be located so that an underground fire disrupting power in one cable or set of conductors will not affect the other; or

(iii) A second fan capable of accomplishing ventilation reversal shall be available for use in the event of failure of the main fan;

(2) Provide rapid air reversal that allows persons underground time to exit in fresh air by the second escapeway or find a place of refuge; and

(3) Be done according to predetermined conditions and procedures.

(d) *Automatic fire suppression system and escape route.* If used as an alternative, the automatic fire suppression system and alternate escape route shall meet the following requirements:

(1) The suppression system shall be—

(i) Located in the shop area;

(ii) The appropriate size and type for the particular fire hazards involved; and

(iii) Inspected at weekly intervals and properly maintained.

(2) The escape route shall bypasss the shop area so that the route will not be affected by a fire in the shop area.

Appendix I for Subpart C—National Consensus Standards

Mine operators seeking further information in the area of fire prevention and control may consult the following national consensus standards.

MSHA standard	National consensus standard
§§ 57.4200, 57.4201, 57.4261, and 57.4262	NFPA No. 10—Portable Fire Extinguisher. NFPA No. 11—Low Expansion Foam and Combined Agent Systems. NFPA No. 11A—High Expansion Foam Systems. NFPA No. 12—Carbon Dioxide Extinguishing Systems. NFPA No. 12A—Halon 1301 Extinguishing Systems. NFPA No. 13—Water Sprinkler Systems. NFPA No. 14—Standpipe and Hose Systems. NFPA No. 15—Water Spray Fixed Systems. NFPA No. 16—Foam Water Spray Systems. NFPA No. 17—Dry-Chemical Extinguishing Systems. NFPA No. 121—Mobile Surface Mining Equipment. NFPA No. 291—Testing and Marking Hydrants. NFPA No. 1962—Care, Use, and Maintenance of Fire Hose, Connections, and Nozzles.
§ 57.4202	NFPA No. 14—Standpipe and Hose Systems. NFPA No. 291—Testing and Marking Hydrants.
§ 57.4203	NFPA No. 10—Portable Fire Extinguishers.
§ 57.4230	NFPA No. 10—Portable Fire Extinguishers. NFPA No. 121—Mobile Surface Mining Equipment.
§ 57.4260	NFPA No. 10—Portable Fire Extinguishers.
§ 57.4261	NFPA No. 14—Standpipe and Hose Systems.
§ 57.4533	NFPA Fire Protection Handbook.
§ 57.4560	ASTM E-162—Surface Flammability of Materials Using a Radiant Heat Energy Source.

Subpart D—Air Quality, Radiation, and Physical Agents

Air Quality—Surface and Underground

§ 57.5001 Exposure limits for airborne contaminants.

Except as permitted by § 57.5005—

(a) Except as provided in paragraph (b), the exposure to airborne contaminants shall not exceed, on the basis of a time weighted average, the threshold limit values adopted by the American Conference of Governmental Industrial Hygienists, as set forth and explained in the 1973 edition of the Conference's publication, entitled "TLV's Threshold Limit Values for Chemical Substances in Workroom Air Adopted by ACGIH for 1973," pages 1 through 54, which are hereby incorporated by reference and made a part hereof. This publication may be obtained from the American Conference of Governmental Industrial Hygienists by writing to the Secretary-Treasurer, P.O. Box 1937, Cincinnati, Ohio 45201, or may be examined in any Metal and Nonmetal Mine Safety and Health District or Subdistrict Office of the Mine Safety and Health Administration. Excursions above the listed thresholds shall not be of a greater magnitude than is characterized as permissible by the Conference.

(b) The 8-hour time-weighted average airborne concentration of asbestos dust to which employees are exposed shall not exceed 2 fibers per milliliter greater than 5 microns in length, as determined by the membrane filter method at 400-450 magnification (4 millimeter objective) phase contrast illumination. No employees shall be exposed at any time to airborne concentrations of asbestos fibers in excess of 10 fibers longer than 5 micrometers, per milliliter of air, as determined by the membrane filter methods over a minimum sampling time of 15 minutes. "Asbestos" is a generic term for a number of hydrated silicates that, when crushed or processed, separate into flexible fibers made up of fibrils. Although there are many asbestos minerals, the term "asbestos" as used herein is limited to the following minerals: chrysotile, amosite, crocidolite, anthophylite asbestos, tremolite asbestos, and actinolite asbestos.

(c) Employees shall be withdrawn from areas where there is present an airborne contaminant given a "C" designation by the Conference and the concentration exceeds the threshold limit value listed for that contaminant.

§ 57.5002 Exposure monitoring.

Dust, gas, mist, and fume surveys shall be conducted as frequently as necessary to determine the adequacy of control measures.

§ 57.5003 Drill dust control.

Holes shall be collared and drilled wet, or other efficient dust control measures shall be used when drilling non-water-soluble material. Efficient dust-control measures shall be used when drilling water-soluble materials

§ 57.5005 Control of exposure to airborne contaminants.

Control of employee exposure to harmful airborne contaminants shall be, insofar as feasible, by prevention of contamination, removal by exhaust ventilation, or by dilution with uncontaminated air. However, where accepted engineering control measures have not been developed or when necessary by the nature of work involved (for example, while establishing controls or occasional entry into hazardous atmospheres to perform maintenance or investigation), employees may work for reasonable periods of time in concentrations of airborne contaminants exceeding permissible levels if they are protected by appropriate respiratory protective equipment. Whenever respiratory protective equipment is used a program for selection, maintenance, training, fitting, supervision, cleaning, and use shall meet the following minimum requirements:

(a) Mine Safety and Health Administration approved respirators which are applicable and suitable for the purpose intended shall be furnished, and employees shall use the protective equipment in accordance with training and instruction.

(b) A respirator program consistent with the requirements of ANSI Z88.2–1969, published by the American National Standards Institute and entitled "American National Standards Practices for Respiratory Protection ANSI Z88.2–1969," approved August 11, 1969, which is hereby incorporated by reference and made a part hereof. This publication may be obtained from the American National Standards Institute, Inc., 1430 Broadway, New York, New York 10018, or may be examined in any Metal and Nonmetal Mine Safety and Health District or Subdistrict Office of the Mine Safety and Health Administration.

(c) When respiratory protection is used in atmospheres immediately harmful to life, the presence of at least one other person with backup equipment and rescue capability shall be required in the event of failure of the respiratory equipment.

(Approved by the Office of Management and Budget under OMB control number 1219–0048)

§ 57.5006 Restricted use of chemicals.

The following chemical substances shall not be used or stored except by competent persons under laboratory conditions approved by a nationally recognized agency acceptable to the Secretary.

(a) Carbon tetrachloride,
(b) Phenol,
(c) 4-Nitrobiphenyl,
(d) Alpha-naphthylamine,
(e) 4,4-Methylene Bis (2-chloroaniline),
(f) Methyl-chloromethyl ether,
(g) 3,3 Dichlorobenzidine,
(h) Bis (chloromethyl) ether,
(i) Beta-napthylamine,
(j) Benzidine,
(k) 4-Aminodiphenyl,
(l) Ethyleneimine,
(m) Beta-propiolactone,
(n) 2-Acetylaminofluorene,
(o) 4-Dimethylaminobenzene, and
(p) N-Nitrosodimethylamine.

Air Quality—Surface Only

§ 57.5010 Abrasive blasting.

Silica sand, or other materials containing more than 1 percent free silica, shall not be used as an abrasive substance in abrasive blasting cleaning operations without requiring full-flow respiratory protection, or equivalent, to all exposed persons.

Air Quality—Underground Only

§57.5015 Oxygen deficiency.

Air in all active workings shall contain at least 19.5 volume percent oxygen.

§ 57.5016 Abrasive blasting.

Silica sand, or other materials containing more than 1 percent free silica, shall not be used as an abrasive substance in abrasive blasting cleaning operations.

Radiation—Underground Only

§ 57.5037 Radon daughter exposure monitoring.

(a) In all mines at least one sample shall be taken in exhaust mine air by a competent person to determine if concentrations of radon daughters are present. Sampling shall be done using suggested equipment and procedures described in section 14.3 of ANSI N13.8–1973, entitled "American National Standard Radiation Protection in Uranium Mines," approved July 18, 1973, pages 13–15, by the American National Standards Institute, Inc., which is incorporated by reference and made a part of the standard or equivalent procedures and equipment acceptable to the Administrator, Metal and Nonmetal Mine Safety and Health, Mine Safety and Health Administration. This publication may be examined at any Metal and Nonmetal Mine Safety and Health Subdistrict Office of the Mine Safety and Health Administration, or may be obtained from the American National Standards Institute, Inc., 1430 Broadway, New York, New York 10018. The mine operator may request that the required exhaust mine air sampling be done by the Mine Safety and Health Administration. If concentrations of radon daughters in excess of 0.1 WL are found in an exhaust air sample, thereafter—

(1) Where uranium is mined—radon daughter concentrations representative of worker's breathing zone shall be determined at least every two weeks at random times in all active working areas such as stopes, drift headings, travelways, haulageways, shops, stations, lunch rooms, magazines, and any other place or location where persons work, travel, or congregate. However, if concentrations of radon daughters are found in excess of 0.3 WL in an active working area, radon daughter concentrations thereafter shall be determined weekly in that working area until such time as the weekly determinations in that area have been 0.3 WL or less for 5 consecutive weeks.

(2) Where uranium is not mined—when radon daughter concentrations between 0.1 and 0.3 WL are found in an active working area, radon daughter concentration measurements representative of worker's breathing zone shall be determined at least every 3 months at random times until such time as the radon daughter concentrations in that area are below 0.1 WL, and annually thereafter. If concentrations of radon daughters are found in excess of 0.3 WL in an active working area radon daughter concentrations thereafter shall be determined at least weekly in that working area until such time as the weekly determinations in that area have been 0.3 WL or less for 5 consecutive weeks.

(b) If concentrations of radon daughters less than 0.1 WL are found in an exhaust mine air sample, thereafter;

(1) Where uranium is mined—at least one sample shall be taken in the exhaust mine air monthly.

(2) Where uranium is not mined—no further exhaust mine air sampling is required.

(c) The sample date, locations, and results obtained under (a) and (b) above shall be recorded and retained at the mine site or nearest mine office for at least two (2) years and shall be made available for inspection by the Secretary or his authorized representative.

(Approved by the Office of Management and Budget under OMB control number 1219–0003)

§ 57.5038 Annual exposure limits.

No person shall be permitted to receive an exposure in excess of 4 WLM in any calendar year.

§ 57.5039 Maximum permissible concentration.

Except as provided by standard § 57.5005, persons shall not be exposed to air containing concentrations of radon daughters exceeding 1.0 WL in active workings.

§57.5040 Exposure records.

(a) The operator shall calculate and record complete individual exposures to concentrations of radon daughters as follows:

(1) Where uranium is mined—the complete individual exposures of all mine personnel working underground shall be calculated and recorded. These records shall include the individual's time in each active working area such as stopes, drift headings, travelways, haulageways, shops, stations, lunch rooms, magazines and any other place or location where persons work, travel or congregate, and the concentration of airborne radon daughters for each active working area.

(2) Where uranium is not mined—the complete individual exposure of all mine personnel working in active working areas with radon daughter concentrations in excess of 0.3 WL shall be calculated and recorded. These records shall include the individual's time in each active working area and the concentrations of airborne radon daughters for each active working area. The operator may discontinue calculating and recording the individual exposures of any personnel assigned to work in active working areas where radon daughter concentrations have been reduced to 0.3 WL or less for 5 consecutive weeks provided that such exposure calculation and recordation shall not be discontinued with respect to any person who has accumulated more exposure than 1/12 (one-twelfth) of a WLM times the number of months for which exposures have been calculated and recorded in the calendar year in which the exposure calculation and recordation is proposed to be discontinued.

(B) The operator shall maintain the form entitled "Record of Individual Exposure to Radon Daughters" (Form 4000–9), or equivalent forms that are acceptable to the Administrator, Metal and Nonmetal Mine Safety and Health, Mine Safety and Health Administration, on which there shall be recorded the specific information required by the form with respect to each person's time-weighted current and cumulative exposure to concentrations of radon daughters.

(1) The form entitled "Record of Individual Exposure to Radon Daughters" (Form 4000–9), shall consist of an original of each form for the operator's records which shall be available for examination by the Secretary or his authorized representative.

(2) On or before February 15 of each calendar year, or within 45 days after the shutdown of mining operations for the calendar year, each mine operator shall submit to the Mine Safety and Health Administration a copy of the "Record of Individual Exposure to Radon Daughters" (Form 4000–9), or acceptable equivalent form, showing the data required by the form for all personnel for whom calculation and recording of exposure was required during the previous calendar year.

(3) Errors detected by the operator shall be corrected on any forms kept by the operator and a corrected copy of any forms submitted to the Mine Safety and Health Administration shall be submitted to the Mine Safety and Health Administration within 60 days of detection and shall identify the errors and indicate the date the corrections are made.

(4) The operator's records of individual exposure to concentrations of radon daughters and copies of "Record of Individual Exposure to Radon Daughters" (Form 4000–9) or acceptable equivalent form or true legible facsimiles thereof (microfilm or other), shall be retained at the mine or nearest mine office for a period as specified in paragraph 9.8, ANSI N13.8–1973, or shall be submitted to the Mine Safety and Health Administration. These records, if retained by the operator, shall be open for inspection by the Secretary of Labor, his authorized representative, and authorized representatives of the official mine inspection agency of the State in which the mine is located. Paragraph 9.8, ANSI N13.8–1973, is incorporated by reference and made a part of this standard. ANSI N13.8–1973 may be examined at any Metal and Nonmetal Mine Safety and Health Subdistrict Office of the Mine Safety and Health Administration, and may be obtained from the American National Standards Institute, Inc., at 1430 Broadway, New York, New York 10018.

(5) Upon written request from a person who is a subject of these records, a statement of the year-to-date and cumulative exposure applicable to that person shall be provided to the person or to whomever such person designates.

(6) The blank form entitled "Record of Individual Exposure to Radon Daughters" (Form 4000–9) may be obtained on request from any Metal and Nonmetal Mine Safety and Health Subdistrict Office of the Mine Safety and Health Administration.

Note.—To calculate an individual's exposure to WLM for a given period of time, multiply the total exposure time (hours to the nearest half-hour) in an active working area by the average concentration of airborne radon daughters for the applicable active working area (average working level calculated to the nearest hundredth working level) and divide the product by the constant 173 hours per month.

An average airborne radon daughter concentration for a designated active working area shall be determined by averaging all sampling results for that working area during the time that persons are present. Any sample taken by Federal or State mine inspectors, which represents exposure to miners and reported to the operator within three days of being taken, shall be included in the average concentration; except that if the mine operator samples simultaneously with the inspector, he may use his own sample results.

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§ 57.5041 Smoking prohibition.

Smoking shall be prohibited in all areas of a mine where exposure records are required to be kept in compliance with standard 57.5040.

§ 57.5042 Revised exposure levels.

If levels of permissible exposures to concentrations of radon daughters different from those prescribed in 57.5038 are recommended by the Environmental Protection Agency and approved by the President, no employee shall be permitted to receive exposures in excess of those levels after the effective dates established by the Agency.

§ 57.5044 Respirators.

The wearing of respirators approved for protection against radon daughters shall be required in environments exceeding 1.0 WL and respirator use shall be in compliance with standard 57.5005.

§ 57.5045 Posting of inactive workings.

Inactive workings in which radon daughter concentrations are above 1.0 WL, shall be posted against unauthorized entry and designated by signs indicating them as areas in which approved respirators shall be worn.

§ 57.5046 Protection against radon gas.

Where radon daughter concentrations exceed 10 WL, respirator protection against radon gas shall be provided in addition to protection against radon daughters. Protection against radon gas shall be provided by supplied air devices or by face masks containing absorbent material capable of removing both the radon and its daughters.

§ 57.5047 Gamma radiation surveys.

(a) Gamma radiation surveys shall be conducted annually in all underground mines where radioactive ores are mined.

(b) Surveys shall be in accordance with American National Standards (ANSI) Standard N13.8–1973, entitled "Radiation Protection in Uranium Mines", section 14.1 page 12, which is hereby incorporated by reference and made a part hereof. This publication may be examined in any Metal and Nonmetal Mine Safety and Health Subdistrict Office, Mine Safety and Health Administration, or may be obtained from the American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018.

(c) Where average gamma radiation measurements are in excess of 2.0 milliroentgens per hour in the working place, gamma radiation dosimeters shall be provided for all persons affected, and records of cumulative individual gamma radiation exposure shall be kept.

(d) Annual individual gamma radiation exposure shall not exceed 5 Rems.

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Physical Agents—Surface and Underground

§ 57.5050 Exposure limits for noise.

(a) No employee shall be permitted an exposure to noise in excess of that specified in the table below. Noise level measurements shall be made using a sound level meter meeting specifications for type 2 meters contained in American National Standards Institute (ANSI) Standard S1.4–1971, "General Purpose Sound Level Meters," approved April 27, 1971, which is hereby incorporated by reference and made a part hereof, or by a dosimeter with similar accuracy. This publication may be obtained from the American National Standards Institute, Inc., 1430 Broadway, New York, New York 10018, or may be examined in any Metal and Nonmetal Mine Health and Safety District or Subdistrict Office of the Mine Safety and Health Administration.

PERMISSIBLE NOISE EXPOSURES

Duration per day, hours of exposure	Sound level dBA, slow response
8	90
6	92
4	95
3	97
2	100
1½	102
1	105
½	110
¼ or less	115

No exposure shall exceed 115 dBA. Impact or impulsive noises shall not exceed 140 dB, peak sound pressure level.

Note.—When the daily exposure is composed of two or more periods of noise exposure at different levels, their combined effect shall be considered rather than the individual effect of each.

If the sum

$$(C_1/T_1)+(C_2/T_2)+\ldots(C_n/T_n)$$

exceeds unity, then the mixed exposure shall be considered to exceed the permissible exposure. C_n indicates the total time of exposure at a specified noise level, and T_n indicates the total time of exposure permitted at that level. Interpolation between tabulated values may be determined by the following formula:

$$\log T = 6.322 - 0.0602\,SL$$

Where T is the time in hours and SL is the sound level in dBA.

(b) When employees' exposure exceeds that listed in the above table, feasible administrative or engineering controls shall be utilized. If such controls fail to reduce exposure to within permissible levels, personal protection equipment shall be provided and used to reduce sound levels to within the levels of the table.

Subpart E—Explosives

§ 57.6000 Application.

The term "explosives" as used in this subpart includes blasting agents. The standards in this subpart in which the term "explosives" appears are applicable to blasting agents (as well as to other explosives) unless blasting agents are expressly excluded.

Storage—Surface and Underground

§ 57.6001 Detonators and explosives.

Detonators and explosives other than blasting agents shall be stored in magazines.

§ 57.6002 Separation of detonators from explosives.

Detonators shall not be stored in the same magazine with explosives.

§ 57.6005 Areas around storage facilities.

Areas surrounding magazines and facilities for the storage of blasting agents shall be kept clear of rubbish, brush, dry grass, or trees (other than live trees 10 or more feet tall), for a distance not less than 25 feet in all directions, and other unnecessary combustible materials for a distance of not less than 50 feet.

§ 57.6007 Precautionary practices.

Explosives, detonators, and related materials such as safety fuse and detonating cord shall be—

(a) Stored in a manner to facilitate use of oldest stocks first;

(b) Stored according to brand and grade in such a manner as to facilitate identification;

(c) Stored with their top sides up; and

(d) Stacked in a stable manner but not more than eight (8) feet high.

§ 57.6008 Separation of ANFO blasting agents from other explosives products.

Ammonium nitrate-fuel oil blasting agents shall be physically separated from other explosives, safety fuse, or detonating cord stored in the same magazine and in such a manner that oil does not contaminate the other explosives, safety fuse, or detonating cord.

§ 57.6011 Containers.

Containers of explosives, blasting agents, and detonators shall be closed while being stored.

§ 57.6012 Repair of storage facilities.

Prior to interior repair of facilities for storage of explosives, including blasting agents, all materials stored within the facility shall be removed and the interior cleaned. Prior to the exterior repair of such facilities, all materials stored within the facility shall be removed, if there exists a possibility that such repairs may produce a spark or flame. The explosives removed from storage facilities to be repaired shall be placed either in other storage facilities appropriate for the storage of such materials under this subpart or a safe distance from the facilities under repair where they shall be properly guarded and protected until the repairs have been completed and the materials have been returned to storage within the facilities.

Storage—Surface Only

§ 57.6020 Magazine requirements.

Magazines shall be—

(a) Located in accordance with the current American Table of Distances for storage of explosives;

(b) Detached structures located away from powerlines, fuel storage areas, and other possible sources of fire;

(c) Constructed substantially of noncombustible material or covered with fire-resistant material;

(d) Reasonably bullet resistant;

(e) Electrically bonded and grounded if constructed of metal;

(f) Made of nonsparking material on the inside, including floors;

(g) Provided with adequate and effectively screened ventilation openings near the floor and ceiling;

(h) Kept locked securely when unattended;

(i) Posted with suitable danger signs so located that a bullet passing through the face of a sign will not strike the magazine;

(j) Used exclusively for storage of explosives or detonators and kept free of all extraneous materials;

(k) Kept clean and dry in the interior, and in good repair; and

(l) Unheated, unless heated in a manner that does not create a fire or explosion hazard. Electrical heating devices shall not be used inside a magazine.

Storage—Underground Only

§ 57.6027 Box-type distribution magazines.

Box-type underground-distribution storage magazines used to store explosives or detonators near working faces shall be constructed with only nonsparking material inside and equipped with covers or doors and shall be located out of the line of blasts.

§ 57.6029 Labeling of magazines.

Secondary underground and box-type underground magazines shall be labeled suitably.

§ 57.6030 Detonator magazines.

Detonator-storage magazines shall be of the same construction as explosives-storage magazines and shall be separated by at least 25 feet from explosives-storage magazines.

Transportation—Surface and Underground

§ 57.6040. Separation of explosive material.

Explosives and detonators shall be transported in separate vehicles unless separated by 4 inches of hard wood or the equivalent.

§ 57.6041 Haulage by trolley locomotive.

When explosives and detonators are hauled by trolley locomotive, covered, electrically-insulated cars shall be used.

§ 57.6042 Fire protection.

Self-propelled vehicles used to transport explosives or detonators shall be equipped with suitable fire extinguishers.

§ 57.6043 Warning signs.

Vehicles containing explosives or detonators shall be posted with proper warning signs.

§ 57.6044 Parking precautions.

When vehicles containing explosives or detonators are parked, the brakes shall be set, the motive power shut off, and the vehicle shall be blocked securely against rolling.

§ 57.6045 Repair of transport vehicles.

Vehicles containing explosives or detonators shall not be taken to a repair garage or shop for any purpose.

§ 57.6046 Maintenance and operation of transport vehicles.

Vehicles containing explosives or detonators shall be maintained in good condition and shall be operated at a safe speed and in accordance with all safe operating practices.

§ 57.6047 Vehicle construction.

Vehicles used to transport explosives, other than blasting agents, shall have substantially constructed bodies, no sparking metal exposed in the cargo space, and shall be equipped with suitable sides and tail gates; explosives shall not be piled higher than the side or end enclosures.

§ 57.6048 Delivery.

Explosives and blasting agents shall be transported without undue delay, and over routes and at times that expose a minimum number of persons.

§ 57.6050 Materials in cargo space.

Other materials or supplies shall not be placed on or in the cargo space of a conveyance containing explosives, detonating cord or detonators, except for safety fuse and except for properly secured nonsparking equipment used expressly in the handling of such explosives, detonating cord or detonators.

§ 57.6051 Transport on locomotives.

Explosives or detonators shall not be transported on locomotives.

§ 57.6053 Riding prohibitions.

Only the necessary attendants shall ride on or in vehicles containing explosives or detonators.

§ 57.6054 Transport on mantrips.

Explosives or detonators shall not be transported on mantrips.

§ 57.6056 Containers for delivery.

Substantial nonconductive containers shall be used to carry explosives to blasting sites.

§ 57.6057 Containers for capped fuses and electric detonators.

Nonconductive containers with tight-fitting covers shall be used to transport or carry capped fuses and electric detonators to blasting sites.

Transportation—Surface Only

§ 57.6065 Vehicle attendance.

Vehicles containing detonators or explosives, other than blasting agents, shall not be left unattended except in blasting areas where loading or charging is in progress.

Transportation—Underground Only

§ 57.6075 Notification to hoist operators.

Persons assigned to and responsible for hoisting shall be notified whenever explosives or detonators are being transported in a shaft conveyance.

§ 57.6076 Hoisting in adjacent shafts.

Hoisting in adjacent shaft compartments shall be stopped when explosives or detonators are being handled.

§ 57.6077 Vehicle attendance.

Vehicles shall be attended, whenever practical and possible, while loaded with explosives or detonators.

Use—Surface and Underground

§ 57.6090 Experience of users and handlers.

Persons who use or handle explosives or detonators shall be experienced persons who understand the hazards involved; trainees shall do such work only under the supervision of and in the immediate presence of experienced persons.

§ 57.6091 Supervision of blasting operations.

Blasting operations shall be under the direct control of authorized persons.

§ 57.6092 Damaged or deteriorated explosives or blasting agents.

Damaged or deteriorated explosives and blasting agents shall be destroyed in a safe manner under the instructions of the explosives or blasting agent manufacturer or its designated agent.

§ 57.6093 Blasthole obstructions.

Boreholes shall be cleared of obstructions before charging.

§ 57.6094 Blasthole charging.

Holes to be blasted shall be charged as near to blasting time as practical and such holes shall be blasted as soon as possible after charging has been completed. In no case shall the time elapsing between the completion of charging to the time of blasting exceed 72 hours unless prior approval has been obtained from the Mine Safety and Health Administration.

§ 57.6096 Separation of explosives from detonators.

Explosives shall be kept separated from detonators until charging is started.

§ 57.6097 Primers.

Primers shall be made up only at the time of use and as close to the blasting area as conditions allow.

§ 57.6098 Primer and detonating cord preparation.

(a) Primers containing a detonator shall be prepared with the detonator contained securely and completely within the explosive charge or within a suitable tunnel or cap well.

(b) When using detonating cord to initiate another explosive, a connection shall be prepared with the detonating cord threaded through, attached securely to, or otherwise in intimate contact with the explosive charge.

§ 57.6099 Implements for punching cartridges.

Only wooden or other nonsparking implements shall be used to punch holes in an explosive cartridge.

§ 57.6100 Tamping poles.

Tamping poles shall be of wood or other material acceptable to the Mine Safety and Health Administration. Couplers of tamping poles shall be of nonsparking materials.

§ 57.6101 Tamping precautions.

Tamping shall not be done directly on a primer.

§ 57.6102 Unused explosives and detonators.

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

§ 57.6103 Blast site security.

Areas in which charged holes are awaiting firing shall be guarded, or barricaded and posted, or flagged against unauthorized entry.

§ 57.6104 Misfire waiting period for safety fuse.

When safety fuse has been used, persons shall not return to misfired holes for at least 30 minutes.

§ 57.6105 Misfire waiting period for electric blasting caps.

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

§ 57.6106 Examination of faces and muck piles.

Faces and muck piles shall be examined by a competent person for undetonated explosives or blasting agents and any undetonated explosives or blasting agents found shall be disposed of safely.

§ 57.6107 Drilling.

Holes shall not be drilled where there is a danger of intersecting a charged or misfired hole.

§ 57.6108 Fuse and igniter storage.

Fuse and igniters shall be stored in a cool, dry place away from oils or grease.

§ 57.6109 Damaged initiating material.

Safety fuse, igniter cord, and detonating cord shall not be used if they have been kinked, bent sharply, or otherwise damaged.

§ 57.6110 Preparation of fuse.

Fuses shall be cut and capped in safe, dry locations posted with "No Smoking" signs.

§ 57.6111 Preparation of blasting caps.

Blasting caps shall be crimped to fuses only with implements designed for that specific purpose.

§ 57.6112 Safety fuse—burning rate.

The burning rate of the safety fuse in use at any time shall be measured, posted in conspicuous locations, and brought to the attention of all persons concerned with blasting.

§ 57.6113 Safety fuse—minimum burning time.

When firing from 1 to 15 blastholes with safety fuse ignited individually using hand-held lighters, the fuses shall be of such lengths to provide the minimum burning time specified in the following table for a particular size round:

No. of holes in a round	Minimum burning time, minutes
1	2
2-5	2½
6-10	3½
11-15	5

In no case shall any 40-second-per-foot safety fuse less than 36 inches long or any 30-second-per-foot safety fuse less than 48 inches long be used.

§ 57.6114 Fuse lighting restrictions.

At least two persons shall be present when lighting fuses, and no person shall light more than 15 individual fuses. If more than 15 holes per person are to be fired, igniter cord and connectors or electric blasting shall be used.

§ 57.6115 Detonating cords.

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

§ 57.6116 Fuse lighting devices.

Fuse shall be ignited with hotwire lighters, lead spitters, igniter cord, or other such devices designed for this purpose. Carbide lights shall not be used to light fuses.

§ 57.6117 Fuse ignition—charge placement.

Fuse shall not be ignited before the primer and the entire charge are securely in place.

§ 57.6118 Safety fuse—timing.

When using safety fuse, where fly rock might damage unlit or burning fuses, timing shall be such that all fuses are burning within the holes before any hole detonates.

