STATUTORY INSTRUMENTS

1961 No. 854

MINES AND QUARRIES

The Coal Mines (Explosives) Regulations, 1961

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The Minister of Power, in pursuance of the powers conferred upon him by subsection (1) of section sixty-nine, section one hundred and forty-one and subsection (1) of section one hundred and forty-three of the Mines and Quarries Act, 1954(a), and of all other powers him enabling, hereby makes the following regulations:—

PART I

GENERAL

Commencement and citation

1. These regulations shall come into operation on the first day of June, nineteen hundred and sixty-one, and may be cited as the Coal Mines (Explosives) Regulations, 1961.

(a) 2 & 3 Eliz. 2. c. 70.

Interpretation

2.—(1) In these regulations, unless the context otherwise requires, the following expressions have the meanings hereby respectively assigned to them, that is to say—

"the Act" means the Mines and Quarries Act, 1954;

"cross measure drift" includes any drift driven otherwise than in coal or otherwise than for the purpose of getting coal therefrom;

"deputy" and "deputy's district" have the meanings respectively assigned thereto in the Coal and Other Mines (Managers and Officials) Regulations, 1956(a);

"detonator" includes safety fuse capped with a detonator;

"explosive" does not include a detonator;

"explosives store" has the meaning assigned thereto in paragraph (1) of regulation thirteen;

"firedamp content" means the percentage of inflammable gas present in the general body of the air;

"infusion method" has the meaning assigned thereto in paragraph (2) of regulation eight;

"mine" has the meaning assigned thereto in regulation six;

"the Minister" means the Minister of Power;

"miss-fire in a round by broken continuity" and "miss-fire in a round after firing" have the meanings respectively assigned thereto in paragraph (1) of regulation sixty-five;

"permitted detonator" and "permitted explosive" have the meanings respectively assigned thereto in regulation seven;

"round", in relation to shots, means (subject to the provisions of paragraph (1) of regulation sixty-one) a number of shots fired—

(*a*) electrically in one operation, by means of instantaneous or delay detonators; or

(*b*) by means approved by the Minister for firing more than four shots at one time by fuse; or

(*c*) by fuses lighted at one time;

"safety fuse" means fuse consisting of gun powder protected either by not less than three coverings of thread or by not less than two coverings of thread and one of tape or gutta-percha, being of such a quality that the rate of burning does not vary more than ten seconds above or below the rate of ninety seconds for each three feet of fuse;

"scheme of transit" has the meaning assigned thereto in paragraph (1) of regulation twenty;

"sheathed explosive" means explosive covered by an external sheath of incombustible material spread evenly over the sides of the cartridge, and includes explosive, in any type of cartridge, certified by the Minister to be equivalent in safety to sheathed explosive;

"shot firer" has the meaning assigned thereto in paragraph (1) of regulation eight;

"single-shot miss-fire" has the meaning assigned thereto in paragraph (2) of regulation sixty-one;

"trainee shot firer" has the meaning assigned thereto in paragraph (1) of regulation eight.

(a) S.I. 1956/1758 (1956 I, p. 1212).

(2) In these regulations any reference to the use of explosive includes the charging of a shot hole therewith.

(3) Expressions to which meanings are assigned by the Act or by these regulations shall (unless the contrary intention appears) have the same meanings in any document issued under the provisions of these regulations.

(4) The Interpretation Act, 1889(a), shall apply to the interpretation of these regulations as it applies to the interpretation of an Act of Parliament, and as if these regulations and the regulations hereby revoked were Acts of Parliament; and any reference in any other regulations made under the Act to any provision of the regulations hereby revoked shall be construed as a reference to the corresponding provision of these regulations.

Exemptions

3. An inspector may by notice served on the manager of any mine exempt that mine or any part thereof, or any person or thing or class of persons or things thereat, from the application of any provision of these regulations if he is satisfied that the safety of persons employed at the mine will not be prejudiced in consequence of the granting of the exemption.

