

SOLID SHOOTING PLAN

Company Name

Mine Name or Number

Date

DM Mine Index Number

The following procedures, as required by §45.1-161.129.B.2 of the Coal Mine Safety Laws of Virginia, are incorporated as the solid shooting plan for the above named mine:

1. All sections of the Coal Mine Safety Laws of Virginia, pertaining to explosives and blasting, will be complied with.
2. All blasting activities will be conducted by a certified shot-firer or persons working in the presence of and under the direct supervision of a certified shot-firer.
3. Explosives and detonators will only be transported from the section magazine to the face in separate powder bags designated for that purpose.
4. The face area will be thoroughly rock dusted prior to detonation of shot holes.
5. All electric equipment in by the last open crosscut in the working place will be removed or de-energized at the power source before any holes are loaded or charged. All electrical equipment will be kept out of the area or de-energized until all shots are fired.
6. Blast rounds in each face will be drilled, wired, and loaded or charged in accordance with the attached diagrams.
7. Breaker holes will be provided for any face where coal or rock is blasted from the solid. Breaker holes will be the first holes fired in any face.
8. A proper test for methane will be made in the face area immediately before loading or charging holes.
9. Detonators will be properly identified and stored separately. The detonators will be inserted into the blasting cartridge in such a manner that they will not become dislodged or the wires damaged during handling, loading, or charging of the holes.
10. When loading or charging a shot hole, the explosive cartridge containing the detonator will be the first cartridge inserted in the mouth of the hole. Additional cartridges of explosives will be placed in the hole against the primed cartridge and pushed in a continuous train toward the back of the hole.

11. No explosive cartridge will be cut, slit, or otherwise deformed except for the purpose of sizing to allow the use of a section of a cartridge in a shot hole. Any cutting or slitting for other than the above use will be considered deliberately deforming the explosives and is prohibited.
12. The minimum delay period between any group of shots will not be less than 50 milliseconds. The maximum delay will not be more than 100 milliseconds.
13. The maximum delay period between the first and the last shot in any one blasting operation will not exceed 1,000 milliseconds.
14. Only stemming material of a noncombustible clay substance or comparable product will be used in solid shooting to ensure proper deformation of the stemming material. Frozen, dried-out, or otherwise hardened clay stemming will not be used.
15. When stemming a shot hole, the first dummy is to be inserted against the explosive charge and tamped very lightly. The succeeding dummies are to be placed into the hole individually and tamped individually until they are expanded to cover the entire circumference of the shot hole and are tightly compacted.
16. Explosives will not be fired when the temperature of the explosives is below the manufacturer's recommended minimum firing temperature.
17. The shooting circuit will be tested with a blaster's galvanometer prior to detonation.
18. Not more than one face may be blasted at any one time.
19. A copy of this plan will be posted in a conspicuous location on the specific mine section.
20. Explosive/Detonator information:

	Explosives	Detonator	Shot-firing Unit
Manufacturer:			
Type or Model:			
Size:		N/A	N/A
Maximum Number of Cartridges per hole:		N/A	N/A
Delay Numbers:	N/A		N/A

Attachment A – Explosives and Blasting

Coal Mine Safety Laws of Virginia

§ 45.1-161.129. Blasting practices; penalty.

A. All explosives shall be of the permissible type except where addressed in the plan for shaft and slope development required by § 45.1-161.250 B.

B. All explosives shall be used as follows:

1. Explosives shall be fired only with electric detonators of proper strength;
2. Explosives shall be fired with permissible shot-firing units, unless firing is done from the surface when all persons are out of the mine, or in accordance with a plan approved by the Chief;
3. Boreholes in coal shall not be drilled beyond the limits of the cut where the coal is cut nor into the roof or floor;
4. Boreholes shall be cleaned, and shall be checked to see that they are placed properly and are of correct depth in relation to the cut, before being charged;
5. All blasting charges in coal shall have a burden of at least eighteen inches in all directions if the height of the coal permits;
6. Boreholes shall be stemmed with at least twenty-four inches of incombustible material, or at least one-half of the length of the hole shall be stemmed if the hole is less than four feet in depth. The Chief may approve the use of other stemming devices;
7. Examinations for gas shall be made immediately before firing each shot or group of multiple shots, and after blasting is completed;
8. Shots shall not be fired in any place where a methane level of one percent or greater can be detected with a permissible methane detector;
9. Without approval, charges exceeding one and one-half pounds, but not exceeding three pounds, shall be used only if (i) boreholes are six feet or more in depth; (ii) the explosives are charged in a continuous train, with no cartridges deliberately deformed or crushed; (iii) all cartridges are in contact with each other, with the end cartridges touching the back of the hole and the stemming, respectively; and (iv) permissible explosives are used; however, the three-pound limit shall not apply to solid rock work;
10. Any solid shooting shall be done in compliance with conditions prescribed by the Chief;