§ 57.6119 Compatibility of electric detonators.

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

§ 57.6120 Shunting.

Except when being tested with a blasting galvanometer—

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

(b) Wired rounds shall be kept shunted until they are being connected to the blasting line; and

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

§ 57.6121 Circuit testing.

When blasting electrically, a blasting galvanometer, or other instrument that is specifically designed for testing blasting circuits, shall be used to test—

(a) In surface operations:

(1) Continuity of each electric blasting cap in the borehole prior to the addition of stemming.

(2) Resistance of individual series or the resistance of multiple balanced series to be connected in parallel prior to their connection to the blasting line.

(3) Continuity of blasting lines prior to the connection of electric blasting cap series.

(4) Total blasting circuit resistance prior to connection to the power source.

(b) In underground operations:

(1) Continuity of each electric blasting cap series.

(2) Continuity of blasting lines prior to the connection of electric blasting caps.

§ 57.6122 Blasting line requirements.

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

§ 57.6123 Extraneous electricity—loading practices.

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.

§ 57.6124 Precautions during storms.

When electric detonators are used, charging shall be suspended in surface mining, shaft sinking, and tunneling and persons withdrawn to a safe location upon the approach of an electrical storm.

§ 57.6125 Branch circuits.

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.

§ 57.6126 Deenergizing circuits near blasting caps.

Electric power distribution circuits shall be deenergized within 50 feet of boreholes containing electric blasting caps which can be initiated by conventional power sources or extraneous electricity except that such circuits need not be deenergized between 25 and 50 feet of such boreholes when stray current tests, conducted as frequently as necessary, measure a maximum stray current less than 0.05 ampere through a one-ohm resistor measured at the location of the electric blasting cap.

§ 57.6127 Positive separation of blasting circuits from power source.

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.

§ 57.6128 Control of firing device.

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

§ 57.6129 Grounding restrictions.

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

§ 57.6130 Air gap.

At least a 15-foot air gap shall be provided between the blasting circuit and the electric power source.

§ 57.6131 Firing devices.

Power sources shall be suitable for the number of electric detonators to be fired and for the type of circuits used.

§ 57.6132 Delay connectors.

Delay connectors shall be treated and handled with the same safety precautions as detonators.

§ 57.6133 Duration of current flow.

If any part of a blast is connected in parallel and is to be initiated from powerlines or lighting circuits, the time of current flow shall be limited to a maximum of 25 milliseconds by incorporating a control device in the blasting circuit or by interrupting the circuit with an explosive charge attached to one or both lead lines and initiated by a zero-delay electric blasting cap.

§ 57.6134 Use of nonsparking implements to open containers.

Tools used for opening metal or nailed wooden containers of explosives or detonators shall be of nonsparking materials.

§ 57.6135 Collaring in bootlegs.

Holes shall not be collared in bootlegs.

§ 57.6136 Black powder restriction.

Black powder shall not be used for blasting except when a desired result cannot be obtained with another type of explosive such as in quarrying certain types of dimension stone.

§ 57.6137 Black powder handling precautions.

In the use of black blasting powder—

(a) Containers shall not be opened in, or within 50 feet of, any magazine; within any building in which a fuel-fired or exposed-element electric heater is in operation; where electrical or incandescent-particle sparks could result in powder ignition; or within 50 feet of any open flame;

(b) Granular powder shall be transferred from containers only by pouring;

(c) Spills of granular powder shall be cleaned up promptly with nonsparking equipment; contaminated powder shall be put into a container of water and its content disposed of promptly after the granules have distintegrated, or the spill area shall be flushed with a copious amount of water to completely distintegrate the granules;

(d) Containers of powder shall be kept securely closed at all times other than when the powder is being transferred from or into a container;

(e) Containers of powder transported by vehicles shall be in a wholly enclosed cargo space;

(f) Misfires shall be disposed of by: (1) Washing the stemming and powder charge from the borehole, and (2) removal and disposal of the initiator as a damaged explosive; and

(g) Boreholes of shots that fire but fail to break, or fail to break properly, shall not be recharged for at least 12 hours.

§ 57.6138 Hot holes.

Explosives or blasting agents shall not be loaded into drilled or sprung holes that could result in premature detonation from heat.

§ 57.6139 Reentry to blasting areas.

Blasting areas shall not be re-entered after firing until concentrations of smoke, dust, and fumes have been reduced to safe limits as required in, and determined by standards 57.5001 and 57.5002, respectively.

§57.6140 Extraneous electricity—blasting circuits and electric blasting caps.

Blasting circuits and electric blasting caps (which are capable of being initiated by conventional power sources) shall be protected from sources of extraneous electricity.

§ 57.6141 Secondary blasting.

In secondary blasting, if more than one shot is to be fired at one time in a blasting area, the shots shall be initiated from one source.

§ 57.6142 Drill stem loading.

Explosives or blasting agents shall not be loaded into bore-holes through or with either drill stem equipment or other devices which could be extracted while containing explosives or blasting agents. The use of loading hose, collar sleeves or collar pipes is permitted.

(Sec. 101, Pub. L. 91-173 as amended by Pub. L. 95-164, 91 Stat. 1291 [30 U.S.C. 811], and Sec. 301(c)(3), Pub. L. 95-164, 91 Stat. 1317 [30 U.S.C. 961(c)(3)])

§ 57.6159 Powder chests.

Powder chests shall be—

(a) Substantially constructed of nonsparking material on the inside;

(b) Posted with suitable warning signs;

(c) Located out of the blast area and out of the line of blasts;

(d) Emptied and their contents returned to the main magazine at the end of each shift unless the powder chest is located within the area continually attended by employees during shift changes;

(e) Separate for detonators and explosives unless separated by 4 inches of hardwood or the equivalent; and

(f) Kept locked when unattended.

Use—Surface Only

§ 57.6160 Protection of personnel at blast site.

Ample warning shall be given before blasts are fired. All persons shall be cleared and removed from the blasting area unless suitable blasting shelters are provided to protect persons endangered by concussion or flyrock from blasting.

§ 57.6161 Burning charges.

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

§ 57.6162 Isolation of blasting circuits.

Lead wires and blasting lines shall not be strung across power conductors, pipelines, railroad tracks, or within 20 feet of bare powerlines. They shall be protected from sources of static or other electrical contact.

§ 57.6163 Detonating cord blasting.

The double-trunkline or loop system shall be used in detonating-cord blasting.

§ 57.6164 Trunklines.

Trunklines, in multiple-row blasts, shall make one or more complete loops, with crossties between loops at intervals of not over 200 feet.

§ 57.6168 Handling of misfires.

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

Use—Underground Only

§ 57.6175 Loading and blast site restrictions.

Ample warning shall be given before the blasts are fired. All persons shall be cleared and removed from areas endangered by the blast. Clear access to exits shall be provided for personnel firing the rounds.

§ 57.6177 Handling of misfires.

Misfires shall be reported to the proper supervisor. The blast area shall be dangered-off until misfired holes are disposed of. Where explosives other than black powder have been used, misfired holes shall be disposed of as soon as possible by one of the following methods:

(a) Washing the stemming and charge from the borehole with water;

(b) Reattempting to fire the holes if leg wires are exposed; or

(c) Inserting new primers after the stemming has been washed out.

§ 57.6182 Blasting in shafts or winzes.

Blasts in shafts or winzes shall be initiated from a safe location outside the shaft or winze.

Sensitized Ammonium Nitrate Blasting Agents—Surface and Underground

§ 57.6193 Static electricity.

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.

§ 57.6194 Grounding prohibitions.

Pneumatic loading equipment shall not be grounded to waterlines, air lines, rails, or the permanent electrical grounding systems.

§ 57.6195 Conductivity of hoses.

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-countered hose shall not be used because of the potential hazard from stray electric currents.

§ 57.6198 Hole liners.

Plastic tubes shall not be used as hole liners if blasting agents are loaded pneumatically into holes containing an electric detonator.

§ 57.6200 Transport and unloading.

Vehicles used to transport blasting agents shall have substantially constructed bodies, no zinc or copper exposed in the cargo space and shall be freely vented. Blasting agents shall not be piled higher than the side or end enclosures of open-body vehicles. If an enclosed screw conveyor is used to discharge blasting agents from the vehicle the conveyor shall be protected against excessive internal pressure and excessive frictional heat.

Sensitized Ammonium Nitrate Blasting Agents—Underground Only

§ 57.6220 Mixing blasting agents.

Ammonium nitrate-fuel oil blasting agents shall not be mixed or otherwise "formulated" underground.

Miscellaneous—Surface and Underground

§ 57.6250 Smoking and open flames.

Smoking and open flames, except for the use of suitable devices for igniting safety fuse or the use of approved heating devices, shall not be permitted within 50 feet as measured by the line of sight of explosives, blasting agents, or detonators or within 25 feet when out of line of sight and separated by permanent noncombustible barriers in underground active workings.

Subpart F—Drilling and Rotary Jet Piercing

Drilling—Surface Only

§ 57.7002 Equipment defects.

Equipment defects affecting safety shall be corrected before the equipment is used.

§ 57.7003 Drill area inspection.

The drilling area shall be inspected for hazards before starting the drilling operations.

§ 57.7004 Drill mast.

Persons shall not be on a mast while the drill-bit is in operation unless they are provided with a safe platform from which to work and they are required to use safety belts to avoid falling.

§ 57.7005 Augers and drill stems.

Drill crews and other shall stay clear of augers or drill stems that are in motion. Persons shall not pass under or step over a moving stem or auger.

§ 57.7008 Moving the drill.

When a drill is being moved from one drilling area to another, drill steel, tools, and other equipment shall be secured and the mast placed in a safe position.

§ 57.7009 Drill helpers.

If a drill helper assists the drill operator during movement of a drill to a new location, the helper shall be in sight of, or in communication with, the operator at all times.

§ 57.7010 Power failures.

In the event of power failure, drill controls shall be placed in the neutral position until power is restored.

§ 57.7011 Straightening crossed cables.

The drill stem shall be resting on the bottom of the hole or on the platform with the stem secured to the mast before attempts are made to straighten a crossed cable on a reel.

§ 57.7012 Tending drills in operation.

While in operation, drills shall be attended at all times.

§ 57.7013 Covering or guarding drill holes.

Drill holes large enough to constitute a hazard shall be covered or guarded.

§ 57.7018 Hand clearance.

Persons shall not hold the drill steel while collaring holes, or rest their hands on the chuck or centralizer while drilling.

Drilling—Underground Only

§ 57.7028 Hand clearance.

Persons shall not rest their hands on the chuck or centralizer while drilling.

§ 57.7032 Anchoring.

Columns and the drills mounted on them shall be anchored firmly before and during drilling.

Drilling—Surface and Underground

§ 57.7050 Tool and drill steel racks.

Receptacles or racks shall be provided for drill steel and tools stored or carried on drills.

§ 57.7051 Loose objects on the mast or drill platform.

To prevent injury to personnel, tools and other objects shall not be left loose on the mast or drill platform.

§ 57.7052 Drilling positions.

Persons shall not drill from—

(a) Positions which hinder their access to the control levers;

(b) Insecure footing or insecure staging; or

(c) Atop equipment not suitable for drilling.

§ 57.7053 Moving hand-held drills.

Before hand-held drills are moved from one working area to another, air shall be turned off and bled from the hose.

§ 57.7054 Starting or moving drill equipment.

Drill operators shall not start or move drilling equipment unless all miners are in the clear.

Rotary Jet Piercing—Surface Only

§ 57.7801 Jet drills.

Jet piercing drills shall be provided with—

(a) A system to pressurize the equipment operator's cab, when a cab is provided; and

(b) A protective cover over the oxygen flow indicator.

§ 57.7802 Oxygen hose lines.

Safety chains or other suitable locking devices shall be provided across connections to and between high pressure oxygen hose lines of 1-inch inside diameter or larger.

§ 57.7803 Lighting the burner.

A suitable means of protection shall be provided for the employee when lighting the burner.

§ 57.7804 Refueling.

When rotary jet piercing equipment requires refueling at locations other than fueling stations, a system for fueling without spillage shall be provided.

§ 57.7805 Smoking and open flames.

Persons shall not smoke and open flames shall not be used in the vicinity of the oxygen storage and supply lines. Signs warning against smoking and open flames shall be posted in these areas.

§ 57.7806 Oxygen intake coupling.

The oxygen intake coupling on jet piercing drills shall be constructed so that only the oxygen hose can be coupled to it.

§ 57.7807 Flushing the combustion chamber.

The combustion chamber of a jet drill stem which has been sitting unoperated in a drill hole shall be flushed with a suitable solvent after the stem is pulled up.

Subpart G—Ventilation

Surface and Underground

§ 57.8518 Main and booster fans.

(a) All mine main and booster fans installed and used to ventilate the active workings of the mine shall be operated continuously while persons are underground in the active workings. However, this provision is not applicable during scheduled production-cycle shutdowns or planned or scheduled fan maintenance or fan adjustments where air quality is maintained in compliance with the applicable standards of Subpart D of this part and all persons underground in the affected areas are advised in advance of such scheduled or planned fan shutdowns, maintenance, or adjustments.

(b) In the event of main or booster fan failure due to a malfunction, accident, power failure, or other such unplanned or unscheduled event:

(1) The air quality in the affected active workings shall be tested at least within 2-hours of the discovery of the fan failure, and at least every 4-hours thereafter by a competent person for compliance with the requirements of the applicable standards of Subpart D of this part until normal ventilation is restored, or

(2) All persons, except those working on the fan, shall be withdrawn, the ventilation shall be restored to normal and the air quality in the affected active workings shall be tested by a competent person to assure that the air quality meets the requirements of the standards in Subpart D of this part, before any other persons are permitted to enter the affected active workings.

§ 57.8519 Underground main fan controls.

All underground main fans shall have controls placed at a suitable protected location remote from the fan and preferably on the surface.

Underground Only

§ 57.8520 Ventilation plan.

A plan of the mine ventilation system shall be set out by the operator in written form. Revisions of the system shall be noted and updated at least annually. The ventilation plan or revisions thereto shall be submitted to the District Manager for review and comments upon his written request. The plan shall, where applicable, contain the following:

(a) The mine name.

(b) The current mine map or schematic or series of mine maps or schematics of an appropriate scale, not greater than five hundred feet to the inch, showing—

(1) Direction and quantity of principal air flows;

(2) Locations of seals used to isolate abandoned workings;

(3) Locations of areas withdrawn from the ventilation system;

(4) Locations of all main, booster and auxiliary fans not shown in subsection (d) of this standard.

(5) Locations of air regulators and stoppings and ventilation doors not shown in subsection (d) of this standard;

(6) Locations of overcasts, undercasts and other airway crossover devices not shown in subsection (d) of this standard;

(7) Locations of known oil or gas wells;

(8) Locations of known underground mine openings adjacent to the mine;

(9) Locations of permanent underground shops, diesel fuel storage depots, oil fuel storage depots, hoist rooms, compressors, battery charging stations and explosive storage facilities. Permanent facilities are those intended to exist for one year or more; and

(10) Significant changes in the ventilation system projected for one year.

(c) Mine fan data for all active main and booster fans including manufacturer's name, type, size, fan speed, blade setting, approximate

pressure at present operating point, and motor brake horsepower rating.

(d) Diagrams, descriptions or sketches showing how ventilation is accomplished in each typical type of working place including the approximate quantity of air provided, and typical size and type of auxiliary fans used.

(e) The number and type of internal combustion engine units used underground, including make and model of unit, type of engine, make and model of engine, brake horsepower rating of engine, and approval number.

(Approved by the Office of Management and Budget under OMB control number 1219–0016)

§ 57.8525 Main fan maintenance.

Main fans shall be maintained according to either the manufacturer's recommendations or a written periodic schedule adopted by the operator which shall be available at the operation on request of the Secretary or his authorized representative.

(Approved by the Office of Management and Budget under OMB control number 1219–0012)

§ 57.8527 Oxygen-deficiency testing.

Flame safety lamps or other suitable devices shall be used to test for acute oxygen deficiency.

§ 57.8528 Unventilated areas.

Unventilated areas shall be sealed, or barricaded and posted against entry.

§ 57.8529 Auxiliary fan systems

When auxiliary fan systems are used, such systems shall minimize recirculation and be maintained to provide ventilation air that effectively sweeps the working places.

§ 57.8531 Construction and maintenance of ventilation doors.

Ventilation doors shall be—

(a) Substantially constructed;

(b) Covered with fire-retardant material, if constructed of wood;

(c) Maintained in good condition;

(d) Self-closing, if manually operated; and

(e) Equipped with audible or visual warning devices, if mechanically operated.

§ 57.8532 Opening and closing ventilation doors.

When ventilation control doors are opened as a part of the normal mining cycle, they shall be closed as soon as possible to re-establish normal ventilation to working places.

§ 57.8534 Shutdown or failure of auxiliary fans.

(a) Auxiliary fans installed and used to ventilate the active workings of the mine shall be operated continuously while persons are underground in the active workings, *except* for scheduled production-cycle shutdowns or planned or scheduled fan maintenance or fan adjustments where air quality is maintained in compliance with the applicable standards of Subpart D of this part, and all persons underground in the affected areas are advised in advance of such scheduled or planned fan shutdowns, maintenance, or adjustments.

(b) In the event of auxiliary fan failure due to malfunction, accident, power failure, or other such unplanned or unscheduled event:

(1) The air quality in the affected active workings shall be tested at least within 2 hours of the discovery of the fan failure, and at least every 4 hours thereafter by a competent person for compliance with the requirements of the applicable standards of Subpart D of this part until normal ventilation is restored, or

(2) All persons, except those working on the fan, shall be withdrawn, the ventilation shall be restored to normal and the air quality in the affected active workings shall be tested by a competent person to assure that the air quality meets the requirements of the standards in Subpart D of this part, before any other persons are permitted to enter the affected active workings.

§ 57.8535 Seals.

Seals shall be provided with a means for checking the quality of air behind the seal and a means to prevent a water head from developing unless the seal is designed to impound water.

Subpart H—Loading, Hauling, and Dumping

Surface and Underground

§ 57.9001 Self-propelled equipment inspection.

Self-propelled equipment that is to be used during a shift shall be inspected by the equipment operator before being placed in operation. Equipment defects affecting safety shall be reported to, and recorded by the mine operator. The records shall be maintained at the mine or nearest mine office for at least 6 months from the date the defects are recorded. Such records shall be made available for inspection by the Secretary of Labor or his duly authorized representative.

(Approved by the Office of Management and Budget under OMB control number 1219–0089)

§ 57.9002 Safety defects.

Equipment defects affecting safety shall be corrected before the equipment is used.

§ 57.9003 Mobile equipment brakes.

Powered mobile equipment shall be provided with adequate brakes.

§ 57.9005 Warning prior to starting or moving equipment.

Operators shall be certain, by signal or other means, that all persons are clear before starting or moving equipment.

§ 57.9006 Conveyor start-up warning.

When the entire length of a conveyor is visible from the starting switch, the operator shall visually check to make certain that all persons are in the clear before starting the conveyor. When the entire length of the conveyor is not visible from the starting switch, a positive audible or visible warning system shall be installed and operated to warn persons that the conveyor will be started.

§ 57.9007 Unguarded conveyors with walkways.

Unguarded conveyors with walkways shall be equipped with emergency stop devices or cords along their full length.

§ 57.9009 Train warnings.

Operators shall sound warning before starting trains and when trains approach crossings, other trains on adjacent tracks, persons, and any place where vision is obscured.

§ 57.9010 Operators' cabs.

Equipment operators' cabs shall not be equipped, altered or otherwise modified in a manner which impairs operating visibility.

§ 57.9011 Cab windows.

Cab windows shall be of safety glass or equivalent, in good condition and shall be kept clean.

§ 57.9012 Extraneous material in cabs.

Cabs of mobile equipment shall be kept free of extraneous materials.

§ 57.9013 Incline conveyors—backstops or brakes.

Adequate backstops or brakes shall be installed on inclined-conveyor drive units to prevent conveyors from running in reverse if a hazard to personnel would be caused.

§ 57.9014 Transporting persons on conveyors.

No person shall be permitted to ride a power-driven chain, belt, or bucket conveyor, unless the belt is specifically designed for the transportation of persons.

§ 57.9015 Slusher backlash guards and securing.

Unless the operator is otherwise protected, slushers in excess of 10 horsespower shall be provided with backlash guards. All slushers shall be equipped with rollers, and drum covers, and anchored securely before slushing operations are started.

§ 57.9016 Design, installation, and maintenance of rail trackage.

Roadbeds, rails, joints, switches, frogs, and other trackage elements on railroads subject to the control of the operator shall be designed, installed, and maintained in a safe manner consistent with the speed and type of haulage.

§ 57.9017 Operating speeds.

Equipment operating speeds shall be consistent with conditions of roadways, grades, clearance, visibility, traffic, and the type of equipment used.

§ 57.9019 Track guardrails, lead rails, and frogs.

Track guardrails, lead rails, and frogs shall be protected or blocked so as to prevent a person's foot from becoming wedged.

§ 57.9020 Protection against moving or runaway rail equipment.

Positive-acting stopblocks, derail devices, track skates, or other adequate means shall be installed wherever necessary to protect persons from runaway or moving railroad equipment.

§ 57.9022 Berms or guards.

Berms or guards shall be provided on the outer bank of elevated roadways.

§ 57.9023 Control of trackless haulage equipment.

Trackless haulage equipment shall be operated under power control at all times.

§ 57.9024 Control of mobile equipment.

Mobile equipment operators shall have full control of the equipment while it is in motion.

§ 57.9025 Movement of dippers, buckets, loading booms, or suspended loads.

Dippers, buckets, loading booms, or heavy suspended loads shall not be swung over the cabs of haulage vehicles until the drivers are out of the cabs and in safe locations, unless the trucks are designed specifically to protect the drivers from falling material.

§ 57.9026 Air valves for pneumatic equipment.

A quick-close type air valve shall be provided on each piece of pneumatic-powered loading, hauling, and dumping equipment. The valve shall be closed except when the equipment is being operated.

§ 57.9027 Notification to the equipment operator.

When an operator is present, persons shall notify him before getting on or off equipment.

§ 57.9028 Switch throws.

Switch throws shall be installed so as to provide adequate clearance for switchmen.

§ 57.9030 Suspended loads.

Persons shall not work or pass under the buckets or booms of loaders in operation.

§ 57.9031 Securing equipment during travel.

When traveling between work areas, the equipment shall be secured in the travel position.

§ 57.9032 Securing movable parts.

Dippers, buckets, scraper blades and similar movable parts shall be secured or lowered to the ground when not in use.

§ 57.9034 Minimizing spillage.

Haulage equipment shall be loaded in a manner to minimize spillage during haulage.

§57.9035 Movement of independently operating rail equipment.

Movements of two or more pieces of rail equipment operating independently on the same track shall be suitably controlled for safe operation.

§ 57.9036 Parking procedures electrically-powered mobile equipment.

Electrically-powered mobile equipment shall not be left unattended unless the master switch is in the off position, all operating controls are in the neutral position, and the brakes are set or other equivalent precautions are taken against rolling.

§ 57.9037 Parking procedures for mobile equipment.

Mobile equipment shall not be left unattended unless the brakes are set. Mobile equipment with wheels or tracks, when parked on a grade, shall be either blocked or turned into a bank or rib; and the bucket or blade lowered to the ground to prevent movement.

§ 57.9039 Getting on or off moving equipment.

Persons shall not get on or off moving equipment, except that train-men may get on or off of slowly moving trains.

§ 57.9040 Transporting persons—prohibitions.

Persons shall not be transported—

(a) In or on dippers, forks, clamshells, beds of trucks unless special provisions are made for their safety, or buckets except shaft buckets;

(b) On top of loaded haulage equipment;

(c) Outside the cabs and beds of mobile equipment, except trains;

(d) Between cars of trains; or

(e) In conveyances equipped with unloading devices unless means are provided to prevent accidential starting of the unloading mechanism.

§ 57.9041 Riding trains or locomotives.

Only authorized persons shall be permitted to ride on trains or locomotives and they shall ride in a safe position.

§ 57.9042 Rocker-bottom and bottom-dump railcars.

Rocker-bottom or bottom-dump railcars shall be equipped with locking devices.

§ 57.9045 Loading and securing equipment for haulage.

Equipment which is to be hauled shall be loaded and protected so as to prevent sliding or spillage.

§ 57.9046 Backpoling.

Backpoling of trolleys shall be avoided wherever possible; but when necessary, backpoling shall be done only at slow speeds.

§ 57.9047 Securing parked railcars.

Parked railcars, unless held effectively by brakes, shall be blocked securely.

§ 57.9048 Brakes on railcars.

Railroad cars with braking systems, when in use, shall be equipped with effective brake shoes.

§ 57.9049 Oversize-load warning.

When in the dark or under conditions of limited visibility, all vehicles carrying loads which project beyond the sides or more than four feet beyond the rear of the vehicles shall display a warning light at the end of the projection; or in the light, a warning flag not less than 12 inches square shall be displayed at the end of the projection.

§ 57.9050 Clearance on adjacent tracks.

Railcars shall not be left on side tracks unless ample clearance is provided for traffic on adjacent tracks.

§ 57.9051 Travel precautions around railcars.

Persons shall not go over, under, or between cars unless the train is stopped and the motorman has been notified and the notice acknowledged.

§ 57.9052 Brakeman signals.

Inability of a motorman to clearly recognize his brakeman's signals, when the train is under the direction of the brakeman, shall be construed by the motorman as a stop signal.

§ 57.9053 Removal of hazards to moving equipment.

Water, debris, or spilled material which create hazards to moving equipment shall be removed.

§ 57.9054 Restraining devices at dumping locations.

Berms, bumper blocks, safety hooks, or similar means shall be provided to prevent overtravel and overturning at dumping locations.

§ 57.9055 Dumping near unstable ground.

Where there is evidence that the ground at a dumping place may fail to support the weight of a vehicle, loads shall be dumped back from the edge of the bank.

§ 57.9056 Track dead ends.

Where necessary, bumper blocks or the equivalent shall be provided at track dead ends.

§ 57.9057 Anchoring stationary sizing devices.

Grizzlies, grates, and other stationary sizing devices shall be anchored securely.

§ 57.9058 Truck spotters.

If truck spotters are used, they shall be well in the clear while trucks are backing into dumping position and dumping; lights shall be used at night to direct trucks.

§ 57.9059 Rail crossings.

Public and permanent railroad crossings shall be posted with warning signs or signals, or shall be guarded when trains are passing and shall be planked or otherwise filled between the rails.

§ 57.9060 Restricted overhead clearance.

Where overhead clearance is restricted, warning devices shall be installed and the restricted area shall be conspicuously marked.

§ 57.9061 Trimming of stockpile and muckpile faces.

Stockpile and muckpile faces shall be trimmed to prevent hazards to personnel.

§ 57.9062 Loading large rocks.

Rocks too large to be handled safely shall be broken before loading.

§ 57.9063 Construction of ramps and dumping facilities.

Ramps and dumping facilities shall—

(a) Be of substantial construction; and

(b) Have suitable width, clearance, and headroom to accommodate the equipment using the facilities.

§ 57.9064 Chute design.

Chute-loading installations shall be designed so that the persons pulling chutes are not required to be in a hazardous position while loading cars.

§ 57.9065 Coupling or uncoupling railcars.

Cars shall not be coupled, or uncoupled, manually from the inside of curves unless the railroad and cars are so designed to eliminate any hazard from manual coupling.

§ 57.9066 Movement of rail equipment on adjacent tracks.

When a locomotive on one track is used to move equipment on a different track, a suitable chain, cable, or drawbar shall be used.

§ 57.9067 Transporting persons—overcrowding.

Facilities used to transport persons to and from work areas shall not be overcrowded.

§ 57.9068 Warning devices for parked equipment.

Lights, flares, or other warning devices shall be posted when parked equipment creates a hazard to vehicular traffic.

§ 57.9069 Tire repair and inflation.

Tires shall be deflated before repairs on them are started and adequate means shall be provided to prevent wheel locking rims from creating a hazard during tire inflation.

§ 57.9070 Precautions for towing.

A tow bar of substantial construction or other suitable means of control shall be used to tow heavy equipment. A substantial safety chain or wire rope shall be used in conjunction with any primary rigging.

§ 57.9071 Traffic rules.

Traffic rules including speed, signals, and warning signs shall be standardized at each mine and posted.

§ 57.9072 Freeing hangups.

Persons attempting to free hangups shall be experienced persons who understand the hazards involved.

§ 57.9073 Tagging defective equipment.

Defective equipment, removed from service as unsafe to operate, shall be tagged to prohibit further use until repairs are completed.

§ 57.9074 Dust control.

Dust shall be suitably controlled at muck piles, material transfer points, crushers, and on haulage roads where hazards to personnel may be created as a result of impaired visibility.

Surface Only

§ 57.9083 Rail equipment clearance.

Where possible, at least 30 inches continuous clearance from the farthest projection of moving railroad equipment shall be provided on at least one side of the tracks; all places where it is not possible to provide 30-inch clearance shall be marked conspicuously.

§ 57.9085 Tools, materials, and equipment in mantrips.

Tools, materials, and equipment shall not be transported with persons in vehicles, railcars, and other conveyances unless means have been provided to make such transportation safe.

§ 57.9087 Audible warning devices and back-up alarms.