Revocation

4. The Coal Mines (Explosives) Regulations, 1956(b), are hereby revoked.

Savings

5. Notwithstanding the revocation of the Coal Mines (Explosives) Regulations, 1956, any certificate, exemption, consent, approval, authority, determination, permission or scheme granted or made, or having effect as if it had been granted or made, for the purposes of any provision of those regulations, or any other thing done for the purposes of any such provision, shall, if in force on the coming into operation of these regulations and so far as it could have been granted, made or done for the purposes of the corresponding provision of these regulations, have effect as if it had been so granted, made or done.

PART II

APPLICATION

6. These regulations shall apply to every mine of coal, and in these regulations "mine" means such a mine.

PART III

MINES AND PARTS OF MINES IN WHICH ONLY PERMITTED EXPLOSIVES AND PERMITTED DETONATORS MAY BE USED

7.—(1) At any mine in which the use of lamps or lights, other than permitted lights, is unlawful, no person shall take or use below ground any explosive or detonator other than an explosive or detonator of a type approved by the Minister for use in places hazardous by reason of the presence or possibility of the presence of inflammable gas or combustible dust. An explosive or detonator of a type so approved is hereinafter referred to as a "permitted explosive" or a "permitted detonator", as the case may be.

(2) No person shall take into or use in any part of a mine, being a part in which safety-lamps are for the time being in use by way of temporary

(a) 52 & 53 Vict. c. 63. (b) S.I. 1956/1767 (1956 I, p. 1329).

precaution, any explosive other than a permitted explosive or any detonator other than a permitted detonator.

(3) No person shall use any explosive other than a permitted explosive or any detonator other than a permitted detonator—

(*a*) in a length of road which as regards any working face is an intake airway and which begins at a shaft or outlet or the current of air in which is subsequently split; or

(*b*) in a length of road through which coal is, or during the last preceding six months has been, transported by means of a conveyor or in vehicles moved otherwise than by hand or by animal traction; or

(*c*) in any place within thirty feet of such a road (not being a roadhead).

(4) If an inspector is of opinion that any part of a mine is dry and dusty he may serve on the manager a notice stating that he is of that opinion and requiring him to ensure that no explosive other than a permitted explosive and no detonator other than a permitted detonator is taken into or used in that part of the mine and any such notice shall, if it is so specified therein, become operative forthwith.

(5) The provisions of Part XV of the Act with respect to references upon notices served by inspectors shall apply to a notice served under the last preceding paragraph and the relevant ground of objection to such a notice shall be that that part of the mine is not so dry and dusty as to make the use therein of explosives other than permitted explosives, or detonators other than permitted detonators, dangerous.

PART IV

APPOINTMENT AND QUALIFICATION OF SHOT FIRERS

8.—(1) No person shall fire a shot in any mine other than—

(*a*) a competent person appointed to fire shots in that mine by the manager thereof (any person so appointed being, in these regulations, referred to as a "shot firer"); or

(*b*) a person who is the holder of a shot firer's certificate granted by the Minister on the recommendation of the Mining Qualifications Board, and who, in firing the shot, is practising shot firing by means of electric shot firing apparatus under the close personal supervision of a shot firer in pursuance of an authority in that behalf given in writing by the manager (such a person being in these regulations referred to as a "trainee shot firer").

(2) No person shall fire a shot in any mine—

(*a*) by means of a delay detonator;

(*b*) by the method known as infusion shot firing (in these regulations referred to as "the infusion method"); or

(*c*) in a round of more than six shots;

unless he is a shot firer appointed so to do by the manager of that mine or, in the case of a shot fired by means of a delay detonator or in a round of more than six shots, he is a shot firer practising the firing of such shots in accordance with the provisions of regulation eleven. The manager shall include a record of any such appointment in the record of the appointment of that shot firer kept in pursuance of section one hundred and thirty-four of the Act.