11. Shots shall be fired by a certified underground shot firer;
12. Boreholes shall not be charged while any other work is being done at the face, and the shot or shots shall be fired before any other work is done in the zone of danger from blasting except that which is necessary to safeguard the miners;
13. Only nonmetallic tamping bars, including a nonmetallic tamping bar with a nonsparking metallic scraper on one end, shall be used for charging and tamping boreholes;
14. The leg wires of electric detonators shall be kept shunted until ready to connect to the firing cable;
15. The roof and faces of working places shall be tested before and after firing each shot or group of multiple shots;
16. Ample warning shall be given before shots are fired, and care shall be taken to ascertain that all miners are in the clear;
17. All miners shall be removed from the working place and the immediately adjoining working place or places to a distance of at least 100 feet and accounted for before shots are fired;
18. Mixed types or brands of explosives shall not be charged or fired in any borehole;
19. Adobe (mudcap) or other open, unconfined shots shall not be fired in any mine except those types approved by the Mine Safety and Health Administration and the Chief;
20. Power wires and cables that could contact blasting cables or leg wires shall be de-energized during charging and firing;
21. Firing shots from a properly installed and protected blasting circuit may be permitted by the Chief;
22. No miner shall return, or shall be allowed to return, to the working place after the firing of any shot or shots until the smoke has reasonably cleared away;
23. Before returning to work and beginning to load coal, slate or refuse, a miner shall make a careful examination of the condition of the roof and do what is necessary to make the working place safe; and
24. An examination for fire shall be made of the working area after any blasting.

C. It shall be unlawful for an operator, his agent, or mine foreman to cause or permit any solid shooting to be done without first having obtained a written permit from the Chief. It shall be unlawful for any miner to shoot coal from the solid without first obtaining permission to do so from the operator, his agent, or mine foreman. A violation of this subsection is a Class 1 misdemeanor.

(Code 1950, §§ 45-53.1, 45-53.5; 1954, c. 191; 1966, c. 594, § 45.1-48; 1978, c. 729; 1981, c. 179; 1984, c. 229; 1993, c. 442; 1994, c. 28; 1999, c. 256.)

§ 45.1-161.130. Blasting cables.

Blasting cables shall be:

1. Well insulated and as long as may be necessary to permit the shot firer to get in a safe place around a corner;
2. Short-circuited at the battery end until ready to attach to the blasting unit;
3. Staggered as to length or the ends kept well separated when attached to the detonator leg wires; and
4. Kept clear of power wires and all other possible sources of active or stray electric currents.

(Code 1950, § 45-53.6; 1954, c. 191; 1966, c. 594, § 45.1-49; 1994, c. 28.)

§ 45.1-161.131. Misfires.

A. Where misfires occur with electric detonators, a waiting period of at least fifteen minutes shall elapse before a miner shall be allowed to return to the shot area. After such failure, the blasting cable shall be disconnected from the source of power and the battery ends short-circuited before electric connections are examined.

B. Explosives shall be removed by firing a separate charge at least two feet away from, and parallel to, the misfired charge or by washing the stemming and the charge from the borehole with water, or by inserting and firing a new primer after the stemming has been washed out.

C. A very careful search of the working place, and, if necessary, of the coal shall be conducted after the coal reaches the tipple after blasting a misfired hole to recover any undetonated explosive.

D. The handling of a misfired shot shall be directly supervised by the mine foreman or a certified person designated by him.

(Code 1950, § 45-53.7; 1954, c. 191; 1966, c. 594, § 45.1-50; 1994, c. 28.)