Heavy duty mobile equipment shall be provided with audible warning devices. When the operator of such equipment has an obstructed view to the rear, the equipment shall have either an automatic reverse signal alarm which is audible above the surrounding noise level or an observer to signal when it is safe to back up.

§ 57.9088 Roll-over protective structures (ROPS) and seat belts.

(a) Excluding equipment that is operated by remote control, all self-propelled track-type (crawler mounted) or wheeled (rubber-tired) scrapers; front-end loaders; dozers; tractors, including industrial and agricultural tractors but not including over-the-road type tractors (the type that pull trailers or vans on highways); and motor graders; and wheeled prime movers (a tractor of the type and kind normally used as the mode of power for rubber-tired scrapers); all as used in metal and non-metal mining operations, with or without attachments, shall be used in such mining only when equipped with (1) Roll-Over Protective Structures (ROPS) in accordance with the

requirements of paragraphs (b) through (g) of this standard, as applicable, and (2) seat belts meeting the requirements of the Society of Automotive Engineers (SAE), Motor Vehicle Seat Belts Assemblies—SAE J4c, approved November 1955, revised July 1965; Seat Belt Hardware Test Procedures—SAE J140a, approved April 1970, revised February 1973; Seat Belt Hardware Performance Requirements—SAE J141; Operator Protection for Wheel Type Agricultural and Industrial Tractors—SAE J333a, approved April 1968, revised July 1970, conforms to ASAE S305; and Seat Belts for Construction Equipment—SAE J386, approved March 1968; and, in accordance with paragraphs (b), (c), and (e) of this standard, as applicable.

(b) Except as provided in paragraph (e) all self-propelled equipment described in paragraph (a) of this standard and manufactured on or after the effective date of this standard shall be equipped with (1) ROPS meeting the requirements of paragraph (d), and (2) seat belts meeting the requirements of SAE J4c, J140a, J141, J333a, and J386 specified in paragraph (a) of this standard.

(c) All self-propelled equipment described in paragraph (a) of this standard manufactured prior to the effective date of this standard and after June 30, 1969, shall be equipped with ROPS meeting the requirements of paragraphs (d) through (g) of this standard as appropriate, and seat belts, no later than the dates specified below:

(1) Equipment manufactured between July 1, 1971, and the effective date of this standard shall be equipped with ROPS and seat belts no later than 6 months after the effective date of this standard.

(2) Equipment manufactured between July 1, 1970, and June 30, 1971, shall be equipped with ROPS and seat belts no later than 10 months after the effective date of this standard.

(3) Equipment manufactured between July 1, 1969, and June 30, 1970, shall be equipped with ROPS and seat belts no later than 16 months after the effective date of this standard.

(4) Nothing in this standard shall preclude the issuance of an order because of imminent danger.

(d) Except as provided in paragraph (e) of this standard, self-propelled equipment described in paragraph (a) of this standard shall be deemed in compliance with the ROPS requirements of this standard if the ROPS meet the following requirements:

(1) The ROPS complies with the Society of Automotive Engineers, SAE Recommended Practice, Critical Zone—Characteristics and Dimensions for Operators of Construction and Industrial Machinery—SAE J397, approved July 1969, or Deflection Limiting Volume for Laboratory Evaluation of Roll-Over Protective Structures (ROPS) and Falling Object Protective Structures (FOPS) of Construction and Industrial Vehicles—SAE J397a, approved July 1969, revised January 1972, editorial change July 1973; and, as appropriate, the ROPS and installation of the ROPS meet the requirements of either SAE Recommended Practice, Performance Criteria for Roll-Over Protective Structures (ROPS) for Earth-moving, Construction, Logging, and Industrial Vehicles—SAE J1040, approved April 1974, or any of the following applicable SAE standards or recommended practices.

(i) Minimum Performance Criteria for Roll-Over Protective Structure for Rubber-Tired, Self-Propelled Scrapers—SAE J320a, approved November 1967, revised July 1969, editorial change June 1970; or

(ii) Minimum Performance Criteria for Roll-Over Protective Structures for Prime Movers—SAE J320b, approved November 1967, revised January 1972, editorial change September 1972; or

(iii) Minimum Performance Criteria for Roll-Over Protective Structure for Rubber-Tired Front End Loaders and Rubber-Tired Dozers—SAE J394, approved July 1969, editorial change July 1970, or Minimum Performance Criteria for Roll-Over Protective Structures for Wheeled Front-End Loaders and Wheeled Dozers—SAE J394a, approved July 1969, revised March 1972, editorial change September 1972; or

(iv) Minimum Performance Criteria for Roll-Over Structures for Crawler Tractors and Crawler-Type Loaders—SAE J395, approved July 1969, editorial change July 1970, or Minimum Performance Criteria for Roll-Over Protective Structures for Track-Type Tractors and Track-Type Front-End Loaders—SAE J395a, approved July 1969, revised January 1972, editorial change September 1972; or

(v) Minimum Performance Criteria for Roll-Over Protective Structure for Motor Graders—SAE J396, approved 1969, editorial change July 1970, or Minimum Performance Criteria for Roll-Over Protective Structures for Motor Graders—SAE J396a, approved July 1969, revised March 1972, editorial change September 1972; or

(vi) Operator Protection for Wheel Type Agricultural and Industrial Tractors—SAE J333a, approved April 1968, revised July 1970, conforms to ASAE S305; and Protective Frame Test Procedure and Performance Requirements—SAE J334a, approved April 1968, revised July 1970, conforms to ASAE S306.

(2) The ROPS is installed on the equipment in accordance with the recommendations of the ROPS manufacturer. If the installation includes bolts and nuts, the bolts and nuts used to attach the ROPS to the equipment frame and to connect structural parts of the ROPS shall be SAE Grade 5 or 8 (SAE J429g and J995b).

(e) All self-propelled equipment described in paragraph (a) of this standard, manufactured prior to the effective date of this standard, shall be deemed in compliance with the standard if ROPS and seat belt installations meet the ROPS and seat belt requirements of the State of California; or the U.S. Army Corps of Engineers; or the Bureau of Reclamation, or MSHA coal mine regulations of the U.S. Department of Labor; or the Occupational Safety and Health Administration of the U.S. Department of Labor. The requirements in effect are:

(1) The State of California: Title 8 of the California Administrative Code: Construction Safety Orders, Article 10, "Haulage and Earth Moving," 1591(i) and 1596 (Register 70, No. 40—October 3, 1970); General Industry Safety Orders, Article 25, "Industrial Trucks, Tractors, Haulage Vehicles, and Earth Moving Equipment," 3650–55 (Register 72, No. 6—Feburary 5, 1972); and Logging and Sawmill Safety Orders, Article 7, "Tractor Yarding," 5243 (Register 69, No. 10—March 8, 1969), all issued by the Division of Industrial Safety, State of California.

(2) U.S. Army Corps of Engineers: Manuals—Corps of Engineers, U.S. Army Safety-General Safety Requirements, EM–385–1–1 (March 1967), or Change 1, March 27, 1972.

(3) Bureau of Reclamation, U.S. Department of the Interior: Section 9, "Machinery and Mechanized Equipment," Safety and Health Regulations for Construction, Part II—Bureau of Reclamation (September 1971).

(4) Mine Safety and Health Administration, U.S. Department of Labor: Section 77.403a, Part 77, Title 30, Code of Federal Regulations—Mandatory Safety Standards, Surface Coal Mines and Surface Work Areas of Underground Coal Mines, promulgated in the **Federal Register** (39 FR 24006–24009).

(5) Occupational Safety and Health Administration, U.S. Department of Labor: Sections 1926.1001 and 1926.1002, Title 29, Code of Federal Regulations—Safety and Health Regulations for Construction, promulgated in the

Federal Register (37 FR 27585–27590), and published in the Federal Register (39 FR 22880–22886).

(f) Any alteration, repair, or welding of the ROPS and ROPS-to-vehicle frame mounts shall be performed only with prior approval and with instructions from the ROPS manufacturer or under the instructions of a registered professional engineer; and the manufacturer, or engineer, as the case may be, shall decide what qualifications the welders involved in this operation must have.

(g) Each ROPS shall have the following information permanently affixed to the structure:

(1) Manufacturer's or fabricator's, name and address; and

(2) ROPS model number, if any; and

(3) Make and model numbers of the equipment on which the ROPS is designed to fit.

For equipment already in existence when this standard goes into effect, a satisfactory substitute for the above-required information will be a certificate from either the manufacturer of the ROPS or a registered professional engineer to the effect that the ROPS does meet the performance standards and is appropriate for the piece of equipment upon which it is installed.

(h) Publications to which references are made in this standard are hereby incorporated by reference and made a part hereof. The incorporated publications are available at each Metal and Nonmetal Mine Safety and Health Subdistrict Office, MSHA. State of California safety orders are available from the state of California Office of Procurement, Documents Section, Post Office Box 20191, Sacramento, California 95820. The U.S. Army Corps of Engineers Safety-General Safety requirements are available from the U.S. Government Printing Office, Washington, D.C. 20402. Bureau of Reclamation Safety and Health Regulations for construction are available from the Bureau of Reclamation, Division of Safety, Engineering and Research Center, Denver, Colorado 80225. SAE documents are available from the Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, Pennsylvania 15096.

Underground Only

§ 57.9096 Transporting tools and materials on locomotives.

Tools or materials, except properly located and secured rerailing devices, shall not be carried on top of locomotives. Tools or material shall not be carried in the cab if they would interfere with the operation of the locomotive.

§ 57.9097 Coupling or uncoupling of rail cars.

Trains shall be brought to a complete stop, then moved very slowly when coupling or uncoupling cars manually.

§ 57.9098 Makeshift couplings.

Makeshift couplings shall not be used.

§ 57.9099 Supplies, materials, and tools on mantrips.

Supplies, materials, and tools other than small handtools shall not be transported with persons in mantrip cars. Mantrips shall be operated independently of ore and supply trips.

§ 57.9102 Protection of slusher signalmen.

When a signalman is used during slushing operations he shall be positioned in a safe place.

§ 57.9103 Open draw holes.

Collars of open draw holes shall be kept free of muck and material.

§ 57.9104 Chute lip, ventilation door, and obstruction warnings.

Warning devices or conspicuous markings shall be installed where chute lips, ventilation doors, and obstructions create a hazard to persons on equipment.

§ 57.9105 Empty chute hazard.

To prevent rock from flying out when broken material is dumped into an empty chute—

(a) The chute shall be properly guarded prior to filling; or

(b) Sufficient material shall be left in the chute bottom.

§ 57.9106 Warning before chute-pulling.

Ample warning shall be given to persons who may be affected by the draw or otherwise exposed to danger from chute-pulling operations.

§ 57.9107 Working around draw holes.

Persons shall not stand on broken rock or ore over draw points if there is danger that the chute will be pulled. Suitable platforms or safety lines shall be provided when work must be done in such areas.

§ 57.9110 Provision for shelter holes.

Shelter holes shall be provided to ensure the safety of persons along haulageways where continuous clearance of at least 30 inches from the farthest projection of moving equipment on at least one side of the haulageway cannot be maintained.

§ 57.9111 Size and marking of shelter holes.

Shelter holes shall be a least 4-feet wide, marked conspicuously with lights or reflective signs or reflective tape or reflectors or luminous paint, provide a minimum of 40-inch clearance from the farthest projection of moving equipment, and shall not be used for storage of timber, tools, or other materials unless a 40-inch clearance is maintained.

§ 57.9112 Trip lights.

On rail haulage, trip lights shall be used on the rear of pulled trips and on the front of pushed trips.

§ 57.9113 Mantrip speeds.

Mantrips shall be operated at speeds consistent with the condition of tracks and equipment used.

§ 57.9114 Boarding and leaving mantrips.

Where mantrips are used, discharge and boarding points shall be designated. Persons shall not board or leave moving mantrip cars.

§ 57.9115 Mantrip trolley wire hazards.

Mantrips shall be covered if there is danger of passengers contacting the trolley wire.

§ 57.9116 Train movement during shift changes.

During shift changes the movement of rock or material trains shall be limited to areas where such trains could not present a hazard to persons coming on or going off shift.

Subpart I—Aerial Tramways

§ 57.10001 Filling buckets.

Buckets shall not be overloaded, and feed shall be regulated to prevent spillage.

§ 57.10002 Inspection and maintenance.

Inspection and maintenance of carriers (including loading and unloading mechanisms), ropes and supports, and brakes shall be performed by competent persons according to the recommendations of the manufacturer.

§ 57.10003 Correction of defects.

Any hazardous defects shall be corrected before the equipment is used.

§ 57.10004 Brakes.

Positive-action-type brakes and devices which apply the brakes automatically in the event of a power failure shall be provided on aerial tramways.

§ 57.10005 Track cable connections.

Track cable connections shall not obstruct the passage of carriage wheels.

§ 57.10006 Tower guards.

Towers shall be suitably protected from swaying buckes.

§ 57.10007 Falling object protection.

Guard nets or other suitable protection shall be provided where tramways pass over roadways, walkways, or buildings.

§ 57.10008 Riding tramways.

Persons other than maintenance persons shall not ride aerial tramways unless the following features are provided.

(a) Two independent brakes, each capable of holding the maximum load;

(b) Direct communication between terminals;

(c) Power drives with emergency power available in case of primary power failure; and

(d) Buckets equipped with positive locks to prevent accidental tripping or dumping.

§ 57.10009 Riding loaded buckets.

Persons shall not ride loaded buckets.

§ 57.10010 Starting precautions.

Where possible, aerial tramways shall not be started until the operator has ascertained that everyone is in the clear.

Subpart J—Travelways and Escapeways

Travelways—Surface and Underground

§ 57.11001 Safe access.

Safe means of access shall be provided and maintained to all working places.

§ 57.11002 Handrails and toeboards.

Crossovers, elevated walkways, elevated ramps, and stairways shall be of substantial construction, provided with handrails, and maintained in good condition. Where necessary, toeboards shall be provided.

§ 57.11003 Construction and maintenance of ladders.

Ladders shall be of substantial construction and maintained in good condition.

§ 57.11004 Portable rigid ladders.

Portable rigid ladders shall be provided with suitable bases and placed securely when used.

§ 57.11005 Fixed ladder anchorage and toe clearance..

Fixed ladders shall be anchored securely and installed to provide at least 3 inches of toe clearance.

§ 57.11006 Fixed ladder landings.

Fixed ladders shall project at least 3 feet above landings, or substantial handholds shall be provided above the landings.

§ 57.11007 Wooden components of ladders.

Wooden components of ladders shall not be painted except with a transparent finish.

§ 57.11009 Walkways along conveyors.

Walkways with outboard railings shall be provided wherever persons are required to walk alongside elevated conveyor belts. Inclined railed walkways shall be nonskid or provided with cleats.

§ 57.11010 Stairstep clearance.

Vertical clearance above stair steps shall be a minimum of seven feet, or suitable warning signs or similar devices shall be provided to indicate an impaired clearance.

§ 57.11011 Use of ladders.

Persons using ladders shall face the ladders and have both hands free for climbing and descending.

§ 57.11012 Protection for openings around travelways.

Openings above, below, or near travelways through which persons or materials may fall shall be protected by railings, barriers, or covers. Where it is impractical to install such protective devices, adequate warning signals shall be installed.

§ 57.11013 Conveyor crossovers.

Crossovers shall be provided where it is necessary to cross conveyors.

§ 57.11014 Crossing moving conveyors.

Moving conveyors shall be crossed only at designated crossover points.

§ 57.11016 Snow and ice on walkways and travelways.

Regularly used walkways and travelways shall be sanded, salted, or cleared of snow and ice as soon as practicable.

§ 57.11017 Inclined fixed ladders.

Fixed ladders shall not incline backwards.

Travelways—Surface Only

§ 57.11025 Railed landings, backguards, and other protection for fixed ladders.

Fixed ladders, except on mobile equipment, shall be offset and have substantial railed landings at least every 30 feet unless backguards or equivalent protection such as safety belts and safety lines, are provided.

§ 57.11026 Protection for inclined fixed ladders.

Fixed ladders 70 degrees to 90 degrees from the horizontal and 30 feet or more in length shall have backguards, cages or equivalent protection, starting at a point not more than seven feet from the bottom of the ladders.

§ 57.11027 Scaffolds and working platforms.

Scaffolds and working platforms shall be of substantial construction and provided with handrails and maintained in good condition. Floorboards shall be laid properly and the scaffolds and working platform shall not be overloaded. Working platforms shall be provided with toeboards when necessary.

Travelways—Underground Only

§ 57.11036 Ladderway trap doors and guards.

Trap doors or adequate guarding shall be provided in ladderways at each level. Doors shall be kept operable.

§ 57.11037 Ladderway openings.

Ladderways constructed after November 15, 1979, shall have a minimum unobstructed cross-sectional opening of 24 inches by 24 inches measured from the face of the ladder.

§ 57.11038 Entering a manway.

Before entering a manway where persons may be working or traveling, a warning shall be given by the person entering the manway and acknowledged by any person present in the manway.

§ 57.11040 Inclined travelways.

Travelways steeper than 35 degrees from the horizontal shall be provided with ladders or stairways.

§ 57.11041 Landings for inclined ladderways.

Fixed ladders with an inclination of more than 70 degrees from the horizontal shall be offset with substantial landings at least every 30 feet or have landing gates at least every 30 feet.

Escapeways—Underground Only

§ 57.11050 Escapeways and refuges.

(a) Every mine shall have two or more separate, properly maintained escapeways to the surface from the lowest levels which are so positioned that damage to one shall not lessen the effectiveness of the others. A method of refuge shall be provided while a second opening to the surface is being developed. A second escapeway is recommended, but not required, during

the exploration or development of an ore body.

(b) In addition to separate escapeways, a method of refuge shall be provided for every employee who cannot reach the surface from his working place through at least two separate escapeways within a time limit of one hour when using the normal exit method. These refuges must be positioned so that the employee can reach one of them within 30 minutes from the time he leaves his workplace.

§ 57.11051 Escape routes.

Escape routes shall be—

(a) Inspected at regular intervals and maintained in safe, travelable condition; and

(b) Marked with conspicuous and easily read direction signs that clearly indicate the ways of escape.

§ 57.11052 Refuge areas.

Refuge areas shall be—

(a) Of fire-resistant construction, preferably in untimbered areas of the mine;

(b) Large enough to accommodate readily the normal number of persons in the particular area of the mine;

(c) Constructed so they can be made gastight; and

(d) Provided with compressed air lines, waterlines, suitable handtools, and stopping materials.

§ 57.11053 Escape and evacuation plans.

A specific escape and evacuation plan and revisions thereof suitable to the conditions and mining system of the mine and showing assigned responsibilities of all key personnel in the event of an emergency shall be developed by the operator and set out in written form. Within 45 calendar days after promulgation of this standard a copy of the plan and revisions thereof shall be available to the Secretary or his authorized representative. Also, copies of the plan and revisions thereof shall be posted at locations convenient to all persons on the surface and underground. Such a plan shall be updated as necessary and shall be reviewed jointly by the operator and the Secretary or his authorized representative at least once every six months from the date of the last review. The plan shall include—

(a) Mine maps or diagrams showing directions of principal air flow, location of escape routes and locations of existing telephones, primary fans, primary fan controls, fire doors, ventilation doors, and refuge chambers. Appropriate portions of such maps or diagrams shall be posted at all shaft stations and in underground shops, lunchrooms, and elsewhere in working areas where persons congregate;

(b) Procedures to show how the miners will be notified of emergency;

(c) An escape plan for each working area in the mine to include instructions showing how each working area should be evacuated. Each such plan shall be posted at appropriate shaft stations and elsewhere in working areas where persons congregate;

(d) A fire fighting plan;

(e) Surface procedure to follow in an emergency, including the notification of proper authorities, preparing rescue equipment, and other equipment which may be used in rescue and recovery operations; and

(f) A statement of the availability of emergency communication and transportation facilities, emergency power and ventilation and location of rescue personnel and equipment.

(Approved by the Office of Management and Budget under OMB control number 1219-0046)

§ 57.11054 Communication with refuge chambers.

Telephone or other voice communication shall be provided between the surface and refuge chambers and such systems shall be independent of the mine power supply.

§ 57.11055 Inclined escapeways.

Any portion of a designated escapeway which is inclined more than 30 degrees from the horizontal and that is more than 300 feet in vertical extent shall be provided with an emergency hoisting facility.

§ 57.11056 Emergency hoists.

The procedure for inspection, testing and maintenance required by standard 57.19120 shall be utilized at least every 30 days for hoists designated as emergency hoists in any evacuation plan.

§ 57.11058 Check-in, check-out system.

Each operator of an underground mine shall establish a check-in and check-out system which shall provide an accurate record of persons in the mine. These records shall be kept on the surface in a place chosen to minimize the danger of destruction by fire or other hazards. Every person underground shall carry a positive means of being identified.

§ 57.11059 Respirable atmosphere for hoist operators underground.

For the protection of operators of hoists located underground which are part of the mine escape and evacuation plan required under standard 57.11053, the hoist operator shall be provided with a respirable atmosphere completely independent of the mine atmosphere. This independent ventilation system shall convert, without contamination, to an approved and properly maintained 2-hour self-contained breathing apparatus to provide a safe means of escape for the hoist operator after the hoisting duties have been completed as prescribed in the mine escape and evacuation plan for that hoist. The hoist operator's independent ventilation system shall be provided by one of the following methods:

(a) A suitable enclosure equipped with a positive pressure ventilation system which may be operated continuously or be capable of immediate activation from within the enclosure during an emergency evacuation. Air for the enclosure's ventilation system shall be provided in one of the following ways—

(1) Air coursed from the surface through a borehole into the hoist enclosure directly or through a metal pipeline from such borehole; or

(2) Air coursed from the surface through metal duct work into the hoist enclosure, although this duct work shall not be located in timber-supported active workings; or

(3) Air supplied by air compressors located on the surface and coursed through metal pipe into the hoist enclosure.

A back-up system shall be provided for a hoist enclosure ventilation system provided by either of the methods set forth in (a)(2) and (a)(3) above. This back-up system shall consist of compressed air stored in containers connected to the enclosure. This back-up system shall provide and maintain a respirable atmosphere in the enclosure for a period of time equal to at least twice the time necessary to complete the evacuation of all persons designated to use that hoist as prescribed in the mine escape and evacuation plan required under standard 57.11053; or

(b) An approved and properly maintained self-contained breathing apparatus system which shall consist of a mask connected to compressed air stored in containers adjacent to the hoist controls. The self-contained breathing system shall provide a minimum of 24 hours of respirable atmosphere to the hoist operator. In addition, the self-contained breathing system shall be capable of a quick connect with the approved 2-hour self-contained breathing apparatus above.

Subpart K—Electricity

Surface and Underground

§57.12001 Circuit overload protection.

Circuits shall be protected against excessive overloads by fuses or circuit breakers of the correct type and capacity.

§ 57.12002 Controls and switches.

Electric equipment and circuits shall be provided with switches or other controls. Such switches or controls shall be of approved design and construction and shall be properly installed.

§ 57.12003 Trailing cable overload protection.

Individual overload protection or short circuit protection shall be provided for the trailing cables of mobile equipment.

§ 57.12004 Electrical conductors.

Electrical conductors shall be of a sufficient size and current-carrying capacity to ensure that a rise in temperature resulting from normal operations will not damage the insulating materials. Electrical conductors exposed to mechanical damage shall be protected.

§ 57.12005 Protection of power conductors from mobile equipment.

Mobile equipment shall not run over power conductors, nor shall loads be dragged over power conductors, unless the conductors are properly bridged or protected.

§ 57.12006 Distribution boxes.

Distribution boxes shall be provided with a disconnecting device for each branch circuit. Such disconnecting devices shall be equipped or designed in such a manner that it can be determined by visual observation when such a device is open and that the circuit is deenergized, and the distribution box shall be labeled to show which circuit each device controls.

§ 57.12007 Junction box connection procedures.

Trailing cable and power-cable connections to junction boxes shall not be made or broken under load.

§ 57.12008 Insulation and fittings for power wires and cables.

Power wires and cables shall be insulated adequately where they pass into or out of electrical compartments. Cables shall enter metal frames of motors, splice boxes, and electrical compartments only through proper fittings. When insulated wires, other than cables, pass through metal frames, the holes shall be substantially bushed with insulated bushings.

§ 57.12010 Isolation or insulation of communication conductors.

Telephone and low-potential signal wire shall be protected, by isolation or suitable insulation, or both, from contacting energized power conductors or any other power source.

§ 57.12011 High-potential electrical conductors.

High-potential electrical conductors shall be covered, insulated, or placed to prevent contact with low potential conductors.

§ 57.12012 Bare signal wires.

The potential on bare signal wires accessible to contact by persons shall not exceed 48 volts.

§ 57.12013 Splices and repairs of power cables.

Permanent splices and repairs made in power cables, including the ground conductor where provided, shall be—

(a) Mechanically strong with electrical conductivity as near as possible to that of the original;

(b) Insulated to a degree at least equal to that of the original, and sealed to exclude moisture; and,

(c) Provided with damage protection as near as possible to that of the original, including good bonding to the outer jacket.

§ 57.12014 Handling energized power cables.

Power cables energized to potentials in excess of 150 volts, phase-to-ground, shall not be moved with equipment unless sleds or slings, insulated from such equipment, are used. When such energized cables are moved manually, insulated hooks, tongs, ropes, or slings shall be used unless suitable protection for persons is provided by other means. This does not prohibit pulling or dragging of cable by the equipment it powers when the cable is physically attached to the equipment by suitable mechanical devices, and the cable is insulated from the equipment in conformance with other standards in this part.

§ 57.12016 Work on electrically-powered equipment.

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.

§ 57.12017 Work on power circuits.

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 preventive devices shall be removed only by the person who installed them or by authorized personnel.

§ 57.12018 Identification of power switches.

Principal power switches shall be labeled to show which units they control, unless identification can be made readily by location.

§ 57.12019 Access to stationary electrical equipment or switchgear.

Where access is necessary, suitable clearance shall be provided at stationary electrical equipment or switchgear.

§ 57.12020 Protection of persons at switchgear.

Dry wooden platforms, insulating mats, or other electrically-nonconductive material shall be kept in place at all switchboards and power-control switches where shock hazards exist. However, metal plates on which a person normally would stand and which are kept at the same potential as the grounded, metal, non-current-carrying parts of the power switches to be operated may be used.

§ 57.12021 Danger signs.

Suitable danger signs shall be posted at all major electrical installations.

§ 57.12022 Authorized persons at major electrical installations.

Areas containing major electrical installations shall be entered only by authorized persons.

§ 57.12023 Guarding electrical connections and resistor grids.

Electrical connections and resistor grids that are difficult or impractical to insulate shall be guarded, unless protection is provided by location.

§ 57.12025 Grounding circuit enclosures.

All metal enclosing or encasing electrical circuits shall be grounded or

provided with equivalent protection. This requirement does not apply to battery-operated equipment.

§ 57.12026 Grounding transformer and switchgear enclosures.

Metal fencing and metal buildings enclosing transformers and switchgear shall be grounded.

§ 57.12027 Grounding mobile equipment.

Frame grounding or equivalent protection shall be provided for mobile equipment powered through trailing cables.

§ 57.12028 Testing grounding systems.

Continuity and resistance of grounding systems shall be tested immediately after installation, repair, and modification; and annually thereafter. A record of the resistance measured during the most recent test shall be made available on a request by the Secretary or his duly authorized representative.

§ 57.12030 Correction of dangerous conditions.

When a potentially dangerous condition is found it shall be corrected before equipment or wiring is energized.

§ 57.12032 Inspection and cover plates.

Inspection and cover plates on electrical equipment and junction boxes shall be kept in place at all times except during testing or repairs.

§ 57.12033 Hand-held electric tools.

Hand-held electric tools shall not be operated at high potential voltages.

§ 57.12034 Guarding around lights.

Portable extension lights, and other lights that by their location present a shock or burn hazard, shall be guarded.

§ 57.12035 Weatherproof lamp sockets.

Lamp sockets shall be of a weatherproof type where they are exposed to weather or wet conditions that may interfere with illumination or create a shock hazard.

§ 57.12036 Fuse removal or replacement.

Fuses shall not be removed or replaced by hand in an energized circuit, and they shall not otherwise be removed or replaced in an energized circuit unless equipment and techniques especially designed to prevent electrical shock are provided and used for such purpose.

§ 57.12037 Fuses in high-potential circuits.

Fuse tongs or hotline tools, shall be used when fuses are removed or replaced in high-potential circuits.

§ 57.12038 Attachment of trailing cables.

Trailing cables shall be attached to machines in a suitable manner to protect the cable from damage and to prevent strain on the electrical connections.

§ 57.12039 Protection of surplus trailing cables.

Surplus trailing cables to shovels, cranes and similar equipment shall be—

(a) Stored in cable boats;

(b) Stored on reels mounted on the equipment; or

(c) Otherwise protected from mechanical damage.

§ 57.12040 Installation of operating controls.

Operating controls shall be installed so that they can be operated without danger of contact with energized conductors.

§ 57.12041 Design of switches and starting boxes.

Switches and starting boxes shall be of safe design and capacity.

§ 57.12042 Track bonding.

Both rails shall be bonded or welded at every joint and rails shall be crossbonded at least every 200 feet if the track serves as the return trolley circuit. When rails are moved, replaced, or broken bonds are discovered, they shall be rebonded within three working shifts.

§ 57.12045 Overhead powerlines.

Overhead high-potential powerlines shall be installed as specified by the National Electrical Code.

§ 57.12047 Guy wires.