(3) No person firing shots in the regular course of his employment in any mine or part of a mine in which no explosives other than permitted explosives may be used shall be paid by wages depending upon the amount of mineral gotten:

Provided that this paragraph shall not apply—

(*a*) by virtue of the firing of shots in a part of the mine in which no explosives other than permitted explosives may be used by reason only that safety-lamps are for the time being in use therein by way of temporary precaution; or

(*b*) to a shot firer who is a master sinker or who is a deputy whose district consists of a shaft in the course of being sunk.

Qualification of shot firers

9.—(1) No person shall be qualified to be appointed or to be a shot firer unless—

(*a*) he has attained the age of twenty-two years, or such less age not being less than twenty-one years as may be approved by the Minister having regard to any special qualification held by him, and has had the practical experience specified in paragraph (2) of this regulation; or

(*b*) he is the holder of a service certificate made under paragraph (6) of article twelve of the Coal Mines (Explosives) Order, 1951(a).

(2) The practical experience referred to in the preceding paragraph is three years' practical experience below ground in a mine including employment for not less than eighteen months in one or more of the following, namely—

(*a*) getting or cutting coal;

(*b*) ripping in a roadhead;

(*c*) setting or withdrawing supports at or building packs at a face at which coal is being worked;

(*d*) drilling shot holes at a face at which coal is being worked;

(*e*) for not more than six months, repairing or enlarging roads or driving cross measure drifts;

(*f*) in the case of a master sinker or a deputy whose district consists of a shaft in the course of being sunk, sinking operations.

10.—(1) No person shall be qualified to be appointed or to be a shot firer at a mine in which no explosives other than permitted explosives may be used and no shot firer shall fire a shot or supervise the firing of a shot in a part of a mine in which no explosives other than permitted explosives may be used, not being such a mine or part of a mine by reason only that safety-lamps are for the time being in use therein by way of temporary precaution, unless (in addition to the qualification required under the last preceding regulation)—

(*a*) he is the holder of—

(i) a first or second class certificate of competency valid with respect to that mine; or

(ii) a shot firer's certificate granted by the Minister on the recommendation of the Mining Qualifications Board and he has spent not less than five shifts in practising shot firing in a mine under the close personal supervision of a shot firer; or

(iii) a service certificate made under paragraph (6) of article twelve of the Coal Mines (Explosives) Order, 1951, being a certificate

(a) S.I. 1951/1675 (1951 I, p. 284).

which states that he regularly fired shots in a mine to which Part II of the Explosives in Coal Mines Order, 1934(a), applied; and

(*b*) he has within the last preceding five years obtained a certificate that he was then able to make proper tests for inflammable gas and, in so far as concerned his hearing, to carry out his duties efficiently, being a certificate granted by a university or university college or by a school, college or institution maintained or assisted by a local education authority, or by another body approved by the Minister for that purpose:

Provided that the certificate referred to in sub-paragraph (*b*) of this paragraph shall not be required in the case of any person who has within the last preceding five years obtained for the purposes of regulation five of the Coal Mines (Explosive) Regulations, 1956, or for the purposes of paragraph (2) of regulation twenty-six of the Coal and Other Mines (Managers and Officials) Regulations, 1956, a certificate that he was then able to recognise the various gas caps formed in a safety-lamp as required by the regulation in question.

(2) No person shall be authorised to practise shot firing, and no person shall practice shot firing, in any such mine or part of a mine unless that person, in addition to holding the certificate referred to in sub-paragraph (*b*) of paragraph (1) of regulation eight, has the qualification described in sub-paragraph (*b*) of the preceding paragraph subject to the proviso to that paragraph.

11. No shot firer shall be appointed to fire shots in any mine by means of a delay detonator or in a round of more than six shots unless he has spent not less than five shifts practising the firing of shots by such means or in such a round, as the case may be, under the close personal supervision of a shot firer authorised to fire the shots in question who was not then supervising any other person for the purposes of this regulation.

12. Any certificate required by the preceding provisions of this Part of these regulations to be held as a qualification by any person for the time being employed as a shot firer or trainee shot firer at any mine shall be kept at the office at that mine or at such other place as may be approved by an inspector.