Guy wires of poles supporting high-voltage transmission lines shall meet the requirements for grounding or insulator protection of the National Electrical Safety Code, Part 2, entitled "Safety Rules for the Installation and Maintenance of Electric Supply and Communication Lines" (also referred to as National Bureau of Standards Handbook 81, Nov. 1, 1961), and Supplement 2 thereof issued March 1968, which are hereby incorporated by reference and made a part hereof. These publications and documents may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, or may be examined in any Metal and Nonmetal Mine Safety and Health District or Subdistrict Office of the Mine Safety and Health Administration.

§ 57.12048 Communication conductors on power poles.

Telegraph, telephone, or signal wires shall not be installed on the same crossarm with power conductors. When carried on poles supporting powerlines, they shall be installed as specified by the National Electrical Code.

§ 57.12050 Installation of trolley wires.

Trolley wires shall be installed at least seven feet above rails where height permits, and aligned and supported to suitably control sway and sag.

§ 57.12053 Circuits powered from trolley wires.

Ground wires for lighting circuits powered from trolley wires shall be connected securely to the ground return circuit.

Surface Only

§ 57.12065 Short circuit and lightning protection.

Powerlines, including trolley wires, and telephone circuits shall be protected against short circuits and lightning.

§ 57.12066 Guarding trolley wires and bare powerlines.

Where metallic tools or equipment can come in contact with trolley wires or bare powerlines, the lines shall be guarded or deenergized.

§ 57.12067 Installation of transformers.

Transformers shall be totally enclosed, or shall be placed at least 8 feet above the ground, or installed in a transformer house, or surrounded by a substantial fence at least 6 feet high and at least 3 feet from any energized parts, casings, or wiring.

§ 57.12068 Locking transformer enclosures.

Transformer enclosures shall be kept locked against unauthorized entry.

§ 57.12069 Lightning protection for telephone wires and ungrounded conductors.

Each ungrounded conductor or telephone wire that leads underground and is directly exposed to lightning shall be equipped with suitable lightning arrestors of approved type within 100 feet of the point where the circuit enters the mine. Lightning arrestors shall be connected to a low resistence grounding medium on the surface and shall be separated from neutral grounds by a distance of not less than 25 feet.

§ 57.12071 Movement or operation of equipment near high-voltage power lines.

When equipment must be moved or operated near energized high-voltage powerlines (other than trolley lines) and the clearance is less than 10 feet, the lines shall be deenergized or other precautionary measures shall be taken.

Underground Only

§ 57.12080 Bare conductor guards.

Trolley wires and bare power conductors shall be guarded at mantrip loading and unloading points, and at shaft stations. Where such trolley wires and bare power conductors are less than 7 feet above the rail, they shall be guarded at all points where persons work or pass regularly beneath.

§ 57.12081 Bonding metal pipelines to ground return circuits.

All metallic pipelines, 1,000 feet or more in length running parallel to trolley tracks, that are used as a ground return circuit shall be bonded to the return circuit rail at the ends of the pipeline and at intervals not to exceed 500 feet.

§ 57.12082 Isolation of powerlines.

Powerlines shall be well separated or insulated from waterlines, telephone lines and air lines.

§ 57.12083 Support of power cables in shafts and boreholes.

Power cables in shafts and boreholes shall be fastened securely in such a manner as to prevent undue strain on the sheath, insulation, or conductors.

§ 57.12084 Branch circuit disconnecting devices.

Disconnecting switches that can be opened safely under load shall be provided underground at all branch circuits extending from primary power circuits near shafts, adits, levels and boreholes.

§ 57.12085 Transformer stations.

Transformer stations shall be enclosed to prevent persons from unintentionally or inadvertently contacting energized parts.

§ 57.12086 Location of trolley wire.

Trolley and trolley feeder wire shall be installed opposite the clearance side of haulageways. However, this standard does not apply where physical limitations would prevent the safe installation or use of such trolley and trolley feeder wire.

§ 57.12088 Splicing trailing cables.

No splice, except a vulcanized splice or its equivalent, shall be made in a trailing cable within 25 feet of the machine unless the machine is equipped with a cable reel or other power feed cable payout-retrieval system. However, a temporary splice may be made to move the equipment for repair.

Subpart L—Compressed Air and Boilers

§ 57.13001 General requirements for boilers and pressure vessels.

All boilers and pressure vessels shall be constructed, installed, and maintained in accordance with the standards and specifications of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code.

§ 57.13010 Reciprocating-type air compressors.

(a) Reciprocating-type air compressors rated over 10 horsepower shall be equipped with automatic temperature-actuated shutoff mechanisms which shall be set or adjusted to the compressor when the normal operating temperature is exceeded by more than 25 percent.

(b) However, this standard does not apply to reciprocating-type air compressors rated over 10 horsepower if equipped with fusible plugs that were installed in the compressor discharge lines before November 15, 1979, and designed to melt at temperatures at least 50 degrees below the flash point of the compressors' lubricating oil.

§ 57.13011 Air receiver tanks.

Air receiver tanks shall be equipped with one or more automatic pressure-relief valves. The total relieving capacity of the relief valves shall prevent pressure from exceeding the maximum allowable working pressure in a receiver tank by not more than 10 percent. Air receiver tanks also shall be equipped with indicating pressure gages which accurately measure the pressure within the air receiver tanks.

§ 57.13012 Compressor air intakes.

Compressor air intakes shall be installed to ensure that only clean, uncontaminated air enters the compressors.

§ 57.13015 Inspection of compressed-air receivers and other unfired pressure vessels.

(a) Compressed-air receivers and other unfired pressure vessels shall be inspected by inspectors holding a valid National Board Commission and in accordance with the applicable chapters of the National Board Inspection Code, a Manual for Boiler and Pressure Vessel Inspectors, 1979. This code is incorporated by reference and made a part of this standard. It may be examined at any Metal and Nonmetal Mine Safety and Health District Office of the Mine Safety and Health Administration, and may be obtained from the publisher, the National Board of Boiler and Pressure Vessel Inspectors, 1055 Crupper Avenue, Columbus, Ohio 43229.

(b) Records of inspections shall be kept in accordance with requirements of the National Board Inspection Code, and the records shall be made available to the Secretary or his authorized representative.

§ 57.13017 Compressor discharge pipes.

Compressor discharge pipes where carbon build-up may occur shall be cleaned periodically as recommended by the manufacturer, but no less frequently than once every two years.

§ 57.13019 Pressure system repairs.

Repairs involving the pressure system of compressors, receivers, or compressed-air-powered equipment shall not be attempted until the pressure has been bled off.

§ 57.13020 Use of compressed air.

At no time shall compressed air be directed toward a person. When compressed air is used, all necessary precautions shall be taken to protect persons from injury.

§ 57.13021 High-pressure hose connections.

Except where automatic shutoff valves are used, safety chains or other suitable locking devices shall be used at connections to machines of high-pressure hose lines of ¾-inch inside diameter or larger, and between high-pressure hose lines of ¾-inch inside diameter or larger, where a connection failure would create a hazard.

§ 57.13030 Boilers.

(a) Fired pressure vessels (boilers) shall be equipped with water level gauges, pressure gauges, automatic pressure-relief valves, blowdown piping, and other safety devices approved by the American Society of Mechanical Engineers to protect against hazards from overpressure, flameouts, fuel interruptions and low water level, all as required by the appropriate sections, chapters and appendices listed in paragraphs (b) (1) and (2) of this section.

(b) These gauges, devices and piping shall be designed, installed, operated, maintained, repaired, altered, inspected, and tested by inspectors holding a valid National Board Commission and in accordance with the following listed sections, chapters and appendices:

(1) The ASME Boiler and Pressure Vessel Code, 1977, published by the American Society of Mechanical Engineers.

Section and Title

I Power Boilers
II Material Specifications—Part A—Ferrous
II Material Specifications—Part B—Nonferrous
II Material Specifications—Part C—Welding Rods, Electrodes, and Filler Metals
IV Heating Boilers
V Nondestructive Examination
VI Recommended Rules for Care and Operation of Heating Boilers
VII Recommended Rules for Care of Power Boilers

(2) The National Board Inspection Code, a Manual for Boiler and Pressure Vessel Inspectors, 1979, published by the National Board of Boiler and Pressure Vessel Inspectors.

Chapter and Title

I Glossary of Terms
II Inspection of Boilers and Pressure Vessels
III Repairs and Alterations to Boiler and Pressure Vessels by Welding
IV Shop Inspection of Boilers and Pressure Vessels
V Inservice Inspection of Pressure Vessels by Authorized Owner-User Inspection Agencies

Appendix and Title

A Safety and Safety Relief Valves
B Non-ASME Code Boilers and Pressure Vessels
C Storage of Mild Steel Covered Arc Welding Electrodes
D-R National Board "R" (Repair) Symbol Stamp
D-VR National Board "VR" (Repair of Safety and Safety Relief Valve) Symbol Stamp
D-VR1 Certificate of Authorization for Repair Symbol Stamp for Safety and Safety Relief Valves
D-VR2 Outline of Basic Elements of Written Quality Control System for Repairers of ASME Safety and Safety Relief Valves
D-VR3 Nameplate Stamping for "VR"
E Owner-User Inspection Agencies
F Inspection Forms

(c) Records of inspections and repairs shall be kept in accordance with the requirements of the ASME Boiler and Pressure Vessel Code and the National Board Inspection Code. The records shall be made available to the Secretary or his authorized representative.

(d) Sections of the ASME Boiler and Pressure Vessel Code, 1977, listed in paragraph (b)(1) of this section, and chapters and appendices of the National Board Inspection Code, 1979, listed in paragraph (b)(2) of this section, are incorporated by reference and made a part of this standard. These publications may be obtained from the publishers, the American Society of Mechanical Engineers, 345 East Forty-seventh Street, New York, N.Y. 10017, and the National Board of Boiler and Pressure Vessel Inspectors, 1055 Crupper Avenue, Columbus, Ohio 43229. The publication may be examined at any Metal and Nonmetal Mine Safety and Health District Office of the Mine Safety and Health Administration.

Subpart M—Machinery and Equipment

Guards

§ 57.14001 Moving machine parts.

Gears; sprockets; chains; drive, head, tail, and takeup pulleys; flywheels; couplings; shafts; sawblades; fan inlets; and similar exposed moving machine parts which may be contacted by persons, and which may cause injury to persons, shall be guarded.

§ 57.14002 Guarding overhead belts.

Overhead belts shall be guarded if the whipping action from a broken line would be hazardous to persons below.

§ 57.14003 Conveyors.

Guards at conveyor-drive, conveyor-head, and conveyor-tail pulleys shall extend a distance sufficient to prevent a person from accidentally reaching behind the guard and becoming caught between the belt and the pulley.

§ 57.14006 Placement of guards during machinery operation.

Except when testing the machinery, guards shall be securely in place while machinery is being operated.

§ 57.14007 Construction and maintenance.

Guards shall be of substantial construction and properly maintained.

§ 57.14008 Stationary grinding machines.

Stationary grinding machines other than special bit grinders shall be equipped with—

(a) Peripheral hoods (less than 90° throat openings) capable of withstanding the force of a bursting wheel;

(b) Adjustable tool rests set as close as practical to the wheel; and

(c) Safety washers.

§ 57.14009 Grinding wheels.

Grinding wheels shall be operated within the specifications of the manufacturer of the wheel.

§ 57.14010 Hand-held power tools.

Hand-held power tools, other than rock drills, shall be equipped with controls requiring constant hand or finger pressure to operate the tools or shall be equipped with friction or other equivalent safety devices.

§ 57.14011 Flying or falling objects.

Guards, shields, or other suitable protection shall be provided in areas where flying or falling materials present a hazard to personnel.

§ 57.14013 Falling object protection.

Fork-lift trucks, front-end loaders, and bulldozers shall be provided with substantial canopies when necessary to protect the operator.

§ 57.14014 Eye protection with grinding wheels.

Face shields or goggles, in good condition, shall be worn when operating a grinding wheel.

Methods and Procedures

§ 57.14026 Removal of unsafe equipment or machinery.

Unsafe equipment or machinery shall be removed from service immediately.

§ 57.14027 Machinery and equipment operators.

Operation of machinery or equipment shall be assigned only to competent persons.

§ 57.14029 Machinery repairs and maintenance.

Repairs or maintenance shall not be performed on machinery until the power is off and the machinery is blocked against motion, except where machinery motion is necessary to make adjustments.

§ 57.14030 Blocking equipment in raised position.

Persons shall not work on or from a piece of mobile equipment in a raised position until it has been blocked in place securely. This does not preclude the use of equipment specifically designed as elevated mobile work platforms.

§ 57.14031 Shifting drive belts.

Drive belts shall not be shifted while in motion unless the machines are provided with mechanical shifters.

§ 57.14032 Guiding and hand feeding chains, ropes, and belts.

Belts, chains, and ropes shall not be guided onto power-driven moving pulleys, sprockets, or drums with the hands except on slow moving equipment especially designed for hand feeding.

§ 57.14033 Manual cleaning of conveyor pulleys.

Pulleys of conveyors shall not be cleaned manually while the conveyor is in motion.

§ 57.14034 Applying belt dressing.

Belt dressing shall not be applied manually while belts are in motion unless an aerosol-type dressing is used.

§ 57.14035 Machinery lubrication.

Machinery shall not be lubricated while in motion where a hazard exists, unless equipped with extended fittings or cups.

§ 57.14036 Use of tools and equipment.

Tools and equipment shall not be used beyond the design capacity intended by the manufacturer, where such use may create a hazard to personnel.

§ 57.14045 Ventilation and shielding for welding.

Welding operations shall be shielded and well-ventilated.

Subpart N—Personal Protection

Surface and Underground

§ 57.15001 First aid materials.

Adequate first-aid materials, including stretchers and blankets shall be provided at places convenient to all working areas. Water or neutralizing agents shall be available where corrosive chemicals or other harmful substances are stored, handled, or used.

§ 57.15002 Hard hats.

All persons shall wear suitable hard hats when in or around a mine or plant where falling objects may create a hazard.

§ 57.15003 Protective footwear.

All persons shall wear suitable protective footwear when in or around an area of a mine or plant where a hazard exists which could cause an injury to the feet.

§ 57.15004 Eye protection.

All persons shall wear safety glasses, goggles, or face shields or other suitable protective devices when in or around an area of a mine or plant where a hazard exists which could cause injury to unprotected eyes.

§ 57.15005 Safety belts and lines.

Safety belts and lines shall be worn when persons work where there is danger of falling; a second person shall tend the lifeline when bins, tanks, or other dangerous areas are entered.

§ 57.15006 Protective equipment and clothing for hazards and irritants.

Special protective equipment and special protective clothing shall be provided, maintained in a sanitary and reliable condition and used whenever hazards of process or environment, chemical hazards, radiological hazards, or mechancial irritants are encountered in a manner capable of causing injury or impairment.

§ 57.15007 Protective equipment or clothing for welding, cutting, or working with molten metal.

Protective clothing or equipment and face shields or goggles shall be worn when welding, cutting, or working with molten metal.

Surface Only

§ 57.15020 Life jackets and belts.

Life jackets or belts shall be worn where there is danger from falling into water.

Underground Only

§ 57.15030 Provisions and maintenance of self-rescue devices.

A 1-hour self-rescue device approved by the Mine Safety and Health Administration shall be made available by the operator to all personnel underground. Each operator shall maintain self-rescue devices in good condition.

§ 57.15031 Location of self-rescue devices.

(a) Except as provided in paragraph (b) and (c) of this section, self-rescue devices meeting the requirements of standard 57.15030 shall be worn or carried by all persons underground.

(b) Where the wearing or carrying of self-rescue devices meeting the requirements of standard 57.15030 is hazardous to a person, such self-rescue devices shall be located at a distance no greater than 25 feet from such person.

(c) Where a person works on or around mobile equipment, self-rescue devices may be placed in a readily accessible location on such equipment.

Subpart O—Materials Storage and Handling

§ 57.16001 Stacking and storage of materials.

Supplies shall not be stacked or stored in a manner which creates tripping or fall-of-material hazards.

§ 57.16002 Bins, hoppers, silos, tanks, and surge piles.

(a) Bins, hoppers, silos, tanks, and surge piles, where loose unconsolidated materials are stored, handled or transferred shall be—

(1) Equipped with mechanical devices or other effective means of handling materials so that during normal operations persons are not required to enter or work where they are exposed to entrapment by the caving or sliding of materials; and

(2) Equipped with supply and discharge operating controls. The controls shall be located so that spills or overruns will not endanger persons.

(b) Where persons are required to move around or over any facility listed in this standard, suitable walkways or passageways shall be provided.

(c) Where persons are required to enter any facility listed in this standard for maintenance or inspection purposes, ladders, platforms, or staging shall be provided. No person shall enter the facility until the supply and discharge of materials have ceased and the supply and discharge equipment is locked out. Persons entering the facility shall wear a safety belt or harness equipped with a lifeline suitably fastened. A second person, similarly equipped, shall be stationed near where the lifeline is fastened and shall constantly adjust it or keep it tight as needed, with minimum slack.

§ 57.16003 Storage of hazardous materials.

Materials that can create hazards if accidentally liberated from their containers shall be stored in a manner that minimizes the dangers.

§ 57.16004 Containers for hazardous materials.

Hazardous materials shall be stored in containers of a type approved for such use by recognized agencies; such containers shall be labeled appropriately.

§ 57.16005 Securing gas cylinders.

Compressed and liquid gas cylinders shall be secured in a safe manner.

§ 57.16006 Protection of gas cylinder valves.

Valves on compressed gas cylinders shall be protected by covers when being transported or stored, and by a safe location when the cylinders are in use.

§ 57.16007 Taglines, hitches, and slings.

(a) Taglines shall be attached to loads that may require steadying or guidance while suspended.

(b) Hitches and slings used to hoist materials shall be suitable for the particular material handled.

§ 57.16009 Suspended loads.

Persons shall stay clear of suspended loads.

§ 57.16010 Dropping materials from overhead.

To protect personnel, material shall not be dropped from an overhead elevation until the drop area is first cleared of personnel and the area is then either guarded or a suitable warning is given.

§ 57.16011 Riding hoisted loads or on the hoist hook.

Persons shall not ride on loads being moved by cranes or derricks, nor shall they ride the hoisting hooks unless such method eliminates a greater hazard.

§ 57.16012 Storage of incompatible substances.

Chemical substances, including concentrated acids and alkalies, shall be stored to prevent inadvertent contact with each other or with other substances, where such contact could cause a violent reaction or the liberation of harmful fumes or gases.

§ 57.16013 Working with molten metal.

Suitable warning shall be given before molten metal is poured and before a container of molten metal is moved.

§ 57.16014 Operator-carrying overhead cranes.

Operator-carrying overhead cranes shall be provided with—

(a) Bumpers at each end of each rail;

(b) Automatic switches to halt uptravel of the blocks before they strike the hoist;

(c) Effective audible warning signals within easy reach of the operator; and

(d) A means to lock out the disconnect switch.

§ 57.16015 Work or travel on overhead crane bridges.

No person shall work from or travel on the bridge of an overhead crane unless the bridge is provided with substantial footwalks with toeboards and railings the length of the bridge.

§ 57.16016 Lift trucks.

Fork and other similar types of lift trucks shall be operated with the—

(a) Upright tilted back to steady and secure the load;

(b) Load in the upgrade position when ascending or descending grades in excess of 10 percent;

(c) Load not raised or lowered enroute except for minor adjustments; and

(d) Load-engaging device downgrade when traveling unloaded on all grades.

§ 57.16017 Hoisting heavy equipment or material.

Where the stretching or contraction of a hoist rope could create a hazard, chairs or other suitable blocking shall be used to support conveyances at shaft landings before heavy equipment of material is loaded or unloaded.

Subpart P—Illumination

§ 57.17001 Illumination of surface working areas.

Illumination sufficient to provide safe working conditions shall be provided in and on all surface structures, paths, walkways, stairways, switch panels, loading and dumping sites, and working areas.

§ 57.17010 Electric lamps.

Individual electric lamps shall be carried for illumination by all persons underground.

Subpart Q—Safety Programs

Surface and Underground

§ 57.18002 Examination of working places.

(a) A competent person designated by the operator shall examine each working place at least once each shift for conditions which may adversely affect safety or health. The operator shall promptly initiate appropriate action to correct such conditions.

(b) A record that such examinations were conducted shall be kept by the operator for a period of one year, and shall be made available for review by the Secretary or his authorized representative.

(c) In addition, conditions that may present an imminent danger which are noted by the person conducting the examination shall be brought to the immediate attention of the operator who shall withdraw all persons from the area affected (except persons referred to in section 104(c) of the Federal Mine Safety and Health Act of 1977) until the danger is abated.

§ 57.18006 New employees.

New employees shall be indoctrinated in safety rules and safe work procedures.

§ 57.18009 Designation of person in charge.

When persons are working at the mine, a competent person designated by the mine operator shall be in attendance to take charge in case of an emergency.

§ 57.18010 First aid training.

Selected supervisors shall be trained in first aid. First aid training shall be made available to all interested employees.

§ 57.18012 Emergency telephone numbers.

Emergency telephone numbers shall be posted at appropriate telephones.

§ 57.18013 Emergency communications system.

A suitable communication system shall be provided at the mine to obtain assistance in the event of an emergency.

§ 57.18014 Emergency medical assistance and transportation.

Arrangements shall be made in advance for obtaining emergency medical assistance and transportation for injured persons.

Surface Only

§ 57.18020 Working alone.

No employee shall be assigned, or allowed, or be required to perform work alone in any area where hazardous conditions exist that would endanger his safety unless he can communicate with others, can be heard, or can be seen.

Underground Only

§ 57.18025 Working alone.

No employee shall be assigned, or allowed, or be required to perform work alone in any area where hazardous conditions exist that would endanger his safety unless his cries for help can be heard or he can be seen.

§ 57.18028 Mine emergency and self-rescuer training.

(a) On an annual basis, all persons who are required to go underground shall be instructed in the Mine Safety and Health Administration approved course contained in Bureau of Mines Instruction Guide 19, "Mine Emergency Training" (September 1972). The instruction shall be given by MSHA personnel or by persons who are certified by the District Manager of the area in which the mine is located.

(b) On an annual basis, all persons who go underground shall be instructed in the Mine Safety and Health Administration course contained in Bureau of Mines Instruction Guide 2, "MSA W–65 Self-Rescuer" (March 1972) or Bureau of Mines Instruction Guide 3, "Permissible Drager 810 Respirator for Self-Rescue" (March 1972). The instruction shall be given by MSHA personnel or by persons who are certified by the District Manager of the area in which the mine is located: provided, however, that if a Mine Safety and Health Administration instructor or a certified instructor is not immediately available such instruction of new employees in self-rescuers may be conducted by qualified company personnel who are not certified, but who have obtained provisional approval from the District Manager. Any person who has not had self-rescuer instruction within 12 months immediately preceding going underground shall be instructed in the use of self-rescuers before going underground.

(c) All instructional material, handouts, visual aids, and other such

teaching accessories used by the operator in the courses prescribed in paragraphs (a) and (b) shall be available for inspection by the Secretary or his authorized representative.

(d) Records of all instruction shall be kept at the mine site or nearest mine office at least 2 years from the date of instruction. Upon completion of such instruction, copies of the record shall be submitted to the District Manager.

(e) The Bureau of Mines instruction guides to which reference is made in items (a) and (b) of this standard are hereby incorporated by reference and made a part hereof. The incorporated instruction guides are available and shall be provided upon request made to any Metal and Nonmetal Mine Safety and Health Subdistrict Office.

Subpart R—Personnel Hoisting

§ 57.19000 Application.

(a) The hoisting standards in this subpart apply to those hoists and appurtenances used for hoisting persons. However, where persons may be endangered by hoists and appurtenances used solely for handling ore, rock, and materials, the appropriate standards should be applied.

(b) Standards 57.19021 through 57.19028 shall apply to wire ropes in service used to hoist—

(1) Persons in shafts and slopes underground;

(2) Persons with an incline hoist on the surface; or

(3) Loads in shaft or slope development when persons work below suspended loads.

(4) These standards do not apply to wire ropes used for elevators.

(c) Emergency hoisting facilities should conform to the extent possible to safety requirements for other hoists, and should be adequate to remove the persons from the mine with a minimum of delay.

Hoists

§ 57.19001 Rated capacities.

Hoists shall have rated capacities consistent with the loads handled and the recommended safety factors of the ropes used.

§ 57.19002 Anchoring.

Hoists shall be anchored securely.

§ 57.19003 Driving mechanism connections.

Belt, rope, or chains shall not be used to connect driving mechanisms to man hoists.

§ 57.19004 Brakes.

Any hoist used to hoist persons shall be equipped with a brake or brakes which shall be capable of holding its fully loaded cage, skip, or bucket at any point in the shaft.

§ 57.19005 Locking mechanism for clutch.

The operating mechanism of the clutch of every man-hoist drum shall be provided with a locking mechanism, or interlocked electrically or mechanically with the brake to prevent accidental withdrawal of the clutch.

§ 57.19006 Automatic hoist braking devices.

Automatic hoists shall be provided with devices that automatically apply the brakes in the event of power failure.

§ 57.19007 Overtravel and overspeed devices.

All man hoists shall be provided with devices to prevent overtravel. When utilized in shafts exceeding 100 feet in depth, such hoists shall also be provided with overspeed devices.

§ 57.19008 Friction hoist synchronizing mechanisms.

Where creep or slip may alter the effective position of safety devices, friction hoists shall be equipped with synchronizing mechanisms that recalibrate the overtravel devices and position indicators.

§ 57.19009 Position indicator.

An accurate and reliable indicator of the position of the cage, skip, bucket, or cars in the shaft shall be provided.

§ 57.19010 Location of hoist controls.

Hoist controls shall be placed or housed so that the noise from machinery or other sources will not prevent hoistmen from hearing signals.

§ 57.19011 Drum flanges.

Flanges on drums shall extend radially a minimum of 4 inches or three rope diameters beyond the last wrap, whichever is the lesser.

§ 47.19012 Grooved drums.

Where grooved drums are used, the grooves shall be of suitable size and pitch for the ropes used.

§ 57.19013 Diesel- and other fuel-injection-powered hoists.

Where any diesel or similar fuel-injection engine is used to power a hoist, the engine shall be equipped with a damper or other cutoff in its air intake system. The control handle shall be clearly labeled to indicate that its intended function is for emergency stopping only.

§ 57.19014 Friction hoist overtravel protection.

In a friction hoist installation, tapered guides or other approved devices shall be installed above and below the limits of regular travel of the conveyance and arranged to prevent overtravel in the event of failure of other devices.

§ 57.19017 Emergency braking for electric hoists.

Each electric hoist shall be equipped with a manually-operable switch that will initiate emergency braking action to bring the conveyance and the counterbalance safely to rest. This switch shall be located within reach of the hoistman in case the manual controls of the hoist fail.

§ 57.19018 Overtravel by-pass switches.

When an overtravel by-pass switch is installed, the switch shall function so as to allow the conveyance to the moved through the overtravel position when the switch is held in the closed position by the hoistman. The overtravel by-pass switch shall return automatically to the open position when released by the hoistman.

Wire Ropes

Authority: 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).

§ 57.19019 Guide ropes.

If guide ropes are used in shafts for personnel hoisting applications other than shaft development, the nominal strength (manufacturer's published catalog strength) of the guide rope at installation shall meet the minimum value calculated as follows: Minimum value = Static Load × 5.0.

§ 57.19021 Minimum rope strength.

At installation, the nominal strength (manufacturer's published catalog strength) of wire ropes used for hoisting shall meet the minimum rope strength values obtained by the following formulas in which "L" equals the maximum suspended rope length in feet:

(a) *Winding drum ropes* (all constructions, including rotation resistant).

For rope lengths less than 3,000 feet:
Minimum Value = Static Load × (7.0 − 0.001L)
For rope lengths 3,000 feet or greater:
Minimum Value = Static Load × 4.0.

(b) *Friction drum ropes.*

For rope lengths less than 4,000 feet:
Minimum Value = Static Load × (7.0 − 0.0005L)
For rope lengths 4,000 feet or greater:
Minimum Value = Static Load × 5.0.

(c) *Tail ropes* (balance ropes).

Minimum Value = Weight or Rope × 7.0

§ 57.19022 Initial measurement.

After initial rope stretch but before visible wear occurs, the rope diameter of newly installed wire ropes shall be measured at least once in every third interval of active length and the measurements averaged to establish a baseline for subsequent measurements. A record of the measurements and the date shall be made by the person taking the measurements. This record shall be retained until the rope is retired from service.

(Approved by the Office of Management and Budget under OMB control number 1219-0034)

§ 57.19023 Examinations.

(a) At least once every fourteen calendar days, each wire rope in service shall be visually examined along its entire active length for visible structural damage, corrosion, and improper lubrication or dressing. In addition, visual examination for wear and broken wires shall be made at stress points, including the area near attachments, where the rope rests on sheaves, where the rope leaves the drum, at drum crossovers, and at change-of-layer regions. When any visible condition that results in a reduction of rope strength is present, the affected portion of the rope shall be examined on a daily basis.

(b) Before any person is hoisted with a newly installed wire rope or any wire rope that has not been examined in the previous fourteen calendar days, the wire rope shall be examined in accordance with paragraph (a) of this section.

(c) At least once every six months, nondestructive tests shall be conducted of the active length of the rope, or rope diameter measurements shall be made—

(1) Wherever wear is evident;

(2) Where the hoist rope rests on sheaves at regular stopping points;

(3) Where the hoist rope leaves the drum at regular stopping points; and

(4) At drum crossover and change-of-layer regions.

(d) At the completion of each examination required by paragraph (a) of this section, the person making the examination shall certify, by signature and date, that the examination has been made. If any condition listed in paragraph (a) of this section is present, the person conducting the examination shall make a record of the condition and the date. Certifications and records of examinations shall be retained for one year.

(e) The person making the measurements or nondestructive tests as required by paragraph (c) of this section shall record the measurements or test results and the date. This record shall be retained until the rope is retired from service.

(Approved by the Office of Management and Budget under OMB control number 1219-0034)

§ 57.19024 Retirement criteria.

Unless damage or deterioration is removed by cutoff, wire ropes shall be removed from service when any of the following conditions occurs:

(a) The number of broken wires within a rope lay length, excluding filler wires, exceeds either—

(1) Five percent of the total number of wires; or

(2) Fifteen percent of the total number of wires within any strand.

(b) On a regular lay rope, more than one broken wire in the valley between strands in one rope lay length.

(c) A loss of more than one-third of the original diameter of the outer wires.

(d) Rope deterioration from corrosion.

(e) Distortion of the rope structure.

(f) Heat damage from any source.

(g) Diameter reduction due to wear that exceeds six percent of the baseline diameter measurement.

(h) Loss of more than ten percent of rope strength as determined by nondestructive testing.

§ 57.19025 Load end attachments.

(a) Wire rope shall be attached to the load by a method that develops at least 80 percent of the nominal strength of the rope.

(b) Except for terminations where use of other materials is a design feature, zinc (spelter) shall be used for socketing wire ropes. Design feature means either the manufacturer's original design or a design approved by a registered professional engineer

(c) Load end attachment methods using splices are prohibited.

§ 57.19026 Drum end attachment.

(a) For drum end attachment, wire rope shall be attached—

(1) Securely by clips after making one full turn around the drum spoke;

(2) Securely by clips after making one full turn around the shaft, if the drum is fixed to the shaft; or

(3) By properly assembled anchor bolts, clamps, or wedges, provided that the attachment is a design feature of the hoist drum. Design feature means either the manufacturer's original design or a design approved by a registered professional engineer.

(b) A minimum of three full turns of wire rope shall be on the drum when the rope is extended to its maximum working length.

§ 57.19027 End attachment reterminations.

Damaged or deteriorated wire rope shall be removed by cutoff and the rope reterminated where there is—

(a) More than one broken wire at an attachment;

(b) Improper installation of an attachment;

(c) Slippage at an attachment; or

(d) Evidence of deterioration from corrosion at an attachment.

§ 57.19028 End attachment replacement.

Wire rope attachments shall be replaced when cracked, deformed, or excessively worn.

§ 57.19030 Safety device attachments.

Safety device attachments to hoist ropes shall be selected, installed, and maintained according to manufacturers' specifications to minimize internal corrosion and weakening of the hoist rope.

Headframes and Sheaves

§ 57.19035 Headframe design.

All headframes shall be constructed with suitable design considerations to allow for all dead loads, live loads, and wind loads.

§ 57.19036 Headframe height.

Headframes shall be high enough to provide clearance for overtravel and safe stopping of the conveyance.

§ 57.19037 Fleet angles.

Fleet angles on hoists installed after November 15, 1979, shall not be greater than one and one-half degrees for smooth drums or two degrees for grooved drums.

§ 57.19038 Platforms around elevated head sheaves.

Platforms with toeboards and handrails shall be provided around elevated head sheaves.

Conveyances

§ 57.19045 Metal bonnets.

Man cages and skips used for hoisting or lowering employees or other persons in any vertical shaft or any incline shaft with an angle of inclination of forty-five degrees from the horizontal, shall be covered with a metal bonnet.

§ 57.19049 Hoisting persons in buckets.

Buckets shall not be used to hoist persons except during shaft sinking operations, inspection, maintenance, and repairs.

§ 57.19050 Bucket requirements.

Buckets used to hoist persons during vertical shaft sinking operations shall—

(a) Be securely attached to a crosshead when traveling in either direction between the lower and upper crosshead parking locations;

(b) Have overhead protection when the shaft depth exceeds 50 feet;

(c) Have sufficient depth or a suitably designed platform to transport persons safely in a standing position; and

(d) Have devices to prevent accidental dumping where the bucket is supported by a bail attached to its lower half.

§ 57.19054 Rope guides.

Where rope guides are used in shafts other than in shaft sinking operations, the rope guides shall be a type of lock coil construction.

Hoisting Procedures

§ 57.19055 Availability of hoist operator for manual hoists.

When a manually operated hoist is used, a qualified hoistman shall remain within hearing of the telephone or signal device at all times while any person is underground.

§ 57.19056 Availability of hoist operator for automatic hoists.

When automatic hoisting is used, a competent operator of the hoist shall be readily available at or near the hoisting device while any person is underground.

§ 57.19057 Hoist operator's physical fitness.

No person shall operate a hoist unless within the preceding 12 months he has had a medical examination by a qualified, licensed physician who shall certify his fitness to perform this duty. Such certification shall be available at the mine.

§ 57.19058 Experienced hoist operators.

Only experienced hoistmen shall operate the hoist except in cases of emergency and in the training of new hoistmen.

§ 57.19061 Maximum hoisting speeds.

The safe speed for hoisting persons shall be determined for each shaft, and this speed shall not be exceeded. Persons shall not be hoisted at a speed faster than 2,500 feet per minute, except in an emergency.

§ 57.19062 Maximum acceleration and deceleration.

Maximum normal operating acceleration and deceleration shall not exceed 6 feet per second per second. During emergency braking, the deceleration shall not exceed 16 feet per second per second.

§ 57.19063 Persons allowed in hoist room.

Only authorized persons shall be in hoist rooms.

§ 57.19065 Lowering conveyances by the brakes.

Conveyances shall not be lowered by the brakes alone except during emergencies.

§ 57.19066 Maximum riders in a conveyance.

In shafts inclined over 45 degrees, the operator shall determine and post in the conveyance or at each shaft station the maximum number of persons permitted to ride in a hoisting conveyance at any one time. Each person shall be provided a minimum of 1.5 square feet of floor space.

§ 57.19067 Trips during shift changes.

During shift changes, an authorized person shall be in charge of each trip in which persons are hoisted.

§ 57.19068 Orderly conduct in conveyances.

Persons shall enter, ride, and leave conveyances in an orderly manner.

§ 57.19069 Entering and leaving conveyances.

Persons shall not enter or leave conveyances which are in motion or after a signal to move the conveyance has been given to the hoistman.

§ 57.19070 Closing cage doors or gates.

Cage doors or gates shall be closed while persons are being hoisted; they shall not be opened until the cage has come to a stop.

§ 57.19071 Riding in skips or buckets.

Persons shall not ride in skips or buckets with muck, supplies, materials, or tools other than small hand tools.

§ 57.19072 Skips and cages in same compartment.

When combinations of cages and skips are used in the same compartment, the cages shall be enclosed to protect personnel from flying material and the hoist speed reduced to man-speed as defined in standard 57.19061, but not to exceed 1,000 feet per minute. Muck shall not be hoisted with personnel during shift changes.

§ 57.19073 Hoisting during shift changes.

Rock or supplies shall not be hoisted in the same shaft as persons during shift changes, unless the compartments and dumping bins are partitioned to prevent spillage into the cage compartment.

§ 57.19074 Riding the bail, rim, bonnet, or crosshead.

Persons shall not ride the bail, rim, bonnet, or crosshead of any shaft conveyance except when necessary for inspection and maintenance, and then only when suitable protection for persons is provided.

§ 57.19075 Use of open hooks.

Open hooks shall not be used to hoist buckets or other conveyances.

§ 57.19076 Maximum speeds for hoisting persons in buckets.

When persons are hoisted in buckets, speeds shall not exceed 500 feet per minute and shall not exceed 200 feet per minute when within 100 feet of the intended station.

§ 57.19077 Lowering buckets.

Buckets shall be stopped about 15 feet from the shaft bottom to await a signal from one of the crew on the bottom for further lowering.

§ 57.19078 Hoisting buckets from the shaft bottom.

All buckets shall be stopped after being raised about three feet above the shaft bottom. A bucket shall be stabilized before a hoisting signal is given to continue hoisting the bucket to the crosshead. After a hoisting signal is given, hoisting to the crosshead shall be at a minimum speed. The signaling device shall be attended constantly until a bucket reaches the guides. When persons are hoisted, the signaling devices shall be attended until the crosshead has been engaged.

§ 57.19079 Blocking mine cars.

Where mine cars are hoisted by cage or skip, means for blocking cars shall be provided at all landings and also on the cage.

§ 57.19080 Hoisting tools, timbers, and other materials.

When tools, timbers, or other materials are being lowered or raised in a shaft by means of a bucket, skip, or cage, they shall be secured or so placed that they will not strike the sides of the shaft.

§ 57.19081 Conveyances not in use.

When conveyances controlled by a hoist operator are not in use, they shall be released and the conveyances shall be raised or lowered a suitable distance to prevent persons from boarding or loading the conveyances.

§ 57.19083 Overtravel backout device.

A manually operated device shall be installed on each electric hoist that will allow the conveyance or counterbalance

to be removed from an overtravel position. Such device shall not release the brake, or brakes, holding the overtravelled conveyance or counterbalance until sufficient drive motor torque has been developed to assure movement of the conveyance or counterbalance in the correct direction only.

Signaling

§ 57.19090 Dual signaling systems.

There shall be at least two effective approved methods of signaling between each of the shaft stations and the hoist room, one of which shall be a telephone or speaking tube.

§ 57.19091 Signaling instructions to hoist operator.

Hoist operators shall accept hoisting instructions only by the regular signaling system unless it is out of order. In such an event, and during other emergencies, the hoist operator shall accept instructions to direct movement of the conveyances only from authorized persons.

§ 57.19092 Signaling from conveyances.

A method shall be provided to signal the hoist operator from cages or other conveyances at any point in the shaft.

§ 57.19093 Standard signal code.

A standard code of hoisting signals shall be adopted and used at each mine. The movement of a shaft conveyance on a "one bell" signal is prohibited.

§ 57.19094 Posting signal code.

A legible signal code shall be posted prominently in the hoist house within easy view of the hoistmen, and at each place where signals are given or received.

§ 57.19095 Location of signal devices.

Hoisting signal devices shall be positioned within easy reach of persons on the shaft bottom or constantly attended by a person stationed on the lower deck of the sinking platform.

§ 57.19096 Familiarity with signal code.

Any person reponsible for receiving or giving signals for cages, skips, and mantrips when persons or materials are being transported shall be familiar with the posted signaling code.

Shafts

§ 57.19100 Shaft landing gates.

Shaft landings shall be equipped with substantial safety gates so constructed that materials will not go through or under them; gates shall be closed except when loading or unloading shaft conveyances.

§ 57.19101 Stopblocks and derail switches.

Positive stopblocks or a derail switch shall be installed on all tracks leading to a shaft collar or landing.

§ 57.19102 Shaft guides.

A means shall be provided to guide the movement of a shaft conveyance.

§ 57.19103 Dumping facilities and loading pockets.

Dumping facilities and loading pockets shall be constructed so as to minimize spillage into the shaft.

§ 57.19104 Clearance at shaft stations.

Suitable clearance at shaft stations shall be provided to allow safe movement of persons, equipment and materials.

§ 57.19105 Landings with more than one shaft entrance.

A safe means of passage around open shaft compartments shall be provided on landings with more than one entrance to the shaft.

§ 57.19106 Shaft sets.

Shaft sets shall be kept in good repair and clean of hazardous material.

§ 57.19107 Precautions for work in compartment affected by hoisting operation.

Hoistmen shall be informed when persons are working in a compartment affected by that hoisting operation and a "Men Working in Shaft" sign shall be posted at the hoist.

§ 57.19108 Posting warning signs during shaft work.

When persons are working in a shaft "Men Working in Shaft" signs shall be posted at all devices controlling hoisting operations that may endanger such persons.

§ 57.19109 Shaft inspection and repair.

Shaft inspection and repair work in vertical shafts shall be performed from substantial platforms equipped with bonnets or equivalent overhead protection.

§ 57.19110 Overhead protection for shaft deepening work.

A substantial bulkhead or equivalent protection shall be provided above persons at work deepening a shaft.

§ 57.19111 Shaft-sinking ladders.

Substantial fixed ladders shall be provided from the collar to as near the shaft bottom as practical during shaft-sinking operations, or an escape hoist powered by an emergency power source shall be provided. When persons are on the shaft bottom, a chain ladder, wire rope ladder, or other extension ladders shall be used from the fixed ladder or lower limit of the escape hoist to the shaft bottom.

Inspection and Maintenance

§ 57.19120 Procedures for inspection, testing, and maintenance.

A systematic procedure of inspection, testing and maintenance of shaft and hoisting equipment shall be developed and followed. If it is found or suspected that any part is not functioning properly, the hoist shall not be used until the malfunction has been located and repaired or adjustments have been made.

§ 57.19121 Recordkeeping.

At the time of completion, the person performing inspections, tests, and maintenance of shafts and hoisting equipment required in standard 57.19120 shall certify, by signature and date, that they have been done. A record of any part that is not functioning properly shall be made and dated. Certifications and records shall be retained for one year.

(Approved by the Office of Management and Budget under OMB control number 1219–0034)

(Sec. 101, Pub. L. 91–173 as amended by Pub. L. 95–164, 91 Stat. 1291 (30 U.S.C. 811).

§ 57.19122 Replacement parts.

Parts used to repair hoists shall have properties that will ensure the proper and safe function of the hoist.

§ 57.19129 Examinations and tests at beginning of shift.

Hoistmen shall examine their hoists and shall test overtravel, deadman controls, position indicators, and braking mechanisms at the beginning of each shift.

§ 57.19130 Conveyance shaft test.

Before hoisting persons and to assure that the hoisting compartments are clear of obstructions, empty hoist conveyances shall be operated at least one round trip after—

(a) Any hoist or shaft repairs or related equipment repairs that might restrict or obstruct conveyance clearance;

(b) Any oversize or overweight material or equipment trips that might restrict or obstruct conveyance clearance;

(c) Blasting in or near the shaft that might restrict or obstruct conveyance clearance; or

(d) Remaining idle for one shift or longer.

§ 57.19131 Hoist conveyance connections.

Hoist conveyance connections shall be inspected at least once during any 24-hour period that the conveyance is used for hoisting persons.

§ 57.19132 Safety catches.

(a) A performance drop test of hoist conveyance safety catches shall be made at the time of installation, or prior to installation in a mockup of the actual installation. The test shall be certified to in writing by the manufacturer or by a registered professional engineer performing the test.

(b) After installation and before use, and at the beginning of any seven day period during which the conveyance is to be used, the conveyance shall be suitably rested and the hoist rope slackened to test for the unrestricted functioning of the safety catches and their activating mechanisms.

(c) The safety catches shall be inspected by a competent person at the beginning of any 24-hour period that the conveyance is to be used.

§ 57.19133 Shaft.

Shafts that have not been inspected within the past 7 days shall not be used until an inspection has been conducted by a competent person.

§ 57.19134 Sheaves.

Sheaves in operating shafts shall be inspected weekly and kept properly lubricated.

§ 57.19135 Rollers in inclined shafts.

Rollers used in operating inclined shafts shall be lubricated, properly aligned, and kept in good repair.

Subpart S—Miscellaneous

§ 57.20001 Intoxicating beverages and narcotics.

Intoxicating beverages and narcotics shall not be permitted or used in or around mines. Persons under the influence of alcohol or narcotics shall not be permitted on the job.

§ 57.20002 Potable water.

(a) An adequate supply of potable drinking water shall be provided at all active working areas.

(b) The common drinking cup and containers from which drinking water must be dipped or poured are prohibited.

(c) Where single service cups are supplied, a sanitary container for unused cups and a receptacle for used cups shall be provided.

(d) When water is cooled by ice, the ice shall either be of potable water or shall not come in contact with the water.

(e) Potable water outlets shall be posted.

(f) Potable water systems shall be constructed to prevent backflow or backsiphonage of non-potable water.

§ 57.20003 Housekeeping.

At all mining operations—

(a) Workplaces, passageways, storerooms, and service rooms shall be kept clean and orderly;

(b) The floor of every workplace shall be maintained in a clean and, so far as possible, dry condition. Where wet processes are used, drainage shall be maintained, and false floors, platforms, mats, or other dry standing places shall be provided where practicable; and

(c) Every floor, working place, and passageway shall be kept free from protruding nails, splinters, holes, or loose boards, as practicable.

§ 57.20005 Carbon tetrachloride.

Carbon tetrachloride shall not be used.

§ 57.20008 Toilet facilities.

(a) Toilet facilities shall be provided at locations that are compatible with the mine operations and that are readily accessible to mine personnel.

(b) The facilities shall be kept clean and sanitary. Separate toilet facilities shall be provided for each sex except where toilet rooms will be occupied by no more than one person at a time and can be locked from the inside.

§ 57.20009 Tests for explosive dusts.

Dusts suspected of being explosive shall be tested for explosibility. If tests prove positive, appropriate control measures shall be taken.

§ 57.20010 Retaining dams.

If failure of a water or silt retaining dam will create a hazard, it shall be of substantial construction and inspected at regular intervals.

§ 57.20011 Barricades and warning signs.

Areas where health or safety hazards exist that are not immediately obvious to employees shall be barricaded, or warning signs shall be posted at all approaches. Warning signs shall be readily visible, legible, and display the nature of the hazard and any protective action required.

§ 57.20012 Labeling of toxic materials.

Toxic materials used in conjunction with or discarded from mining or milling of a product shall be plainly marked or labeled so as to positively identify the nature of the hazard and the protective action required.

§ 57.20013 Waste receptacles.

Receptacles with covers shall be provided at suitable locations and used for the disposal of waste food and associated materials. They shall be emptied frequently and shall be maintained in a clean and sanitary condition.

§ 57.20014 Prohibited areas for food and beverages.

No person shall be allowed to consume or store food or beverages in a toilet room or in any area exposed to a toxic material.

§ 57.20020 Unattended mine openings.

Access to unattended mine openings shall be restricted by gates or doors, or the openings shall be fenced and posted.

§ 57.20021 Abandoned mine openings.

Upon abandonment of a mine, the owner or operator shall effectively close or fence off all surface openings down which persons could fall or through which persons could enter. Upon or near all such safeguards, trespass warnings and appropriate danger notices shall be posted.

§ 57.20031 Blasting underground in hazardous areas.

In underground areas where dangerous accumulations of water, gas, mud, or fire atmosphere could be encountered, persons shall be removed to safe places before blasting.

§ 57.20032 Two-way communication equipment for underground operations.

Telephones or other two-way communication equipment with instructions for their use shall be provided for communication from underground operations to the surface.

Subpart T—Gassy Mines

§ 57.21000 Application.

Gassy mines shall be operated in accordance with all mandatory standards in this part. Such mines shall also be operated in accordance with the mandatory standards in this section. The standards in this subpart apply only to underground operations.

Mine Classification

§ 57.21001 Classification criteria.

A mine shall be deemed gassy, and thereafter operated as a gassy mine, if—

(a) The State in which the mine is located classifies the mine as gassy; or

(b) Flammable gas emanating from the orebody or the strata surrounding the orebody has been ignited in the mine; or

(c) A concentration of 0.25 percent or more, by air analysis, of flammable gas

emanating only from the orebody or the strata surrounding the orebody has been detected not less than 12 inches from the back, face, or ribs in any open workings; or

(d) The mine is connected to a gassy mine.

§ 57.21002 Classification during mine reclamation.

Flammable gases detected only while unwatering mines or flooded sections of mines or during other mine reclamation operations shall not be used to permanently classify a mine gassy. During such periods that any flammable gas is present in the mine, the affected areas of the mine shall be operated in accordance with appropriate standards in this subpart.

Fire Prevention and Control

§ 57.21010 Smoking.

Persons shall not smoke or carry smoking materials, matches, or lighters underground. The operator shall institute a reasonable program to ensure that persons entering the mine do not carry smoking materials, matches, or lighters.

§ 57.21011 Use of open flames.

Except when necessary for welding or cutting, open flames shall not be used in other than fresh air or in places where flammable gases are present or may enter the air current.

§ 57.21012 Testing for methane prior to welding, cutting, or soldering.

Immediately before and continuously during welding or cutting with an arc or open flame or soldering with an open flame, in other than fresh air, or in places where methane is present or may enter the air current, a competent person shall test for methane with a device approved by the Secretary for detecting methane.

§ 57.21013 Unsafe methane levels for welding, cutting, or soldering.

Welding or cutting with an arc or open flame or soldering with an open flame shall not be performed in atmospheres containing more than 1 percent of methane as determined by a device approved by the Secretary for detecting methane.

Ventilation

§ 57.21020 Main fan installation and construction.

Main fans shall be—

(a) Installed on the surface;

(b) Installed to permit prompt reversal of airflow;

(c) Powered electrically;

(d) Installed in noncombustible housing provided with noncombustible air ducts;

(e) Offset not less than 15 feet from the nearest side of the mine opening to which the fan is connected. The fan installation shall be equipped with explosion-doors or a weak-wall having an area at least equivalent to the cross-sectional area of the airway. Such doors or weak-wall shall be in direct line with possible explosion forces; and

(f) Provided with an automatic signal device to give warning or alarm should the fan system malfunction. The signal device shall be so located that it can be seen or heard by a responsible person at all times when persons are underground.

§ 57.21021 Main fan operation and inspection.

Main fans shall be—

(a) Operated continuously while persons are underground except when stopped or slowed down for fan maintenance and/or fan adjustments and related ventilation system adjustments and compliance is made with the provisions of mandatory standard 57.21024;

(b) Provided with pressure-recording gages which shall be examined daily for good operating condition. The charts of such gages shall be changed after completing one revolution; and

(c) Inspected daily and logs kept of such inspections and of fan maintenance. Charts and logs shall be retained for a minimum of one year. Such records and charts shall be available for inspection by the Secretary or his duly authorized representative.

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§ 57.21022 Separation of main intake and return air.

The main intake and return air currents in mines shall be in separate shafts, slopes, or drifts, except that during shaft or slope development, vent tubing may be used in the same opening. Until a second opening to the surface can be provided, single shafts used for intake and return air shall be provided with a curtain wall or partition.

§ 57.21023 Separation of intake and return air in single shafts.

When single shafts are used for intake and return, the curtain wall or partition shall be constructed of reinforced concrete or equivalent and provided with pressure relief devices.

§ 57.21024 Failure of main fan.

(a) At mines where a single main fan is used and such fan stops, or at mines where multiple main fans are used and all such fans stop, the operator shall take the following immediate action:

(1) Withdraw all persons from the affected active workings.

(2) Deenergize the power in affected active workings.

(3) Withdraw all persons from the mine when a 1.0 percent concentration of methane in air is measured in any active working.

If ventilation has been interrupted for more than 15 minutes, all working places and active workings where methane may accumulate shall be examined by a competent person(s). The power shall not be restored or persons permitted to reenter the affected active workings until the competent person(s) has determined the methane concentration in such active workings is less than 1.0 percent.

(b) At mines where multiple main fans are used and one or more but not all fans stop, and air flow in intake and return air courses is maintained, the operator shall take the following immediate action:

(1) Monitor the air in all active workings for methane content.

(2) Withdraw all persons from, and deenergize the power in, all active workings when a 1.0 percent concentration of methane in the air is measured.

(3) Comply with all related standards in this subpart.

§ 57.21025 Failure of mine ventilation.

When there has been a failure of mine ventilation other than a failure of a main fan as described in standard 57.21024, the operator shall take the following immediate actions:

(a) Withdraw all persons from the affected active workings.

(b) Deenergize the power in affected active workings. The power shall not be restored or persons permitted to reenter the affected active workings until a competent person(s) has determined that the methane concentration in such active workings is less than 1.0 percent.

§ 57.21027 Reentry after shutdown of main fans.

When the main fan or fans have been shut down with all persons out of the mine, no person, other than those competent to examine the mine, or other authorized persons, shall go underground until the fans have been started and the mine is examined for methane and other hazards and declared safe.

§ 57.21028 Booster fan operation.

Booster fans shall be—

(a) Operated by permissible drive units maintained in permissible condition;

(b) Operated only in air containing less than 1.0 percent methane; and

(c) Kept in continuous operation when persons are in active workings of the mine affected by such fans.

§ 57.21029 Booster fan safety devices.

Booster fans shall be—

(a) Provided with an automatic signal device to give warning or alarm should the fan system malfunction. The signal device shall be so located that it can be seen or heard by a responsible person at all times when persons are underground;

(b) Equipped with a device that automatically deenergizes the power in affected active workings should the fan system malfunction;

(c) Provided with air locks, the doors of which open automatically should the fan stop; and

(d) Equipped with two sets of controls capable of starting, stopping, and reversing the fans. One set of controls shall be located at the fans. A second set of controls shall be at another location remote from the fans.

§ 57.21030 Auxiliary fan requirements.

Auxiliary fans shall be of a permissible type, maintained in permissible condition, and so located and operated to avoid recirculation of air. Auxiliary fans shall not be used to ventilate any working place during the interruption of normal mine ventilation. If the auxiliary fan is stopped or fails, the electrical equipment in the affected area shall be stopped and the power disconnected at the power source until ventilation in the affected area is restored. Tests shall be made at the fan for methane before auxiliary fans are started. The air passing over or through auxiliary fan units shall not exceed 1.0 percent of methane.

§ 57.21031 Auxiliary fan inspection.

Auxiliary fans shall be inspected by competent persons at least twice each operating shift.

§ 57.21033 Minimum air flow in active areas.

The volume and velocity of the current of air coursed through all active areas shall be sufficient to dilute, render harmless, and carry away methane smoke, fumes, and dust.

§ 57.21034 Minimum air flow through last open crosscut and other ventilation openings near the face.

The quantity of air coursed through the last open crosscut in pairs or sets of entries, or through other ventilation openings nearest the face, shall be at least 6,000 cubic feet per minute, or 9,000 cubic feet per minute in longwall and continuous miner sections.

§ 57.21035 Weekly air flow measurements.

At least once each week, a qualified person shall measure the volume of air entering the main intakes and leaving the main returns, the volume of the intake and return of each split, and the volume through the last open crosscuts or other ventilation openings nearest the active faces. Records of such measurements shall be kept in a book on the surface.

(Approved by the Office of Management and Budget under OMB control number 1219-0031)

§ 57.21036 Battery-charging stations and transformer stations.

Permanently installed battery-charging stations and transformer stations in combustible areas shall be ventilated by separate splits of air conducted directly to return air courses. Permanently installed means stations that are intended to exist for one year or more.

§ 57.21038 Changes in ventilation.

Changes in ventilation that materially affect the main air current or any split thereof and may affect the safety of persons in the mine shall be made only when the mine is idle. Only those persons engaged in making such changes shall be permitted in the mine during the change. Power shall be removed from the areas affected by the change before work starts and not restored until the effect of the change has been ascertained and the affected areas determined to be safe by a qualified person.

§ 57.21039 Actions at 1.0 percent methane.

If methane gas in excess of 1.0 percent is detected in the air not less than 12 inches from the back, face, or rib of an underground working place or places, adjustments shall be made in the ventilation immediately so that the concentration of methane gas in such air is reduced to 1.0 percent or less. While such changes or adjustments are underway and until they have been achieved, power to electric equipment located in such place shall be cut off, no other work shall be permitted in such place, and due precautions shall be carried out under the direction of the operator or his agent so as not to endanger other areas of the mine.

§ 57.21040 Actions at 1.5 percent methane.

If 1.5 percent or higher concentration of methane gas is present in air returning from an underground working place or places, or is present in the air not less than 12 inches from the back, face, or rib of an underground working place, all persons other than those persons referred to in section 104(c) of the Federal Mine Safety and Health Act of 1977 shall be withdrawn from the area of the mine endangered by such methane gas until the concentration of methane in such areas is reduced to 1.0 percent or less.

§ 57.21041 Air passing through unsealed abandoned areas.

Air that has passed by an opening of any unsealed abandoned area and contains 0.25 percent or more of methane shall be coursed directly to a return airway. Examinations of such air shall be conducted during the preshift examinations required by § 57.21059.

§ 57.21042 Air passing through abandoned panels or inaccessible or unsafe areas.

Air that has passed through an abandoned panel or area which is inaccessible or unsafe for inspection shall not be used to ventilate any working place in such mine. No air which has been used to ventilate an area from which the pillars have been removed shall be used to ventilate any working place in such mine, except that such air, if it does not contain 0.25 volume per centum or more of methane, may be used to ventilate enough advancing working places immediately adjacent to the line of retreat to maintain an orderly sequence of pillar recovery on a set of entries.

§ 57.21043 Abandoned areas.

Abandoned areas shall be sealed or ventilated; areas that are not sealed shall be barricaded and posted against unauthorized entry.

§ 57.21044 Seal construction.

Seals shall be of substantial construction. Exposed surfaces shall be made of fire-resistant material or, if the commodity mined is combustible, seals shall be made of incombustible material.

§ 57.21045 Provisions for sampling air behind seals.

One or more seals of every sealed area shall be fitted with a pipe and a valve or cap to permit sampling of the atmosphere and measurement of the pressure behind such seals.