PART V

STORAGE, ISSUE AND CONVEYANCE OF EXPLOSIVES AND DETONATORS

13.—(1) The manager of a mine shall not permit any explosive, detonator or safety fuse to be stored thereat except in a place on the surface appointed by him for the purpose (in these regulations referred to as "an explosives store").

(2) The manager of every mine in which explosives are used shall appoint at least one place, which shall be situate conveniently near the top of each shaft or outlet normally used by workmen, as a place for the deposit of explosives and detonators brought out of the mine, and may appoint a place (other than an explosives store) for the issue thereof.

(3) The manager of every mine in which explosives are used shall appoint such number of competent persons and make such arrangements as to secure that a competent person is in charge of each explosives store or place appointed for the purposes of the last preceding paragraph whenever explosives or detonators are taken into the store or place, as the case may be, or are to be issued thereat.

(a) S.R. & O. 1934/6 (Rev. IV, p. 301: 1934 I, p. 221).

14. No person shall cap safety fuse with a detonator at any place at a mine except at a workshop used in connection with an explosives store in pursuance of section forty-seven of the Explosives Act, 1875(a).

Control of issue of detonators

15.—(1) All detonators at an explosives store or at a place appointed in pursuance of paragraph (2) of regulation thirteen shall, except during a shift for which the manager of the mine has appointed a competent person to have charge of that store or place, be in the sole charge of the manager.

(2) No person shall be in possession of any detonator at any place at a mine other than an explosives store or a place appointed in pursuance of paragraph (2) of regulation thirteen except a shot firer or trainee shot firer to whom the detonator has been issued for use, or a person authorised in writing by the manager of the mine so to be, and save as aforesaid no person shall issue or take any detonator from such a store or place.

Conveyance and care of detonators

16.—(1) Except in pursuance of regulation fifty-seven, no person shall take any detonator below ground in a mine except in a securely locked detonator case provided by the owner of the mine.

(2) No person shall put a detonator into a detonator case if it would then contain a delay detonator as well as a detonator which is not a delay detonator.

(3) No person shall put a delay detonator into a detonator case unless the detonator is clearly marked with a number which indicates the period of delay and that period does not exceed five seconds.

(4) The manager of every mine in which detonators are used shall ensure that no detonator case is issued to any person unless it is so constructed and maintained that when the case is closed it is impossible for any detonator or the leads of any detonator contained in the case to touch any metal part thereof which is exposed outside the case or is in contact with any other metal part so exposed.

17.—(1) Each shot firer or trainee shot firer to whom a detonator case has been issued shall—

(*a*) retain the key of the case in his own possession throughout the period during which he is on duty;

(*b*) ensure that, apart from any check sheet for recording shots fired by him, nothing except detonators is in it;

(*c*) keep it separate from any receptacle containing explosive;

(*d*) ensure that at any time at which it is not on his person it is in a safe place and, unless he remains in the immediate vicinity, in a securely locked box which does not contain any explosive; and

(*e*) if at the end of his period of duty it contains any detonator, return it to the explosives store or appropriate place on the surface appointed for the deposit of explosives.

(2) Subject to the provisions of regulation forty-four, no shot firer or trainee shot firer shall remove a detonator from a detonator case unless it is required immediately for charging a shot hole.

Conveyance and care of explosives

18. No person shall take any explosive below ground in any mine unless it is in the form of a cartridge.

(a) 38 & 39 Vict. c. 17.

19.—(1) Except in pursuance of regulation twenty or regulation fifty-seven, no person shall take any explosive below ground in any mine unless it is in a closed canister stoutly constructed and containing not more than five pounds of explosive.

(2) Every person having any canister of explosives in his possession or control shall ensure that it is not deposited at any time elsewhere than in a place of safety, and in particular if at the end of his period of duty the canister contains any explosive shall return it to the explosives store or appropriate place on the surface appointed for the deposit of explosives or, if he received it from a reserve station established for the purposes of a scheme of transit, to that reserve station or to a person and at a place appointed by the manager for the purpose of that scheme.