§ 57.21046 Crosscut intervals.

Crosscuts shall be made at intervals not in excess of 100 feet between entries and between rooms.

§ 57.21048 Line brattice.

Line brattice or other suitable devices shall be installed from the last open crosscut to a point near the face to assure positive air flow to the face of every active underground working place, unless the Secretary or his authorized representative permits an exception to this requirement.

§ 57.21049 Brattice cloth flame-resistance.

Brattice cloth shall be of flame-resistant material.

§ 57.21050 Repair of damaged brattices.

Damaged brattices shall be repaired promptly.

§ 57.21051 Crosscuts before abandonment.

Crosscuts shall be provided where practicable at or within eighteen feet of the face of drifts, entries, and rooms before the workings are abandoned in any unsealed area of the mine. When crosscuts are not practicable, line brattice or other suitable means of ventilating shall be provided to the drifts, entries, or rooms.

§ 57.21052 Entries and rooms beyond the last open crosscut.

Entries or rooms shall not be started off entries beyond the last open crosscuts, except that room necks and entries not to exceed 18 feet in depth may be turned off entries beyond the last open crosscuts if such room necks or entries are kept free of accumulations of methane by use of line brattice or other adequate means.

§ 57.21053 Stoppings.

Stoppings in crosscuts between intake and return airways, on entries other than room entries, shall be built of solid, substantial material; exposed surfaces shall be made of fire-resistant material or, if the material mined is combustible, stoppings shall be made of incombustible material.

§ 57.21055 Air locks, overcasts, and undercasts.

The main ventilation shall be so arranged by means of air locks, overcasts, or undercasts that the passage of trips or persons does not cause interruptions of air currents. Where air locks are impracticable, single doors may be used if they are attended constantly while the areas of the mine affected by the doors are being worked, unless they are operated mechanically or are self-closing.

§ 57.21056 Ventilation of air locks.

Air locks shall be ventilated sufficiently to prevent accumulations of flammable gas inside the locks.

§ 57.21057 Air doors.

Doors which control the flow of air by being closed shall be kept closed, except when persons or equipment are passing through such doorways. Doors shall be plainly marked to indicate whether they shall be closed or open for ventilation control purposes.

§ 57.21058 Overcasts and undercast construction.

Overcasts and undercasts shall be—

(a) Constructed tightly of incombustible material;

(b) Of sufficient strength to withstand possible falls from the back; and

(c) Kept clear of obstruction.

§ 57.21059 Preshift examinations.

Preshift examinations shall be made of all working areas by qualified persons within 3 hours before any workers, other than the examiners, enter the mine.

§ 57.21061 Entry to dangerous areas.

Only qualified examiners and persons authorized to correct the dangerous conditions shall enter places or areas where danger signs are posted.

§ 57.21062 Danger signs.

Danger signs shall not be removed until the dangerous conditions have been corrected.

§ 57.21064 Permissible testing devices.

Each operator shall use permissible devices accepted by the Secretary of Labor for detecting flammable gases, oxygen deficiency, carbon monoxide, and other air contaminants. Such permissible devices shall be provided and maintained in serviceable and permissible condition. In the detection of flammable gases, a permissible flame safety lamp may be used only as a supplementary testing device.

§ 57.21065 Examination for hazardous conditions and testing for methane and carbon monoxide.

At intervals not greater than seven days, the mine foreman (or other competent person designated by the mine foreman) shall examine for hazardous conditions and for compliance with health and safety standards, and shall test for methane and carbon monoxide. The tests shall be made with approved devices at the following locations:

(a) In the return of each split where it enters the main return.

(b) Adjacent to retreat areas, if accessible.

(c) At seals.

(d) In the main return.

(e) In at least one entry of each intake and return airway.

(f) In idle workings.

(g) In unsealed abandoned workings, as conditions permit.

§ 57.21066 Hazardous condition reports.

The mine foreman or other designated official shall read and countersign promptly the reports of the required examinations made by competent persons. Where such reports disclose hazardous conditions, the affected employees shall be so informed and such conditions shall be corrected promptly. If such conditions create an imminent danger, the operator shall withdraw all persons from, or prevent, any person from entering, as the case may be, the area affected by such conditions, except those persons referred to in section 104(c) of the Federal Mine Safety and Health Act of 1977 until such danger is abated. A responsible mine official at the next highest level of authority, if such level exists, shall also read and countersign at least weekly the required reports to ensure that proper inspections have been made and remedial action taken.

§ 57.21067 Mechanical ventilation.

All gassy mines shall be ventilated mechanically.

§ 57.21068 Air flow in intake and return courses.

Airflow shall be maintained in all intake and return air courses of a mine. When multiple main fans are used, such ventilation systems shall not develop neutral areas (areas without perceptible air movement).

§ 57.21069 Doors on main fans.

In mines ventilated by a combination of multiple blowing or multiple exhausting main fans, each main fan installation shall be equipped with noncombustible doors designed and positioned so that, in the event of failure of a main fan, these doors will automatically close to prevent air reversal through the fan. The doors shall be located so that they are not in direct line with forces which would come out of the mine, should an explosion occur.

Equipment

§ 57.21076 Diesel-powered equipment.

Diesel-powered equipment shall not be taken into or operated in places where methane exceeds 1.0 percent at any point not less than 12 inches from the back, face, or rib.

§ 57.21077 Trolley wires.

Trolley wires and trolley feeder wires shall be on intake air and shall not extend into the last open crosscut or other ventilation opening. Such wires

shall be kept at least 150 feet from pillar recovery workings.

§ 57.21078 Permissible equipment.

Only permissible equipment maintained in permissible condition shall be used beyond the last open crosscut or in places where dangerous quantities of flammable gases are present or may enter the air current.

§ 57.21079 Distribution boxes.

Only permissible distribution boxes shall be used in working places and other places where 1 percent or more of methane may be present or may enter the air current.

§ 57.21080 Methane monitors.

A methane monitoring device (methane monitor), approved by the Secretary of Labor, shall be installed and properly maintained on all continuous miners and longwall face equipment. The sensing unit of the methane monitor shall be positioned as close to the working face as practicable. When the concentration of methane is 1.0 percent or more, the monitor shall give a warning and deenergize the equipment automatically when the concentration reaches 1.5 percent. The methane monitor also shall de-energize such equipment automatically when the monitor is not functioning properly.

Illumination

§ 57.21090 Permissible electric lamps.

Only permissible electric lamps shall be used for portable illumination underground.

Explosives

§ 57.21095 Approval of explosives.

Explosives not designated as permissible by the Bureau of Mines or the Mine Safety and Health Administration shall not be used in any underground gassy mine until the Bureau of Mines and State Inspector of Mines have given written approval for each such specific explosive to be used.

§ 57.21096 Conditions of use.

The Mine Safety and Health Administration and the State Inspector of Mines, in granting approval referred to in standard 57.21095, shall provide the operator with a written list of conditions for using the specific explosives covered by the approval and adapted to the mining operation.

§ 57.21097 General requirements for blasting.

Blasts in gassy mines shall be initiated electrically, and multiple-shot blasts shall be initiated only with millisecond-delay detonators. Permissible blasting units of capacity suitable for the number of holes in a round to be blasted shall be used unless the round is fired from the surface when all persons are out of the mine.

§ 57.21098 Stemming boreholes.

Boreholes shall be stemmed as prescribed for the explosives used.

§ 57.21099 Examination for methane when blasting on shift.

When blasting on shift, examinations for methane shall be made immediately before firing each shot or round, and again before other work is performed. Examinations shall be made by competent persons with devices approved by the Secretary for detecting methane.

§ 57.21100 Methane limits for blasting.

Shots or rounds shall not be fired in places where 1.0 percent or more of methane is present at a point no less than 12 inches from the back, face, or rib. Tests to determine the presence of methane shall be made by a competent person with devices approved by the Secretary for detecting methane.

§ 57.21101 Firing shots and rounds.

Shots and rounds shall be fired by competent persons.

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Part IV

Department of Health and Human Services

Food and Drug Administration

21 CFR Parts 600, 606, 610, 620, 630, 640, and 660

Changes in Proper Names of Certain Biological Products; Final Rule

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Food and Drug Administration

21 CFR Parts 600, 606, 610, 620, 630, 640, and 660

[Docket No. 80N-0053]

Changes in Proper Names of Certain Biological Products

AGENCY: Food and Drug Administration.

ACTION: Final rule.

SUMMARY: The Food and Drug Administration (FDA) is amending the biologics regulations by changing the proper names of certain biological products; updating all applicable regulations to reflect these new names; and updating, clarifying, and reorganizing certain regulations. The "proper name" of a product is the name that FDA requires that manufacturers use on the label of the product. FDA is taking these actions to reduce the length of a name, more accurately identify a product, or make the name more consistent with the name of the same product in the United States Pharmacopeia (U.S.P.) or in the United States Adopted Names (USAN).

EFFECTIVE DATE: January 29, 1986 for all affected products initially introduced or initially delivered for introduction into interstate commerce. See Supplementary Information for full discussion of proposed effective date.

FOR FURTHER INFORMATION CONTACT: Joseph Wilczek, Center for Drugs and Biologics (HFN-368), Food and Drug Administration, 5600 Fishers Lane, Rockville, MD 20857, 301-443-1306.

SUPPLEMENTARY INFORMATION: In the **Federal Register** of October 31, 1980 (45 FR 72404), FDA proposed to change the proper names of more than 50 biological products, including various blood, viral, and bacterial products, antivenins, and one category of allergenic extracts, and update applicable regulations in 21 CFR Parts 600 through 660 to reflect these new proposed proper names. (The term "proper name" is defined in 21 CFR 600.3(k).) Further, FDA proposed to reorganize and clarify 21 CFR 610.53(a) concerning the prescribed dating periods for licensed biological products. FDA also proposed to delete the names of 30 biological products in 21 CFR 610.53(a) that are no longer licensed and add the names of 11 biological products that are licensed now but are not listed in the regulations. FDA developed and issued these regulations in collaboration with the United States Adopted Names Council (USAN) to designate meaningful and distinctive nonproprietary names for these biological products. USAN is sponsored by the American Medical Association, the United States Pharmacopeial Convention, and the American Pharmaceutical Association.

FDA provided a public comment period of 60 days on the proposal. However, in response to a request from a manufacturer, FDA extended the comment period an additional 60 days **Federal Register** of December 9, 1980; 45 FR 81065).

FDA received 37 letters in response to the proposal and several of these letters contained more than one comment. Eight letters expressed approval of the amendments as proposed, eight other letters expressed approval of the amendments with some reservations, and the remaining letters contained general comments or suggestions of alternative names. Because certain comments objected to the proposed changes in proper names of one or more products or upon reconsideration, FDA advises that in the final rule about 30 percent of the proper names that FDA proposed to change were not changed. For more detailed information, see table I at the end of the preamble to this final rule. Summaries of all of the comments and FDA's responses follow:

1. One comment noted a discrepancy concerning the modifier to be used with the proposed proper name of each of several blood and blood products.

FDA agrees with the comment. In several instances in the proposal, FDA identified incorrectly a proposed proper name with a modifier as the proper name. Accordingly, in the final rule FDA is excluding any modifier from the proper name of a product. Examples follow:

Proper name	Proper name with modifier
Red blood cells	Red blood cells deglycerolized.
Red blood cells	Red blood cells frozen.
Whole blood	Whole blood cryoprecipitate removed.

2. Two comments suggested new names for five products but gave no reasons why these names should be used instead of the names that FDA proposed.

Name suggested by comments	Name proposed by FDA
Albumin 96 pct. pure	Albumin.
Albumin 83 pct. pure	Plasma protein fraction.
AHF lyophilized	Antihemophilic factor.
AHF cryoprecipitated	Cyroprecipitated AHF.
Factor VIII	Antihemophilic factor and cryoprecipitated AHF.

FDA disagrees with the comments. FDA believes that the names that were suggested offer no advantages over the names that FDA proposed. Accordingly, FDA is rejecting the suggested name changes above for these products. (See also FDA's response in paragraph 29.)

3. One comment stated that proposed § 600.13 concerning retention sample requirements is not accurate because § 600.13 lists some but not all of the products in proposed § 600.15. Section 600.15 specifies temperatures of products to be maintained during shipment.

FDA disagrees with the comment. Section 600.13 lists certain products and categories of products that are exempt from the retention sample requirements. Section 600.15 is unrelated to § 600.13. Section 600.15 specifies temperatures of products to be maintained during shipment. All products shown in § 600.15 should not be listed in § 600.13, because all of the products in § 600.15 are not exempt from the retention sample requirements.

4. One comment stated that proposed § 600.15(a) does not state whether freshly collected whole blood may be shipped before the blood has cooled to 10 °C or colder, as described in proposed § 640.6(b) in FDA's proposal of October 31, 1980 (45 FR 72422).

FDA agrees that proposed § 600.15(a) should be clarified. Accordingly, in the final rule FDA is amending § 600.15(a) to incorporate transit storage temperature requirements.

5. One comment on proposed § 600.15 stated that the name Red Blood Cells should not be identified with the phrase "(liquid product)", because the phrase could easily be mistaken for a proper name, a modifier, or a qualifier.

FDA disagrees with the comment. FDA believes that the phrase "(liquid product)" that is not capitalized and is placed in parentheses helps to clarify the form of the product that is affected by the requirement and the phrase is not part of the proper name of the product. Accordingly, FDA rejects this comment.

6. Two comments on proposed § 610.53(c) stated that the dating periods are incorrect for some products. One comment stated that the dating periods for antisera are unrealistic and wasteful.

FDA disagrees with the comments. The dating periods listed in proposed § 610.53 are minimum dating periods for the products. FDA notes, however, that there could be instances where even shorter dating periods may be necessary to maintain product safety or potency. Therefore, FDA considers the "minimum dating period" to be the dating period based on usage, clinical experience, or laboratory testing which initially may be assigned to a product before the

manufacturer completes extended shelf life stability studies. As an amendment to its product license, a manufacturer may submit stability data to the Director, Center for Drugs and Biologics, to support a dating period longer than the minimum dating period shown in § 610.53. Accordingly, in the final rule FDA is changing § 610.53(a) by inserting the word "minimum" in the first sentence.

7. FDA proposed in § 610.53 to delete the 10-year dating period for Albumin (Human) packaged in hermetically sealed metal containers. Two comments suggested that the 10-year dating period for Albumin (Human) packaged in hermetically sealed metal containers be retained, because the Department of Defense still uses the product packaged in this manner.

FDA agrees with the comments. Accordingly, in the final rule FDA is retaining the 10-year dating period for Albumin (Human) packaged in hermetically sealed metal containers.

8. One comment on proposed § 610.53(c) objected to the proposal to change the name of Allergenic Extracts, Alum Precipitated, to Allergenic Extracts Adsorbed, because the manufacturers' administrative and financial costs from revising all labels and labeling of alum precipitated allergenic extracts would well exceed any expected benefit from consistency in names with other adsorbed products.

FDA now believes that only minimal benefits would result from the proposed change in the name. Accordingly, in the final rule FDA is retaining the current proper names of these products.

9. Four comments on proposed § 610.53(c) concerned the proposed proper names of the antivenins and the proposed word change of "antivenin" to "antivenom." One comment suggested the name Antivenom Black Widow Spider as an alternative to the proposed name Antivenom Widow Spider, because the proposed name suggests that this antivenom may have a broader specificity than has been demonstrated. For a similar reason, another comment objected to the proposed name Antivenom Coral Snake and suggested retaining the name Antivenin (*Micrurus fulvius*) for this product. One comment suggested adding a comma after "Copperhead" in the proposed name Antivenom Rattlesnake, Copperhead and Moccasin. One comment suggested that the current name of all antivenins be retained and that the proposed name Antivenom Rattlesnake, Copperhead and Moccasin is incorrect, because no copperhead or moccasin venom is used in the manufacture of this product. Instead, the venom of a tropical American pit viper is used in the manufacture of this antiserum.

FDA recognizes that confusion may result from changing the names of antivenins to the common names that were proposed, particularly if the products were to be exported to another country where the common name may represent a different genus or species. Thus, FDA agrees with the comments that suggested that the current proper names be retained without change. Accordingly, upon reconsideration, FDA is retaining the current names listed in the biologics regulations for these products. In addition, FDA is retaining the word "antivenin" rather than the proposed word "antivenom."

10. One comment on proposed § 610.53(c) noted that four products (Granulocytes, Pheresis; Granulocytes, Pooled; Granulocytes Platelets Pheresis; and Recovered Plasma, Pooled) that were listed in the Guideline for the Uniform Labeling of Blood and Blood Components that FDA made available in the **Federal Register** of October 31, 1980 (45 FR 72416) were not included in proposed § 610.53. Another comment suggested changing the proper name Recovered Plasma to Source Plasma, Recovered.

FDA advises that the four products identified by the comment were not licensed at the time of the proposal and thus were not included in proposed § 610.53. The three granulocyte preparations and Recovered Plasma still are unlicensed. FDA believes that the proper name Recovered Plasma is widely accepted and understood by the blood banking community and, therefore, FDA rejects the suggested name change for that product.

11. One comment on proposed § 610.53(c) suggested reversing the order of the words in the names of all immune globulins so that they could be listed together.

FDA agrees in part and disagrees in part with the comment. FDA does not believe that it is necessary to change the names of all immune globulins to list them together in the regulations. However, FDA agrees that listing the immune globulins together will aid in locating these products in the dating period listings. Accordingly, in the final rule FDA is reorganizing § 610.53 so that all immune globulin products are listed together. Likewise, FDA is reorganizing § 610.53 so that all plasma products are listed together.

12. Two comments on proposed § 610.53(c) concerned the proposed proper name Rh_o(D) Immune Globulin. One comment suggested substituting the name Rh Immune Globulin, because the product is almost universally known as Rh Immune Globulin or RhoGam. One comment stated that the proposed proper name of this product should be D(Rh_o) Immune Globulin, for consistency with the nomenclature of Blood Grouping Sera.

FDA disagrees with the comments. FDA believes that the most important part of the product name, i.e., Rh_o(D), should appear first. FDA rejects the suggested name D(Rh_o) Immune Globulin because the product is used therapeutically to prevent Rh hemolytic disease. Accordingly, in the final rule FDA is continuing to use the § 610.53(c) the current proper name Rh_o(D) Immune Globulin (Human). (See also FDA's response in paragraph 29.)

13. One comment on proposed § 610.53(c) suggested that the name "Measles and Mumps Virus Vaccine, Live" be changed by deleting the comma, to be consistent with similar products and the nomenclature in the U.S.P.

FDA agrees with the comment. FDA proposed this change in the codified text of § 610.53(c) in the proposal of October 31, 1980, but FDA mistakenly omitted it from the name change amendments listed in the preamble to the proposal. Accordingly, in the final rule FDA is identifying the product as Measles and Mumps Virus Vaccine Live.

14. One comment recommended deleting Mumps Immune Globulin from proposed § 610.53(c), because action has been taken taken by FDA to revoke product licenses for this product.

FDA agrees with the comment. After FDA published the proposal in the **Federal Register**, FDA revoked the licenses of 12 products in addition to the 30 products FDA proposed be deleted. In a final rule published in the **Federal Register** of June 8, 1982 (47 FR 24696), FDA deleted the following six products from § 610.53: Adenovirus and Influenza Virus Vaccines Combined Aluminum Hydroxide Adsorbed, Adenovirus and Influenza Virus Vaccines Combined Aluminum Phosphate Adsorbed, Adenovirus Vaccine, Mumps Immune Globulin (Human), Rocky Mountain Spotted Fever Vaccine, and Typhus Vaccine. Accordingly, in this final rule FDA is deleting the following 35 products from § 610.53: Aggregated Radio-Iodinated (I^{131}) Albumin (Human), Anti-Human Chorionic Gonadotropic Serum, Cobra Venom Solution, Cobra Venom Solution with Silicic and Formic Acids, Diphtheria and Tetanus Toxoids, Diphtheria and Tetanus Toxoids and Pertussis and Poliomyelitis Vaccine Adsorbed, Diphtheria and Tetanus Toxoids and Pertussis Vaccine, Diphtheria and Tetanus Toxoids and

Pertussis Vaccine Adsorbed and Poliomyelitis Vaccine, Diphtheria and Tetanus Toxoids and Poliomyelitis Vaccine, Diphtheria Toxoid and Pertussis Vaccine, Diphtheria Toxoid and Pertussis Vaccine Adsorbed, Fibrinogen (Human), Fibrinogen with Antihemophilic Factor (Human), Gas Gangrene Polyvalent Antitoxin, Haemophilus Influenzae Typing Serum, Histamine Azoprotein, Leukocyte Typing Serum, Lymphogranuloma Venereum Antigen, Measles Immune Globulin (Human), Modified Plasma (Bovine), Mumps Vaccine, Poliomyelitis Vaccine Adsorbed, Polyvalent modified bacterial antigens with "No U.S. Standard of Potency," Pseudomonas Polysaccharide, Radio-Chromated (Cr^{51}) Serum Albumin (Human), Radio-Iodinated (I^{125}) Serum Albumin (Human), Radio-Iodinated (I^{131}) Serum Albumin (Human), Reagent Blood Group Specific Substances A and B, Russell Viper Venom, Schick Test Control, Staphylococcus Antitoxin, Staphylococcus Toxoid, Streptokinase-Streptodornase, Tetanus and Gas Gangrene Polyvalent Antitoxin, Trichinella Extract. Also, FDA proposed to codify existing dating periods for 11 licensed products which previously had not been listed in § 610.53. After publication of the proposed rule, FDA revoked the product license for 1 of the 11 products, Anticarcinoembryonic Antigen Serum, and has issued product licenses for 14 additional products. Accordingly, in the final rule FDA is identifying in § 610.53 dating periods for the following new products: Adenovirus Vaccine Live Oral Type 4; Adenovirus Vaccine Live Oral Type 7; Anti-Inhibitor Coagulant Complex; Asparaginase; Hepatitis B Immune Globulin (Human); Hepatitis B Vaccine; Immune Globulin Intravenous (Human); Lymphocyte Immune Globulin, Anti-Thymocyte Globulin (Equine); Meningococcal Polysaccharide Vaccine Group A; Meningococcal Polysaccharide Vaccine Group C; Meningococcal Polysaccharide Vaccine Groups A and C Combined; Meningococcal Polysaccharide Vaccine Groups A, C, Y, and W135 Combined; Pertussis Vaccine Adsorbed; Pneumococcal Vaccine Polyvalent; Rabies Immune Globulin (Human); Red Blood Cells Deglycerolized; Skin Test Antigens for Cellular Hypersensitivity; Source Leukocytes; Therapeutic Exchange Plasma; Thrombin Impregnated Pad; Varicella-Zoster Immune Globulin (Human).

15. One comment on proposed § 610.53(c) suggested that the storage temperature for Liquid Plasma be included in column D under both (a) and (b).

FDA agrees that this suggested change will clarify the regulations. Accordingly, in the final rule FDA is presenting the storage temperature for Liquid Plasma in column D under both (a) and (b).

16. One comment on proposed § 610.53(c) suggested that reversing the order of the words in the proposed names of some plasma and red blood cell products would allow the proper name and common name to be the same.

FDA agrees that reversing the order of the words in the proposed proper names of some plasma products will clarify the regulations. Accordingly, in the final rule FDA is changing the following proposed proper names to read as follows:

Proposed proper name	Proper name in final rule
Plasma fresh frozen	Fresh frozen plasma.
Plasma liquid	Liquid plasma.
Plasma platelet rich	Platelet rich plasma.

17. One comment on proposed § 610.53(c) stated that the information regarding dating periods for Plasma Protein Fraction in column D were confusing and suggested that the dating period regulations for this product be consistent with the dating period for Albumin.

FDA accepts the comment. In the final rule FDA is revising the information in the dating period regulations so that the requirements regarding manufacturer's storage temperature are consistent for Plasma Protein Fraction (Human) and Albumin (Human).

18. One comment on proposed § 610.53(c) suggested reversing the order of the names of anticoagulated products, e.g., ACD Red Blood Cells and CPD Whole Blood, because the name of the product is more important than the name of the anticoagulant.

FDA disagrees with the comment. FDA sees no advantage in having the name of the anticoagulant following the name of the product. In addition, for consistency with the terminology in the U.S.P., FDA believes that the name of the anticoagulant should precede the name of the product.

19. One comment on proposed § 610.53(c) stated that the hematocrit should be less than 80 percent for 35-day dating of CPDA–1 Red Blood Cells and questioned whether this information should be added to § 610.53.

FDA disagrees with the comment. FDA believes that it is inappropriate for hematocrit levels to be included in the dating period listing in § 610.53. Rather, a blood establishment should include this information in the blood establishment's standard operating procedures and in its product license application. FDA also advises that it currently is reviewing all blood regulations and evaluating hematocrit levels.

20. Two comments noted that no provision was made in proposed § 610.53(c) for Tuberculin, Old, on a multiple puncture device and also questioned why Tuberculin, Old, containing at least 50 percent glycerin was no longer identified.

FDA agrees that Tuberculin, Old, on a multiple puncture device should have been listed in § 610.53(c) and in the final rule FDA is including this product. FDA advises that Tuberculin, Old, containing at least 50 percent glycerin was excluded from proposed § 610.53(c) because the product is no longer manufactured under license.

21. One comment on proposed § 630.10 suggested deleting the comma in the proposed name Poliovirus Vaccine Live Oral, Trivalent, as well as the comma in each of the proposed names of the three monovalent vaccines.

FDA agrees with the comment. In the final rule FDA is deleting each of the commas. FDA notes, however, that only Poliovirus Vaccine Live Oral Trivalent is licensed for distribution. FDA has licensed and is releasing the three monovalent vaccines only for use in manufacturing the trivalent product.

22. One comment on proposed § 630.80 objected to the proposed name Measles-Smallpox Vaccine Live and suggested the name "Measles Live and Smallpox Vaccine" for two reasons: (1) the hyphen is unnecessary and should be replaced by the customary word "and"; and (2) the word "Live" should be placed after "Measles," not at the end of the proper name, to distinguish it from the inactivated form.

FDA agrees with the comment. Accordingly, in the final rule FDA is changing the proper name of the product to Measles Live and Smallpox Vaccine.

23. One comment on proposed § 640.(c) and (h) stated that the term "Heparinized" in the product name "Heparinized Whole Blood" should be changed to "Heparin," to be consistent with the practice of preceding the proper name with the name of the specific anticoagulant used.

FDA agrees with the comment. Accordingly, in the final rule FDA is changing the name of the product to Heparin Whole Blood.

24. One comment on proposed § 640.5(c) stated that Rh "typing" serum should not be changed to "grouping" serum because group refers to ABO and type refers to Rh and other factors.

FDA disagrees with this comment. FDA believes that Rh now is considered a group like ABO. FDA is not changing the regulation as suggested.

25. FDA received five comments on proposed §§ 640.6 and 640.7 concerning the proposed name Whole Blood Platelets and/or Cryoprecipitate Removed. One comment stated that Whole Blood, Modified, Platelets Removed, and Whole Blood, Modified, Cryoprecipitate Removed, should not be combined into one proposed name, because many physicians would not use the product for hemophiliacs if the label stated "Platelets and/or Cryoprecipitate Removed," when in fact only the Platelets had been removed. One comment stated that the name Whole Blood Platelets and/or Cryoprecipitate Removed is more cumbersome than Whole Blood (Human) Modified and suggested the names Blood, Platelets and/or Cryoprecipitate Poor; Whole Blood, Modified; Blood, Whole Blood, Modified; or Blood, Modified, as alternatives. One comment suggested inserting a comma or dash between Whole Blood and the component removed for clarification. One comment proposed two separate names—Platelets and Platelets Cryoprecipitate Removed—while another comment suggested two other separate names—Whole Blood Platelets Removed and Whole Blood Cryoprecipitated AHF Removed.

FDA agrees that the name Whole Blood Platelets and/or Cryoprecipitate Removed is cumbersome. FDA believes that it is important for physicians treating hemophiliacs to know if the Cryoprecipitate has been removed from the product. Further, FDA believes that it is unnecessary to indicate whether platelets have been removed because the blood would have to be very fresh for the platelets to be of value. Further, FDA does not believe that a comma or dash is necessary between the proper name and the modifier because the proper name and modifier appear on a different line on the label. FDA does not believe that the comment suggesting the names Platelets and Platelet Cryoprecipitate Removed should be adopted. The suggested names do not indicate that the product is whole blood that lacks platelets and cryoprecipitate. FDA has evaluated all alternative proper names and concludes that the proper name of the product should be Whole Blood Cryoprecipitate Removed. Accordingly, in the final rule FDA is changing the proper name in §§ 640.6 and 640.7 to Whole Blood Cryoprecipitate Removed.

26. One comment on proposed § 640.20 urged retention of the name Platelet Concentrate, because it is essential to differentiate this product from Whole Blood, Platelets and/or Cryoprecipitate Removed.

FDA disagrees with this comment. FDA believes that the name Platelet Concentrate does not identify the product more clearly than the proposed name Platelets and the comment misunderstood that the second product as Whole Blood from which Platelets or Cryoprecipitate or both have been removed. Accordingly, in the final rule FDA is adopting the name Platelets as proposed.

27. One comment on proposed § 640.34(d) stated that the term cubic milliliter should be cubic millimeter and that the phrase "250,000 platelets per cubic milliliter" should be "400,000 platelets per microliter."

FDA agrees in part and disagrees in part with the comment. FDA agrees that the term "cubic milliliter" is incorrect. Indeed, in the editorial revisions FDA published in the **Federal Register** of March 29, 1983 (48 FR 13052), the term "cubic milliliter" was corrected to read "microliter." FDA disagrees that the number of platelets should be increased from 250,000 to 400,000, because this action would result in wasting otherwise useful platelet preparations that could be used for treating pediatric patients.

28. Two comments on proposed § 640.50 objected to the proposed proper name Cryoprecipitated AHF. One comment stated that the abbreviation AHF is too subjective and uninformative and urged that the name Cryoprecipitated Antihemophilic Factor be retained. Another comment stated that it is misleading to call the product Cryoprecipitated AHF because it contains fibrinogen and von Willebrand factor in addition to Antihemophilic Factor. The comment suggested the name Cryoprecipitate be used, because the term is well recognized and widely used.

FDA disagrees with the comments. FDA believes that the proposed name Cryoprecipitated AHF is clear, informative, and in keeping with the principle of reducing the length of proper names wherever possible. FDA notes that the suggested proper name Cryoprecipitate is indeed uninformative and ambiguous. The term Cryoprecipitate can be used to identify any number of biological products and is, therefore, unacceptable. Accordingly, in the final rule FDA is retaining the proposed proper name Cryoprecipitated AHF in §§ 600.13, 600.15, 606.120, 610.11, 610.12, 610.53, 640.34, 640.50, 640.52, 640.53, 640.54, 640.55, and 640.56.

29. Five comments on proposed § 640.80 noted that the proposed proper name "Albumin" was inconsistent with the name "Albumin Human" in the current U.S.P. Two comments recommended retaining the word "Human" in the proper names of fractionation products, such as albumin, because blood products of animal origin are still available.

FDA agrees with these comments. Accordingly, in the final rule FDA is retaining the word "Human" in the proper names of the following products because similar blood products of animal origin are still available: Albumin (Human), Antihemophilic Factor (Human), Fibrinolysin (Human), Hepatitis B Immune Globulin (Human), Immune Globulin (Human), Pertussis Immune Globulin (Human), Plasma Protein Fraction (Human), Rabies Immune Globulin (Human), Rh_o(D) Immune Globulin (Human), Tetanus Immune Globulin (Human), Vaccinia Immune Globulin (Human).

30. Three comments on proposed § 660.28 concerned Blood Grouping Serum products. One comment stated that Anti-Colton^b is the synonym for Anti-Co^b. One comment noted that the synonym for Anti-CDE is Anti-Rh_o' ", not Anti-Rh_o' ". One comment noted the omission of the bars over the letters in Anti-c, Anti-e, Anti-k, and Anti-s and stated that the bar could be eliminated over the letter e but should be retained for each of the letters c, s, and k to differentiate the lower case letters from the upper case letters.

FDA agrees in part and disagrees in part with the comments. FDA has considered adding Anti-Colton^b to the table in § 660.28(d) as a synonym for Anti-Co^b, but now believes that confusion and typographical errors can be avoided by not listing each Blood Grouping Serum specificity in § 610.53. Instead, FDA is amending § 610.53 to state that all liquid Blood Grouping Serum products have a minimum dating period of 2 years, whereas all dried Blood Grouping Serum products have a minimum dating period of 5 years. The second and third comments deal with typographical errors that are corrected in this final rule. FDA notes that it has already eliminated the bar over the letter e in the biologics regulations (48 FR 13025; March 29, 1983).

31. Six comments concerned the proposed effective date of the final regulation (180 days after publication of the final regulation). The comments suggested changing the effective date to: 18 months (one comment); 1 year (one

comment); 1 year or varying effective dates for different products (one comment); 1 year or when supply of labels run out (one comment); and 2 years (two comments). One comment also suggested that FDA allow the use of "mixed" labeling (both new names and former names) before the effective date.

FDA essentially agrees with the suggestions of the comments regarding the need for a later effective date for the final rule. Accordingly, FDA is changing the effective date to January 29, 1986, which is 1 year after publication of this regulation. Also, FDA is allowing manufacturers to voluntarily begin use of labeling including the new proper name of a product along with labeling including the former proper name of the product, provided that such manufacturers alert their consignees or customers of any significant inconsistencies in the proper name of their products. Any product subject to this final rule that is initially introduced or initially delivered for introduction into interstate commerce on or after January 29, 1986 shall bear labeling including the new proper name of the product established herein.

Table I

For each product subject of a proposed change in proper name that was included in the proposal of October 31, 1980; FDA is listing below the current codified name, the proposed name, and the new proper name, if any, established herein.

Current codified name	Proposed name	Revised proper name (if any) and modifier (if applicable) under final rule
Blood Products		
Normal serum albumin (human)	Albumin	Albumin (human).
Antihemophilic factor (human)	Antihemophilic factor	No change in current codified name (see preamble paragraph 29)
Cryoprecipitated antihemophilic factor (human)	Cryoprecipitated AHF	Cryoprecipitated AHF.
Factor IX complex (human)	Factor IX complex	Factor IX complex.
Fibrinolysin (human)	Fibrinolysin	No change in current codified name (see preamble paragraph 29)
Immune serum globulin (human)	Immune globulin	Immune globulin (human).
Mumps immune globulin (human)	Mumps immune globulin	Product no longer licensed (see preamble paragraph 14).
Measles immune globulin (human)	Measles immune globulin	Do.
Pertussis immune globulin (human)	Pertussis immune globulin	No change in current codified name (see preamble paragraph 29)
Single donor plasma (human)	Plasma	Plasma.
Single donor plasma (human), fresh frozen	Plasma fresh frozen	Fresh frozen plasma.
Single donor plasma (human), liquid	Plasma liquid	Liquid plasma.
Single donor plasma (human), platelet rich	Plasma platelet rich	Platelet rich plasma.
Plasma protein fraction (human)	Plasma protein fraction	No change in current codified name (see preamble paragraph 29)
Platelet concentrate (human)	Platelets	Platelets.
Rabies immune globulin (human)	Rabies immune globulin	No change in current codified name (see preamble paragraph 29)
Reagent red blood cells (human)	Reagent red blood cells	Reagent red blood cells.
Red blood cells (human)	Red blood cells	Red blood cells.
Red blood cells (human), deglycerolized	Red blood cells deglycerolized	Red blood cells deglycerolized.
Red blood cells (human), frozen	Red blood cells frozen	Red blood cells frozen.
$Rh_0(D)$ immune globulin (human)	$Rh_0(D)$ immune globulin	No change in current codfiad name (see preamble paragraph 29)
Source plasma (human)	Source plasma	Source plasma.
Source plasma (human), liquid	Source plasma liquid	Source plasma liquid.
Source plasma (human), pooled	Source plasma pooled	Source plasma pooled.
Source plasma (human), salvaged	Source plasma salvaged	Source plasma salvaged.
Tetanus immune globulin (human)	Tetanus immune globulin	No change in current codified name (see preamble paragraph 29)
Vaccinia immune globulin (human)	Vaccinia immune globulin	Do.
Whole blood (human)	Whole blood	Whole blood.
Whole blood (human), modified	Whole blood platelets and/or cryoprecipitate removed	Whole blood cryoprecipitate removed.
Viral Products		
Measles and mumps virus vaccine, live	Measles and mumps virus vaccine live	Measles and mumps virus vaccine live.
Measles virus vaccine, live attenuated	Measles virus vaccine live	Measles virus vaccine live.
Measles, mumps, and rubella virus vaccine, live	Measles, mumps and rubella virus vaccine live	Measles, mumps, and rubella virus vaccine live.
Measles and rubella virus vaccine, live	Measles and rubella virus vaccine live	Measles and rubella virus vaccine live.
Measles-smallpox vaccine, live	Measles-smallpox vaccine live	Measles live and smallpox vaccine.
Mumps virus vaccine live	Mumps virus vaccine live	Mumps virus vaccine live.
Poliovirus vaccine live, oral, trivalent	Poliovirus vaccine live oral, trivalent	Poliovirus vaccine live oral trivalent.
Poliovirus vaccine live, oral, type I	Poliovirus vaccine live oral, type I	Poliovirus vaccine live oral type I.
Poliovirus vaccine live, oral, type II	Poliovirus vaccine live oral, type II	Poliovirus vaccine live oral type II.
Poliovirus vaccine live, oral, type III	Poliovirus vaccine live oral, type III	Poliovirus vaccine live oral type III.
Poliomyelitis vaccine	Poliovirus vaccine inactivated	Poliovirus vaccine inactivated.
Rubella and mumps virus vaccine live	Rubella and mumps virus vaccine live	Rubella and mumps virus vaccine live.
Rubella virus vaccine, live	Rubella virus vaccine live	Rubella virus vaccine live.
Adenovirus and influenza virus vaccines combined aluminum phosphate adsorbed.	Adenovirus and influenza virus vaccines combined adsorbed.	Product no longer licensed (see preamble paragraph 14)
Bacterial Products		
Anthrax vaccine, adsorbed	Anthrax vaccine adsorbed	Anthrax vaccine adsorbed.
Diphtheria and tetanus toxoids and pertussis and poliomyelitis vaccines adsorbed.	Diphtheria and tetanus toxoids and pertussis and poliovirus vaccines inactivated, adsorbed.	Product no longer licensed (see preamble paragraph 14).
Diphtheria and tetanus toxoids and pertussis vaccine adsorbed and poliomyelitis vaccine.	Diphtheria and tetanus toxoids and pertussis vaccine adsorbed and poliovirus vaccine inactivated.	Product no longer licensed (see preamble paragraph 14).
Tetanus and diphtheria toxoids adsorbed (for adult use)	Tetanus and diphtheria toxoids adsorbed for adult use	Tetanus and diphtheria toxoids adsorbed for adult use.
Antivenins		
Antivenin (crotolidae) polyvalent	Antivenom rattlesnake, copper head and moccasin	No change in current codified name (see preamble paragraph 9)
Antivenin (lactrodectus mactans)	Antivenom widow spider	Do.
Antivenin (micrurus fulvius)	Antivenom coral snake	Do.
Allergenic Extracts		
Allergenic extracts, alum precipitated	Allergenic extracts adsorbed	No change in current codified name (see preamble paragraph 8)

Accordingly, FDA is updating any applicable regulations in Parts 600 through 660 to reflect the new proper names and is updating § 610.53(a) concerning minimum dating periods. Further, FDA is making minor clarifying changes in the regulations. One of these changes includes revising the terms "Reference Measles Immune Globulin" and "Reference Poliomyelitis Immune Globulin" found in § 640.104 concerning potency of immune serum globulins to read "Reference Immune Serum Globulin". The reference standard labeled "Reference Immune Serum Globulin" contains antibodies to both measles and polio.

The agency has determined under 21 CFR 25.24(d)(10) (proposed December 11, 1979; 44 FR 71742) that this action is of a type that does not individually or cumulatively have a significant impact on the human environment. Therefore, neither an environmental assessment nor an environmental impact statement is required.

Paperwork Reduction Act of 1980

FDA is continuing unchanged any collection of information requirements, as defined in the Paperwork Reduction Act of 1980, in the various sections of the biologics regulations being amended by this final rule.

The requirement for a regulatory flexibility analysis under the Regulatory Flexibility Act does not apply to this final rule because the proposed rule was issued prior to January 1, 1981, and is therefore exempt. The economic impact of this rule has been assessed in accordance with Executive Order 12291. Based on the assessment, the agency concludes that the rule does not warrant designation as a major rule under any of the criteria specified under section 1(b) of Executive Order 12291. The assessment done to make this determination in on file with the Dockets Management Branch (HFA-305), Food and Drug Administration, Rm. 4-62, 5600 Fishers Lane, Rockville, MD 20857.

List of Subjects in 21 CFR Parts 600, 606, 610, 620, 630, 640, and 660

Biologics; Blood, Labeling.

Therefore, under the Federal Food, Drug, and Cosmetic Act (secs. 201, 501, 502, 510, 701, 52 Stat. 1040-1042 as amended, 1049-1051 as amended, 1055-1056 as amended, 76 Stat. 794-795 as amended (21 U.S.C. 321, 351, 352, 360, 371)); the Public Health Service Act (secs. 351, 352, 353, 361, 58 Stat. 702-703 as amended, 81 Stat. 536 (42 U.S.C. 262, 263, 263a, 264)) and under authority delegated to the Commissioner of Food and Drugs (21 CFR 5.10), Chapter I of Title 21 of the Code of Federal Regulations is amended as follows:

PART 600—BIOLOGICAL PRODUCTS: GENERAL

1. Part 600 is amended:

§ 600.13 [Amended]

a. In § 600.13 *Retention samples* by revising "Whole Blood (Human), Cryoprecipitated Antihemophilic Factor (Human), Platelet Concentrate (Human), Red Blood Cells (Human), Single Donor Plasma (Human), and Source Plasma (Human)," to read "Whole Blood, Cryoprecipitated AHF, Platelets, Red Blood Cells, Plasma, and Source Plasma".

b. In § 600.15 by revising paragraph (a) to read as follows:

§ 600.15 Temperatures during shipment.

* * * * *

(a) *Products.*

Product	Temperature
Cryoprecipitated AHF	-18 °C or colder.
Measles and rubella virus vaccine live.	10 °C or colder.
Measles live and smallpox vaccine.	Do.
Measles, mumps, and rubella virus vaccine live.	Do.
Measles and mumps virus vaccine live.	Do.
Measles virus vaccine live	Do.
Mumps virus vaccine live	Do.
Fresh frozen plasma	-18 °C or colder.
Liquid plasma	° to 10 °C.
plasma	-18 °C or colder.
Platelet rich plasma	Between 1 and 10 °C if the label indicates storage between 1 and 6 °C, or all reasonable methods to maintain the temperature as close as possible to a range between 20 and 24 °C, if the label indicates storage between 20 and 24 °C.
Platelets	Between 1 and 10 °C if the label indicates storage between 1 and 6 °C, or all reasonable methods to maintain the temperature as close as possible to a range between 20 to 24 °C, if the label indicates storage between 20 and 24 °C.
Poliovirus vaccine live oral trivalent.	0 °C or colder.
Poliovirus vaccine live oral type I.	Do.
Poliovirus vaccine live oral type II.	Do.
Poliovirus vaccine live oral type III.	Do.
Red blood cells (liquid product).	Between 1 and 10 °C.
Red blood cells frozen	-65 °C or colder.
Rubella and mumps virus vaccine live.	10 °C or colder.
Rubella virus vaccine live	Do.
Smallpox vaccine (liquid product).	0 °C or colder.
Source plasma	-5 °C or colder.
Source plasma liquid	10 °C or colder.
Whole blood	Blood that is transported from the collecting facility to the processing facility shall be transported in an environment capable of continuously cooling the blood toward a temperature range of 1 ° to 10 °C, or at a temperature as close as possible to 20 ° to 24 °C for a period not to exceed 6 hours. Blood transported from the storage facility shall be placed in an appropriate environment to maintain a temperature range between 1 to 10 °C during shipment.
Yellow fever vaccine	0 °C or colder.

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PART 606—CURRENT GOOD MANUFACTURING PRACTICE FOR BLOOD AND BLOOD COMPONENTS

2. Part 606 is amended:

a. By revising the part heading to read as set out above.

§ 606.120 [Amended]

b. In § 606.120 *Labeling* in paragraph (b)(2) by revising "Source Plasma (Human)" to read "Source Plasma" and in paragraph (b)(9) by revising "Cryoprecipitated Antihemophilic Factor (Human)" to read "Cryoprecipitated AHF" and "Source Plasma (Human)" to read "Source Plasma".

PART 610—GENERAL BIOLOGICAL PRODUCTS STANDARDS

3. Part 610 is amended:

§ 610.11 [Amended]

a. In § 610.11 *General safety* in paragraph (g) by revising "Whole Blood (Human)," "Red Blood Cells (Human)," "Cryoprecipitated Antihemophilic Factor (Human)," "Platelet Concentrate (Human)," and "Single Donor Plasma (Human)" to read "Whole Blood," "Red Blood Cells," "Cryoprecipitated AHF," "Platelets," and "Plasma", respectively.

§ 610.12 [Amended]

b. In § 610.12 *Sterility* in paragraph (g)(4) removing "Leukocyte Typing Serum" and by revising "Whole Blood (Human)," "Cryoprecipitated Antihemophilic Factor (Human)," "Platelet Concentrate (Human)," "Red Blood Cells (Human)," "Single Donor Plasma (Human)," and "Source Plasma (Human)," to read "Whole Blood," Cryoprecipitated AHF," "Platelets," "Red Blood Cells," "Plasma," and "Source Plasma", respectively, and in paragraph (g)(7) by removing, "and Fibrinogen (Human)" and by revising

"Normal Serum Albumin (Human)," to read "Albumin (Human) and".

§ 610.13 [Amended]

c. In § 610.13 *Purity* in paragraph (a)(2)(ii) by revising "Measles Virus Vaccine, Live, Attenuated; Measles-Smallpox Vaccine, Live; Rubella Virus Vaccine, Live;" to read "Measles Virus Vaccine Live, Measles Live and Smallpox Vaccine, Rubella Virus Vaccine Live,"; in paragraph (a)(2)(iii) by revising "Modified Plasma (Bovine); Thrombin; Fibrinogen; Streptokinase; and Streptokinase-Streptodornase;" to read "Thrombin and Streptokinase;" in the introductory text of paragraph (b) by revising "Cryoprecipitated Antihemophilic Factor (Human); Single Donor Plasma (Human); Source Plasma (Human);" to read "Cryoprecipitate; Plasma; Source Plasma;" in paragraph (b)(1)(i) by removing the phrase "and at least 30 milligrams for Fibrinogen (Human)"; and in paragraph (b)(1)(ii) by removing "Streptokinase-Streptodornase, Aggregated Radio-Iodinated (I^{131}) Albumin (Human), Radio-Chromated (Cr^{51}) Serum Albumin (Human), Radio-Iodinated (I^{125}) Serum Albumin (Human), and Radio-Iodinated (I^{131}) Serum Albumin (Human),".

§ 610.15 [Amended]

d. In § 610.15 *Constituent materials* in paragraph (a) by revising "Poliovirus Vaccine, Live, Oral" to read "Poliovirus Vaccine Live Oral".

§ 610.51 [Removed]

e. By removing § 610.51 *Periods of cold storage.*

§ 610.52 [Removed]

f. By removing § 610.52 *Dating period.*

g. By revising § 610.53, to read as follows:

§ 610.53 Dating periods for licensed biological products.

(a) *General.* The minimum dating periods in paragraph (c) of this section are based on data relating to usage, clinical experience, or laboratory tests that establish the reasonable period beyond which the product cannot be expected to yield its specific results and retain its safety, purity, and potency, provided the product is maintained at the recommended temperatures. The standards prescribed by the regulations in this subchapter are designed to ensure the continued safety, purity, and potency of the products and are based on the dating periods set forth in paragraph (c) of this section. Package labels for each product shall recommend storage at the stated temperatures.

(b) *When the dating period begins.* The dating period for a product shall begin on the date of manufacture, as prescribed in § 610.50. The dating period for a combination of two or more products shall be no longer than the dating period of the component with the shortest dating period.

(c) *Table of dating periods.* In using the table in this paragraph, a product in column A may be stored by the manufacturer at the prescribed temperature and length of time in either column B or C, plus the length of time in column D. The dating period in column D shall be applied from the day the product leaves the manufacturer's storage, provided the product has not exceeded its maximun storage period, as prescribed in column B or C. If a product is held in the manufacturer's storage beyond the period prescribed, the dating period for the product being distributed shall be reduced by a corresponding period.

Product A	Manufacturer's storage period 1 to 5 °C (unless otherwise stated) B	Manufacturer's storage period 0 °C or colder (unless otherwise stated) C	Dating period after leaving manufacturer's storage when stored at 2 to 8 °C (unless otherwise stated) D
Adenovirus vaccine live oral	6 months	Not applicable	6 months.
Albumin (human)	3 years	do	(a) 5 years.
	do	do	(b) 3 years, provided labeling recommends storage at room temperature, no warmer than 37 °C.
	Not applicable	do	(c) 10 years, if in a hermetically sealed metal container and provided labeling recommends storage between 2 and 8 °C.
Allergenic extracts labeled "No U.S. Standard of Potency":			
1. With 50 percent or more glycerin	3 years	do	3 years.
2. With less than 50 percent glycerin	18 months	do	18 months.
3. Products for which cold storage conditions are inappropriate.	Not applicable	do	18 months (from date of manufacture), provided labeling recommends storage at 30 °C or colder.
4. Powders and tablets	do	do	5 years (from date of manufacture), provided labeling recommends storage at 30 °C or colder.
5. Freeze-dried products:			
a. Unreconstituted	do	do	4 years (from date of manufacture).
b. Reconstituted	do	do	18 months (cannot exceed 4-year unreconstituted dating period plus an additional 12 months).
Allergenic Extracts, alum precipitated labeled "No. U.S. Standard of Potency".	18 months	do	18 months.
Anthrax vaccine adsorbed	2 years	do	1 year.
Antibody to hepatitis B surface Antigen:			
1. Antibody to hepatitis B surface antigen	6 months	do	6 months.
2. Lyophilized coated red blood cells	do	do	Do.
3. Enzyme conjugated products	do	do	Do.
Iodinated (^{125}I)	Not applicable	do	45 days (from date of manufacture).
Antihemophilic factor (human)	do	do	1 year (from date of manufacture).
Antihuman globulin liquid	do	do	2 years.
Anti-inhibitor coagulant complex			2 years at 4 °C ±2 °C.
Antirabies serum	1 year	2 years	2 years.
Antivenin (*crotalidae*) polyvalent	do	do	5 years with an initial 10 percent excess of potency, provided labeling recommends storage at 37 °C or colder.
Antivenin (*latrodectus mactans*)	do	do	5 years with an initial 10 percent excess of potency.
Antivenin (*Micrurus fulvius*)	do	do	5 years with an initial 10 percent excess of potency.
Asparaginase	Not applicable	do	18 months from the date of the last valid potency test.
BCG vaccine	1 year	Not applicable	6 months.

Product	Manufacturer's storage period 1 to 5 °C (unless otherwise stated)	Manufacturer's storage period 0 °C or colder (unless otherwise stated)	Dating period after leaving manufacturer's storage when stored at 2 to 8 °C (unless otherwise stated)
A	B	C	D
Blood Grouping Serums:			
1. Liquid	Not applicable	Not applicable	2 years.
2. Dried	1 year	2 years	5 years.
Blood group substance AB	do	do	2 years.
Blood group substance A	do	do	Do.
Blood group substance B	do	do	Do.
Botulism antitoxin	do	do	5 years with an initial 20 percent excess of potency.
Cholera vaccine	do	Not applicable	18 months.
Coccidioidin	do	do	3 years.
Collagenase	Not applicable	do	4 years (from date of manufacture), provided labeling recommends storage at 37 °C or colder.
Cryoprecipitated AFH	do	do	12 months from the date of collection of source blood, provided labeling recommends storage at −18 °C or colder.
Diphtheria Antitoxin:			
1. Liquid	1 year	2 years	5 years with an initial 20 percent excess of potency.
2. Dried	do	do	5 years with an initial 10 percent excess of potency.
Diphtheria and tetanus toxoids and pertussis vaccine adsorbed	do	do	18 months.
Diphtheria and tetanus toxoids, absorbed	do	do	2 years.
Diphtheria toxin for schick test	do	do	1 year.
Diphtheria toxoid	do	do	2 years.
Diphtheria toxoid adsorbed	do	do	Do.
Diphtheria toxoid-schick test control	Not applicable	Not applicable	1 year.
Factor IX complex	do	do	1 year (from date of manufacture).
Fibrinolysin (human)	1 year	2 years	2 years.
Fibrinolysin and desoxyridonuclease combined (bovine)	do	do	3 years, provided labeling recommends storage at 30 °C or colder.
Fibrinolysin and desoxyribonuclease combined (bovine) with chloramphenicol	do	do	3 years, provided labeling recommends storage at 30 °C or colder.
Hepatitis B surface antigen:			
1. Unlyophilied coated red blood cells	Not applicable	do	14 days (from date of manufacture).
2. Iodinated (^{125}I) product	do	do	45 days (from date of manufcture).
3. Enzyme conjugated product	6 months	do	6 months
Histoplasmin	1year	do	2 years.
Immunoglobulins:			
1. Hepatitis B immune globulin (human)	Not applicable	do	1 year.
2. Immune globulin (human)	3 years	do	3 years.
3. Immune globulin intravenous (human)	1 year	do	1 year.
4. Lymphocyte immune globulin, anti-thymocyte globulin (equine).	Not applicable	Not applicable	2 years.
5. Pertussis immune globulin (human)	3 years	do	3 years from date the dried or frozen bulk product is placed in final solution.
6. Rabies immune globulin (Human)	1 year	do	1 year.
7. Rh_o(D) immune globulin (human)	6 months	do	6 months.
8. Tetanus immune globuline (human)	1 year	do	3 years with an initial 10 percent excess of potency.
9. Vaccinia immune globulin (human)	3 year	do	3 years.
10. Vari-cella-zoster immune globulin (human)	1 year	do	1 year.
Hepatitis B vaccine	2 years at 2 to 8 °C	Not applicable	3 years.
Influenza virus vaccine	1 year	do	18 months.
Limulus amebocyte lysate	Not applicable	Not applicable	18 months (from date of manufacture).
Measles, mumps, and rubella virus vaccine live	do	1 year (−20 °C or colder)	1 year.
Measles and mumps virus vaccine live	do	do	1 year.
Measles and rubella virus vaccine live	do	do	Do.
Measles live and smallpox vaccine	Not applicable	do	1 year (from date of manufacture).
Measles virus vaccine live	do	do	1 year.
Meningococcal polysaccharide vaccine group A:			
1. Final bulk powder	do	2 years (−20 °C or colder)	Not applicable.
2. Final container	Not applicable	3 years (−20 °C or colder)	2 years (−20 °C or colder).
Meningococcal polysaccharide vaccine group C:			
1. Final bulk powder	do	2 years (−20 °C or colder)	Not applicable.
2. Final container	do	3 years (−20 °C or colder)	2 years (−20 °C or colder).
Meningococcal polysaccharide vaccine groups A and C combined.	do	do	Do.
Meningococcal polysaccharide vaccine groups vaccine groups A, C, Y, and W135 combined.	do	do	do.
Mumps skin test antigen	1 year	do	18 months.
Mumps virus vaccine live	Not applicable	1 year (−20 °C or colder)	1 year.
Normal horse serum	1 year	2 years	5 years.
Pertussis vaccine	do	Not applicable	18 months.
Pertussis vaccine adsorbed	do	do	Do.
Plague vaccine	do	do	Do.
Plasma products:			
1. Fresh frozen plasma	Not applicable	do	1 year from date of collection of source blood (−18 °C or colder).
2. Liquid plasma	do	do	(a) 26 days from date of collection of source blood (between 1 and 6 °C). (b) 40 days from date of collection of source blood only when CPDA-1 solution is used as the anticoagulant (between 1 and 6 °C).
3. Plasma	do	do	5 years from date of collection of source blood (−18 °C or colder).
4. Platelet rich plasma	do	do	72 hours from time of collection of source blood, provided labeling recommends storage (20 to 24 °C or between 1 and 6 °C). 5 days if certain approved containers are used (20 to 24 °C).

Product	Manufacturer's storage period 1 to 5 °C (unless otherwise stated)	Manufacturer's storage period 0 °C or colder (unless otherwise stated)	Dating period after leaving manufacturer's storage when stored at 2 to 8 °C (unless otherwise stated)
A	B	C	D
5. Source leukocytes	do	do	In lieu of expiration date, the collection date shall appear on the label.
6. Source plasma	do	do	10 years (at the recommended storage temperature stated on the label).
7. Therapeutic exchange plasma	do	do	10 years.
Plasma protein fraction (human)	1 year	do	(a) 5 years. (b) 3 years provided labeling recommends storage at room temperature, no warmer than 30 °C.
Platelets	Not applicable	do	72 hours from time of collection of source blood, provided labeling recommends storage at 20 to 24 °C or between 1 and 6 °C. 5 days if certain approved containers are used (20 to 24 °C).
Pneumococcal vaccine polyvalent:			
1. Final bulk powder	do	15 months after potency assay (−20 °C or colder).	Not applicable.
2. Final container	do	Not applicable	2 years (after date of manufacture).
Poliovirus vaccine inactivated	1 year	do	1 year.
Poliovirus vaccine live oral trivalent:			
1. Frozen	Not Applicable	1 year (−10 °C or colder)	1 year, provided labeling recommends storage at a temperature which will maintain ice continuously in a solid state.
2. Liquid	do	Not applicable	30 days, provided labeling recommends storage between 2 and 8 °C and container has been unopened.
Poliovirus vaccine live oral type I:			
1. Frozen	do	1 year (−10 °C or colder)	1 year, provided labeling recommends storage at a temperature which will maintain ice continuously in a solid state.
2. Liquid	do	Not applicable	30 days, provided labeling recommends storage between 2 and 8 °C and container has been unopened.
Poliovirus vaccine live oral type II:			
1 Frozen	do	1 year (−10 °C or colder)	1 year, provided labeling recommends storage at a temperature which will maintain ice continuously in a solid state.
2. Liquid	do	Not applicable	30 days, provided labeling recommends storage between 2 and 8 °C and container has been unopened.
Poliovirus vaccine live oral type III:			
1 Frozen	do	1 year (−10 °C or colder)	1 year, provided labeling recommends storage at a temperature which will maintain ice continuously in a solid state.
2. Liquid	do	Not applicable	30 days, provided labeling recommends storage between 2 and 8 °C and container has been unopened.
Polyvalent bacterial antigens with "No U.S. Standard of Potency" liquid.	1 year	Not applicable	18 months.
Polyvalent bacterial vaccines with "No U.S. Standard of Potency" liquid.	do	do	Do.
Rabies Vaccine:			
1 Dried	do	2 years	Do.
2. Liquid	3 months	Not applicable	6 months.
Reagent red blood cells	Not applicable	do	35 days from earliest date of collection.
ACD red blood cells	do	do	(a) 21 days from date of collection of source blood, provided labeling recommends storage between 1 and 6 °C and the hermetic seal is not broken during processing. (b) 24 hours after plasma removal, provided labeling recommends storage between 1 and 6 °C and the hermetic seal is broken during processing.
CPD red blood cells	do	do	(a) 21 days from date of collection of source blood, provided labeling recommends storage between 1 and 6 °C and the hermetic seal is not broken during processing. (b) 24 hours after plasma removal, provided labeling recommends storage between 1 and 6 °C and the hermetic seal is broken during processing.
CPDA-1 red blood cells	do	do	(a) 35 days from date of collection of source blood, provided labeling recommends storage between 1 and 6 °C and the hermetic seal is not broken during processing. 24 hours after plasma removal, provided labeling recommends storage between 1 and 6 °C and the hermetic seal is broken during processing.
Red blood cells deglycerolized	do	do	24 hours after removal from storage at −65 °C or colder, provided labeling recommends storage between 1 and 6 °C.
Red blood cells frozen	do	do	3 years from date of collection of source blood, provided labeling recommends storage at −65 °C or colder.
Rubella and mumps virus vaccine live	do	1 year (−20 °C or colder)	1 year.
Rubella virus vaccine live	do	°C.	Do.
Skin test antigens for cellular hypersensitivity	6 months	Not applicable	Do.

Product	Manufacturer's storage period 1 to 5 °C (unless otherwise stated)	Manufacturer's storage period 0 °C or colder (unless otherwise stated)	Dating period after leaving manufacturer's storage when stored at 2 to 8 °C (unless otherwise stated)
A	B	C	D
Smallpox Vaccine:			
1. Liquid	Not applicable	9 months (−10 °C or colder, if product is maintained as glycerinated or equivalent vaccine in bulk or final containers).	3 months, provided labeling recommends storage at 0 °C or colder.
2. Dried	6 months	Not applicable	18 months.
Streptokinase	do	2 years	Do.
Tetanus and diphtheria toxoids adsorbed for adult use	1 year	Not applicable	2 years.
Tetanus antitoxin:			
1. Liquid	do	2 years	5 years with an initial 20 percent excess of potency.
2. Dried	do	do	5 years with an initial 10 percent excess of potency.
Tetanus toxoid adsorbed	do	do	2 years.
Thrombin	do	do	3 years.
Thrombin impregnated pad	Not applicable	Not applicable	1 year, or 6 months at 20 to 24 °C.
Tuberculin:			
1. Purified protein derivative, diluted	6 months	do	1 year.
2. Old or purified protein derivative, dried on multiple puncture device:	1 year (not to exceed 30 °C; do not refrigerate).	do	2 years, provided labeling recommends storage at a temperature not to exceed 30 °C. Do not refrigerate.
3. Old on multiple puncture device	do	do	Do.
Typhoid vaccine	1 year	do	18 months.
ACD whole blood	Not applicable	do	21 days from date of collection, provided labeling recommends storage between 1 and 6 °C.
CPD whole blood	do	do	Do.
CPDA-1 whole blood	do	do	35 days from date of collection, provided labeling recommends storage between 1 and 6 °C.
Heparin whole blood	do	do	48 hours from date of collection, provided labeling recommends storage between 1 and 6 °C.
Yellow fever vaccine	do	1 year (−20 °C or colder)	1 year, provided labeling recommends storage at 5 °C or colder.

(d) *Exemptions.* Exemptions or modifications shall be made only upon written approval, in the form of an amendment of the product license, issued by the Director, Office of Biologics Research and Review (HFN-800), Center for Drugs and Biologics.

PART 620—ADDITIONAL STANDARDS FOR BACTERIAL PRODUCTS

4. Part 620 is amended:

§ 620.4 [Amended]

a. In § 620.4 *Potency test* in paragraph (g) by revising "Poliomyelitis Vaccine" to read "Poliovirus Vaccine Inactivated".

Subpart C—[Amended]

b. By revising the heading of Subpart C to read "Subpart C—Anthrax Vaccine Adsorbed".

§ 620.20 [Amended]

c. In § 620.20 by revising the section heading to read "§ 620.20 *Anthrax Vaccine Adsorbed*" and in the text by revising "Anthrax Vaccine, Adsorbed" to read "Anthrax Vaccine Adsorbed".

PART 630—ADDITIONAL STANDARDS FOR VIRAL VACCINES

5. Part 630 is amended:

Subpart A—[Reserved]

a. By revising the heading of Subpart A to read "Subpart A—Poliovirus Vaccine Inactivated".

§ 630.1 [Amended]

b. In § 630.1 by revising the section heading to read "§ 630.1 *Poliovirus Vaccine Inactivated*" and in the text of paragraphs (a) and (c) by revising "Poliomyelitis Vaccine" to read "Poliovirus Vaccine Inactivated".

§ 630.2 [Amended]

c. In § 630.2 by revising the section heading to read "*Poliovirus Vaccine Inactivated*" and in paragraph (e)((3) by revising "poliomyelitis vaccine" to read "Poliovirus Vaccine Inactivated".

§ 630.3 [Amended]

d. In § 630.3 *Potency test* in the introductory paragraph by revising "poliomyelitis vaccine" to read Poliovirus Vaccine Inactivated".

§ 630.4 [Amended]

e. In § 630.4 *Tests for safety* in paragraph (b)((1) by revising "poliomyelitis vaccine" to read "poliovirus vaccine" and in paragraph (e)(5)((ii) by revising "poliomyelitis" to read "poliovirus".

§ 630.6 [Amended]

f. In § 630.6 *Equivalent methods* in the text by revising "poliomyelitis vaccine" to read "Poliovirus Vaccine Inactivated".

Subpart B—[Amended]

g. By revising the heading of Subpart B to read "Subpart B—Poliovirus Vaccine Live Oral".

h. In § 630.10 in paragraphs (a) and (b)(2) by revising "Poliovirus Vaccine, Live, Oral" to read "Poliovirus Vaccine Live Oral" and by revising the section heading to read "*§ 630.10 Poliovirus Vaccine Live Oral.*"

* * * * *

§ 630.12 [Amended]

i. In § 630.12 *Animal source; quarantine; personnel* in paragraphs (a)(1) and (b) by revising "Poliovirus Vaccine, Live, Oral" to read "Poliovirus Vaccine Live Oral".

§ 630.13 [Amended]

j. In § 630.13 by revising the section heading to read "*§ 630.13 Manufacture of Poliovirus Vaccine Live Oral.*"

§ 630.18 [Amended]

k. In § 630.18 *Equivalent methods* in the text by revising "Poliovirus Vaccine, Live, Oral," to read "Poliovirus Vaccine Live Oral".

Subpart D—[Amended]

1. By revising the heading of Subpart D to read "Subpart D—Measles Virus Vaccine Live".

§ 630.30 [Amended]

m. In § 630.30 by revising the section heading to read "§ 630.30 *Measles Virus Vaccine Live*" and in paragraphs (a) and (b)(2) by revising "Measles Virus Vaccine, Live, Attenuated," to read "Measles Virus Vaccine Live".

§ 630.36 [Amended]

n. In § 630.36 *General requirements* in paragraph (d) by revising "Measles Virus Vaccine, Live, Attenuated," to read "Measles Virus Vaccine Live".

§ 630.37 [Amended]

o. In § 630.37 *Equivalent methods* in the text by revising "Measles Virus Vaccine, Live, Attenuated," to read "Measles Virus Vaccine Live".

Subpart F—[Amended]

p. By revising the heading of Subpart F to read "Subpart F—Mumps Virus Vaccine Live".

§ 630.50 [Amended]

q. In § 630.50 by revising the section heading to read "§ 630.50 *Mumps Virus Vaccine Live*" and in paragraphs (a) and (b)(2) by revising "Mumps Virus Vaccine, Live," to read "Mumps Virus Vaccine Live".

§ 630.51 [Amended]

r. In § 630.51 *Clinical trials to qualify for license* in the text by revising "Mumps Virus Vaccine, Live," to read "Mumps Virus Vaccine Live".

§ 630.52 [Amended]

s. In § 630.52 by revising the section heading to read "§ 630.52 *Manufacture of Mumps Virus Vaccine Live*".

§ 630.56 [Amended]

t. In § 630.56 *General requirements* in paragraph (b) by revising "Mumps Virus Vaccine, Live," to read "Mumps Virus Vaccine Live" and in paragraph (e) by revising "Mumps Virus Vaccine, Live" to read "Mumps Virus Vaccine Live".

§ 630.57 [Amended]

u. In § 630.57 *Equivalent methods* in the text by revising "Mumps Virus Vaccine, Live," to read "Mumps Virus Vaccine Live".

Subpart G—[Amended]

v. By revising the heading of Subpart G to read "Subpart G—Rubella Virus Vaccine Live".

§ 630.60 [Amended]

w. In § 630.60 by revising the section heading to read "§ 630.60 *Rubella Virus Vaccine Live*" and in paragraph (a) by revising "Rubella Virus Vaccine, Live" to read "Rubella Virus Vaccine Live" and in paragraph (d)(1) by revising "Rubella Virus Vaccine, Live," to read "Rubella Virus Vaccine Live".

§ 630.61 [Amended]

x. In § 630.61 *Clinical trials to qualify for license* in the text by revising "Rubella Virus Vaccine, Live," to read "Rubella Virus Vaccine Live".

§ 630.62 [Amended]

y. In § 630.62 *Production* in paragraph (b) by revising "Rubella Virus Vaccine, Live" to read "Rubella Virus Vaccine Live".

§ 630.66 [Amended]

z. In § 630.66 *General requirements* in paragraph (b) by revising "Rubella Virus Vaccine, Live," to read "Rubella Virus Vaccine Live" and in paragraph (d) by revising "Rubella Virus Vaccine, Live" to read "Rubella Virus Vaccine Live".

§ 630.67 [Amended]

aa. In § 630.67 *Equivalent methods* in the text by revising "Rubella Virus Vaccine, Live" to read "Rubella Virus Vaccine Live".

Subpart I—[Amended]

bb. By revising the heading of Subpart I to read "Subpart I—Measles Live and Smallpox Vaccine".

§ 630.80 [Amended]

cc. In § 630.80 by revising the section heading to read "§ 630.80 *Measles Live and Smallpox Vaccine*" and in paragraph (a) by revising "Measles-Smallpox Vaccine, Live" to read "Measles Live and Smallpox Vaccine".

§ 630.84 [Amended]

dd. In § 630.84 *Potency tests* in the introductory paragraph by revising "Measles-Smallpox Vaccine, Live," to read "Measles Live and Smallpox Vaccine".

§ 630.87 [Amended]

ee. In § 630.87 *Equivalent methods* in the text by revising "Measles-Smallpox Vaccine, Live" to read "Measles Live and Smallpox Vaccine".

PART 640—ADDITIONAL STANDARDS FOR HUMAN BLOOD AND BLOOD PRODUCTS

5. Part 640 is amended:

Subpart A—[Amended]

a. By revising the heading of Subpart A to read "Subpart A—Whole Blood".

§ 640.1 [Amended]

b. In § 640.1 by revising the section heading to read "§ 640.1 *Whole blood*" and in the text by revising "Whole Blood (Human)" to read "Whole Blood".

§ 640.2 [Amended]

c. In § 640.2 *General requirements* in paragraph (a) by revising "Whole Blood (Human)" to read "Whole Blood".

§ 640.3 [Amended]

d. In § 640.3. in paragraphs (a) and (f) by revising "Whole Blood (Human)" to read "Whole Blood".

§ 640.4 [Amended]

e. In § 640.4 *Collection of the blood* in paragraphs (c) and (h) by revising "Heparinized Whole Blood (Human)" to read "Heparin Whole Blood" and in paragraph (i) by revising "Platelet Concentrate (Human)" and "platelet concentrate" to read "Platelets" and "platelets", respectively.

§ 640.5 [Amended]

f. In § 640.5 *Testing the blood* in paragraphs (a) through (e) by revising "Whole Blood (Human)" to read "Whole Blood" and in paragraph (c) by revising "Anti-Rh_o (Anti-D) Typing Serum" to read "Anti-D Blood Grouping Serum".

§ 640.6 [Amended]

g. § 640.6 by revising the section heading to read "§ 640.6 *Modifications of Whole Blood*" and in the introductory paragraph by revising "Whole Blood (Human)" to read "Whole Blood" and in paragraph (c) by revising "Whole Blood (Human), modified," to read "Whole Blood Cryoprecipitate Removed".

§ 640.7 [Amended]

h. In § 640.7 *Labeling* in the introductory text of paragraph (g) by revising "Whole Blood (Human), Modified" to read "Whole Blood Cryoprecipitate Removed" and in paragraph (g)(1) by revising "Modified" to read "Cryoprecipitate Removed".

Subpart B—[Amended]

i. By revising the heading of Subpart B to read "Subpart B—Red Blood Cells".

§ 640.10 [Amended]

j. In § 640.10 by revising the section heading to read "§ 640.10 *Red Blood Cells*" and in the text by revising "Red Blood Cells (Human)" to read "Red Blood Cells".

§ 640.11 [Amended]

k. In § 640.11 *General requirements* in paragraph (a) by revising "Red Blood Cells (Human)" to read "Red Blood Cells".

§ 640.12 [Amended]

l. In § 640.12 *Suitability of donor* in the text by revising "Red Blood Cells (Human)" to read "Red Blood Cells".

§ 640.13 [Amended]

m. In § 640.13 *Collection of the blood* in paragraph (b) by revising "Whole Blood (Human)" to read "Whole Blood".

§ 640.15 [Amended]

n. In § 640.15 *Pilot samples* in paragraphs (a) and (d) by revising "Red Blood Cells (Human)" to read "Red Blood Cells".

§ 640.16 [Amended]

o. In § 640.16 *Processing* in paragraph (a) by revising "red blood cells (human)" to read "Red Blood Cells" and in paragraph (c) by revising "Red Blood Cells (Human)" to read "Red Blood Cells".

§ 640.17 [Amended]

p. In § 640.17 *Modifications for specific products* in the text by revising "Red Blood Cells (Human)" to read "Red Blood Cells" and by revising "Red Blood Cells (Human), Frozen" to read "Red Blood Cells Frozen".

§ 640.18 [Amended]

q. In § 640.18 *Labeling* in the introductory paragraph by revising "Red Blood Cells (Human)" to read "Red Blood Cells"; in paragraph (a) by revising "Whole Blood (Human)" to read "Whole Blood"; in paragraph (b) by revising "Red Blood Cells (Human), Frozen, and Red Blood Cells (Human), Deglycerolized" to read "Red Blood Cells Frozen and Red Blood Cells Deglycerolized"; and in paragraph (d) by revising "Whole Blood (Human)" to read "Whole Blood".

Subpart C—[Amended]

r. By revising the heading of Subpart C to read "Subpart C—Platelets".

§ 640.20 [Amended]

s. In § 640.20 by revising the section heading to read "§ 640.20 *Platelets*" and in paragraphs (a) and (b) by revising "Platelets Concentrate (Human)" to read "Platelets".

§ 640.22 [Amended]

t. In § 640.22 *Collection of source material* in paragraph (a) by revising "Platelet Concentrate (Human)" to read "Platelets".

§ 640.23 [Amended]

u. In § 640.23 *Testing the blood* in paragraph (a) by revising "Platelet Concentrate (Human)" to read "Platelets".

§ 640.24 [Amended]

v. In § 640.24 *Processing* in paragraphs (a) and (e) by revising "Platelet Concentrate (Human)" to read "Platelets"; in paragraph (b) by revising "platelet concentrate is" to read "platelets are"; and in paragraph (d) by revising "platelet concentrate" to read "platelets".

§ 604.25 [Amended]

w. In § 640.25 *General requirements* in paragraph (a), the introductory text of paragraph (c), and paragraph (c) (1) and (2) by revising "Platelet Concentrate (Human)" to read "Platelets".

Subpart D—[Amended]

x. By revising the heading of Subpart D to read "Subpart D—Plasma".

§ 640.30 [Amended]

y. In § 640.30 by revising the section heading to read "§ 640.30 *Plasma*", in paragraphs (a) and (b) by revising "Single Donor Plasma (Human)" to read "Plasma", and in paragraph (b)(2) by revising "Whole Blood (Human)" to read "Whole Blood".

§ 640.32 [Amended]

z. In § 640.32 *Collection of source material* in paragraph (a) by revising "Single Donor Plasma (Human); Single Donor Plasma (Human), Fresh Frozen; and Single Donor Plasma (Human), Liquid," to read "Plasma, Fresh Frozen Plasma, and Liquid Plasma"; and by revising "Single Donor Plasma (Human), Platelet Rich" to read "Platelet Rich Plasma".

§ 640.33 [Amended]

aa. In § 640.33 *Testing the blood* in paragraph (b) by revising "Single Donor Plasma (Human)" to read "Plasma".

§ 640.34 [Amended]

bb. In § 640.34 *Processing* in paragraph (a) by revising "Single Donor Plasma (Human)" to read "Plasma" and "Single Donor Plasma (Human), Liquid" to read "Liquid Plasma"; in paragraph (b) by revising "Single Donor Plasma (Human), Fresh Frozen" to read "Fresh Frozen Plasma"; in paragraph (c) by revising "Single Donor Plasma (Human), Liquid" to read "Liquid Plasma"; in paragraph (d) by revising "Single Donor Plasma (Human), Platelet Rich" to read "Platelet Rich Plasma"; in the introductory text of paragraph (e) by revising "Single Donor Plasma (Human)" to read "Plasma" and by revising "Platelet Concentrate (Human) and/or Cryoprecipitated Antihemophilic Factor (Human) from Single Donor Plasma (Human)" to read "Platelets and/or Cryoprecipitated AHF from Plasma"; in paragraph (e)(1) by revising "Platelet Concentrate (Human)" to read "Platelets" and "Single Donor Plasma (Human), Fresh Frozen" to read "Fresh Frozen Plasma"; in paragraph (e)(2) by revising "Cryoprecipitated Antihemophilic Factor (Human)" to read "Cryoprecipitated AHF" and "Single Donor Plasma (Human)" to read "Plasma"; in paragraph (e)(3) by revising "Platelet Concentrate (Human) and Cryoprecipitated Antihemophilic Factor (Human)" to read "Platelets and Cryoprecipitated AHF" and "Single Donor Plasma (Human)" to read "Plasma"; and in paragraph (g)(2) by revising "Single Donor Plasma (Human), Platelet Rich; and Single Donor Plasma (Human), Liquid" to read "Platelet Rich Plasma and Liquid Plasma".

§ 640.35 [Amended]

cc. In § 640.35 *Labeling* in the introductory paragraph by revising "Single Donor Plasma (Human)" to read "Plasma" and in paragraph (s) by changing the proper name "Whole Blood (Human)" to read "Whole Blood".

Subpart F—[Amended]

dd. By revising the heading of Subpart F to read "Subpart F—Cryoprecipitate".

§ 640.50 [Amended]

ee. In § 640.50 by revising the section heading to read "§ 640.50 *Cryoprecipitated AHF*" and in paragraphs (a) and (b) by revising "Cryoprecipitated Antihemophilic Factor (Human)" to read "Cryoprecipitated AHF".

§ 640.52 [Amended]

ff. In § 640.52 *Collection of source material* in paragraph (a) by revising "Cryoprecipitated Antihemophilic Factor (Human)" to read "Cryoprecipitated AHF" and "Platelet Concentrate (Human)" to read "Platelets".

§ 640.53 [Amended]

gg. In § 640.53 *Testing the blood* in paragraphs (a) and (c) by revising "Cryoprecipitated Antihemophilic Factor (Human)" to read "Cryoprecipitated AHF".

§ 640.54 [Amended]

hh. In § 640.54 *Processing* in paragraphs (a)(3) and (b)(1) and (3) by revising "Cryoprecipitated

Antihemophilic Factor (Human)" to read "Cryoprecipitated AHF".

§ 640.55 [Amended]

ii. In § 640.55 *U.S. Standard preparation* in the text by revising "Cryoprecipitated Antihemophilic Factor (Human)" to read "Cryoprecipitated AHF".

§ 640.56 [Amended]

jj. In § 640.56 *Quality control test for potency* in paragraphs (a), (b), and (c)(1) by revising "Cryoprecipitated Antihemophilic Factor (Human)" to read "Cryoprecipitated AHF".

Subpart G—[Amended]

kk. By revising the heading of Subpart G to read "Subpart G—Source Plasma".

§ 640.60 [Amended]

ll. In § 640.60 by revising the section heading to read "§ 640.60 *Source Plasma*" and in the text by revising "Source Plasma (Human)" to read "Source Plasma".

§ 640.63 [Amended]

mm. In § 640.63 *Suitability of donor* in paragraph (a) by revising "Source Plasma (Human)" to read "Source Plasma".

§ 640.64 [Amended]

nn. In § 640.64 by revising the section heading to read "§ 640.64 *Collection of blood for Source Plasma*" and in paragraphs (a) and (c) by revising "Source Plasma (Human)" to read "Source Plasma".

§ 640.67 [Amended]

oo. In § 640.67 *Test for hepatitis B surface antigen* by revising "Source Plasma (Human)" to read "Source Plasma".

§ 640.68 [Amended]

pp. In § 640.68 *Processing* in paragraphs (a), (b), and (c) by revising "Source Plasma (Human)" to read "Source Plasma".

§ 640.69 [Amended]

qq. In § 640.69 *General requirements* in paragraph (a), (b), and (c) by revising "Source Plasma (Human)" to read "Source Plasma".

§ 640.70 [Amended]

rr. In § 640.70 *Labeling* in the introductory text of paragraph (a) by revising "Source Plasma (Human)" to read "Source Plasma" and in paragraph (b) by revising "Source Plasma (Human)" to read "Source Plasma" and by revising "Source Plasma (Human) Salvaged" to read "Source Plasma Salvaged".

§ 640.71 [Amended]

ss. In § 640.71 *Manufacturing responsibility* in the introductory texts of paragraphs (a) and (b) and in paragraph (b) (1) and (2) by revising "Source Plasma (Human)" to read "Source Plasma".

§ 640.72 [Amended]

tt. In § 640.72 *Records* in paragraphs (a)(1) and (b) by revising "Source Plasma (Human)" to read "Source Plasma".

§ 640.74 [Amended]

uu. In § 640.74 by revising the section heading to read "§ 640.74 *Modification of Source Plasma*" and in paragraphs (a) and (b) by revising "Source Plasma (Human)" to read "Source Plasma" and in paragraph (b) by revising "Liquid Source Plasma (Human)" to read "Source Plasma Liquid".

§ 640.75 [Amended]

vv. In § 640.75 *Alternate procedures* in the text by revising "Source Plasma (Human)" to read "Source Plasma".

ww. In § 640.76 in paragraphs (a), (b), and (c) by revising "Source Plasma (Human)" to read "Source Plasma" and by revising "Source Plasma (Human) Salvaged" to read "Source Plasma Salvaged".

Subpart H—[Amended]

xx. By revising the heading of Subpart H to read "Subpart H—Albumin (Human)".

§ 640.80 [Amended]

yy. In § 640.80 by revising the section heading to read "§ 640.80 *Albumin (Human)*" and in paragraph (a), introductory text of (b), and paragrah (b)(1) by revising "Normal Serum Albumin (Human)" to read "Albumin (Human)".

§ 640.81 [Amended]

zz. In § 640.81 *Processing* in paragraphs (e) and (g) by revising "Normal Serum Albumin (Human)" to read "Albumin (Human)".

§ 640.82 [Amended]

aaa. In § 640.82 *Tests on final product* in paragraph (f) by revising "Normal Serum Albumin (Human)" to read "Albumin (Human)".

bbb. In § 640.85 in the introductory paragraph by revising "Normal Serum Albumin (Human)" to read "Albumin (Human)".

§ 640.86 [Amended]

ccc. In § 640.86 *Equivalent methods* by revising "Normal Serum Albumin (Human)" to read "Albumin (Human)".

Subpart J—[Amended]

ddd. By revising the heading of Subpart J to read "Subpart J—Immune Globulin (Human)".

§ 640.100 [Amended]

eee. In § 640.100 by revising the section heading to read "§ 640.100 *Immune Globulin (Human)*" and in paragraphs (a) and (b) by revising "Immune Serum Globulin (Human)" to read "Immune Globulin (Human)".

§ 640.101 [Amended]

fff. In § 640.101 *General requirements* in paragraph (e)(3) by revising "Measles Virus Vaccine, Live, Attenuated" to read "Measles Virus Vaccine Live" and in the introductory text of paragraph (f) by revising "Immune Serum Globulin (Human)" to read "Immune Globulin (Human)".

§ 640.102 [Amended]

ggg. In § 640.102 by revising the section heading to read "§ 640.102 *Manufacture of Immune Globulin (Human)*" and in paragraph (d) by revising "Immune Serum Globulin (Human)" to read "Immune Globulin (Human)".

§ 640.104 [Amended]

hhh. In § 640.104 *Potency* in paragraphs (b)(2) and (c)(1) by revising "Reference Measles Immune Globulin" to read "Reference Immune Serum Globulin"; in paragraph (b)(2) by revising "Measles Virus Vaccine, Live, Attenuated" to read "Measles Virus Vaccine Live"; and in paragraphs (b)(3) and (c)(2) by revising "Reference Poliomyelitis Immune Globulin" to read "Reference Immune Serum Globulin".

PART 660—ADDITIONAL STANDARDS FOR DIAGNOSTIC SUBSTANCES FOR LABORATORY TESTS

7. Part 660 is amended:

§ 660.23 [Amended]

a. In § 660.23 *Red blood cell preparations* in paragraph (a) by revising "Reagent Red Blood Cells (Human)" to read "Reagent Red Blood Cells".

b. In § 660.25 by revising paragraph (a)(5)(iii), to read as follows:

§ 660.25 Potency test without reference preparations.

* * * * *

(a) * * *

(5) * * *

(iii) For Anti-U, Anti-Kp^a, Anti-Kp^c, Anti-Js^a, Anti-Js^b, Anti-Fy^b, Anti-N, Anti Le^a, Anti-Le^b, Anti-Di^a, Anti-Mg, Anti-

Jk^b, Anti-Xg^a, Anti-Co^b, and Wr^a at least 2+ reaction with undiluted serum.

* * * * *

c. In § 660.28 by revising paragraph (d), to read as follows:

§ 660.28 Labeling.

* * * * *

(d) *Names of antibodies.*

Blood group designation for container label	Optional synonym for package label and package insert
Anti-A	None.
Anti-A_1	Do.
Anti-B	Do.
Anti-A, B	Do.
Anti-Di^a	(Anti-Diego^a).
Anti-Fy^a	(Anti-Duffy^a).
Anti-Fy^b	(Anti-Duffy^b).
Anti-I	None.
Anti-Jk^a	(Anti-Kidd^a).
Anti-Jk^b	(Anti-Kidd^b).
Anti-Js^a	(Anti-Sutter).
Anti-Js^b	(Anti-Matthews).
Anti-K	(Anti-Kell).
Anti-k	(Anti-Celiano).
Anti-Kp^a	(Anti-Penney).
Anti-Kp^b	(Anti-Rautenborg).
Anti-Le^a	(Anti-Lewis^a).
Anti-Le^b	(Anti-Lewis^b).
Anti-M	None.
Anti-N	Do.
Anti-M^a	(Anti-Gilfeather).
Anti-P_1	None.
Anti-D	(Anti-Rh_o).
Anti-CD	(Anti-Rh_o').
Anti-DE	(Anti-Rh_o'').
Anti-CDE	(Anti-Rh_o''').
Anti-C	(Anti-rh').
Anti-E	(Anti-rh'').
Anti-c	(Anti-hr').
Anti-e	(Anti-hr'').
Anti-C^w	(Anti-rh^w).
Anti-S	None.
Anti-s	Do.
Anti-U	Do.
Anti-Wr^a	(Anti-Wright^a).
Anti-Js^a	(Anti-Sutter).
Anti-Co^b	(Anti-Colton^b).
Anti-Xg^a	None.

Effective date. Any product subject to this final rule that is initially introduced or initially delivered for introduction into interstate commerce on or after January 29, 1986 shall bear labeling including the new proper name of the product established herein.

(Secs. 201, 501, 502, 510, 701, 52 Stat. 1040–1042 as amended, 1049–1051 as amended, 1055–1056 as amended, 76 Stat. 794–795 as amended (21 U.S.C. 321, 351, 352, 360, 371); secs. 351, 352, 353, 361, 58 Stat. 702–703 as amended, 81 Stat. 536 (42 U.S.C. 262, 263, 263a, 264))

Dated: January 18, 1985.

Frank E. Young,

Commissioner of Food and Drugs.

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BILLING CODE 4160–01–M