(3) Subject to the provisions of regulation forty-four, no person below ground shall unlock or open any canister of explosives or take any explosive from any canister unless the shot firer or trainee shot firer concerned requires to check the quantity of the explosives or the explosive is required immediately for charging a shot hole or the act in question has been authorised by a deputy or other official of the mine.

Conveyance of explosives in bulk

20.—(1) Subject to the following provisions of this regulation the manager of any mine may as respects that mine or any part thereof make a scheme for the conveyance of explosives in bulk (herein referred to as a "scheme of transit") whereby explosives packed at an explosives store in securely locked canisters of any size may be conveyed in a special carriage to one or more reserve stations in that mine or part of the mine or to the working face.

(2) Every scheme of transit shall contain provisions for securing safety with respect to each of the following matters—

(*a*) the location, construction and marking of each reserve station and the custody of the keys thereof;

(*b*) the design and construction of the special carriage;

(*c*) supervision of and precautions to be taken during the transit of the carriage;

(*d*) supervision of any explosives at a reserve station;

(*e*) if explosives are to be taken in bulk to any working face, the manner of so doing;

(*f*) the maximum quantity of explosives to be at any reserve station at any time;

(*g*) the control of the issue of explosives from any reserve station;

(*h*) the return of explosives to a reserve station or other place appointed by the manager.

(3) Every scheme of transit shall contain provisions to ensure that—

(*a*) the quantity of explosives conveyed into the mine in pursuance thereof at any time together with any quantity so conveyed already in the mine does not exceed the quantity estimated to be required for use during the next full working day;

(*b*) except in pursuance of a provision of the scheme, no explosive shall while being conveyed in bulk be taken nearer to a working face (not being only a place in a road at which ripping or work of repair is in progress) than the reserve station nearest to that face.

(4) A scheme of transit may impose duties and prohibitions on persons employed at the mine and those persons shall comply therewith. It shall

be the duty of the manager of the mine to secure that the provisions of any scheme of transit for that mine are executed and enforced.

(5) If an inspector is of opinion with respect to a scheme of transit that the provisions contained therein in pursuance of paragraph (2) of this regulation are not adequate to secure safety, he may serve on the manager of the mine a notice stating that he is of that opinion, specifying the nature of the provision which in his opinion ought to be made and requiring the manager to amend the scheme accordingly, and any such notice shall, if it is so specified therein, become operative forthwith.

(6) The provisions of Part XV of the Act with respect to references upon notices served by inspectors shall apply to a notice served under the last preceding paragraph, and the relevant ground of objection shall be that the provisions contained in the scheme of transit in pursuance of paragraph (2) of this regulation are adequate to secure safety.

(7) The person in charge of the explosives at any reserve station shall ensure that—

(*a*) any explosives remaining thereat at the end of his period of duty are—

(i) if the mine will not be worked during the period of one hundred and twenty hours next following, returned to the explosives stores;

(ii) in any other case,

(A) delivered by him to a person appointed to have charge of them during the immediately following shift; or

(B) returned to the explosives store; or

(C) securely locked in the reserve station; and

(*b*) if any such explosives are locked in the reserve station as aforesaid, the key thereof is—

(i) delivered by him to a person appointed to have charge of those explosives during the immediately following shift; or

(ii) deposited in the explosives store.

(8) The manager of every mine at which a scheme of transit is in operation shall ensure that a copy thereof is provided in the covered accommodation provided in pursuance of section one hundred and thirty-five of the Act and that a copy thereof is supplied to each shot firer and trainee shot firer employed at the mine.

PART VI

EQUIPMENT OF A SHOT FIRER

21.—(1) For each shot firer on duty there shall be provided by the owner of the mine—

(*a*) a tool made entirely of wood suitable for charging and stemming shot holes;

(*b*) a scraper suitable for cleaning out shot holes; and

(*c*) in the case of a shot firer in a mine in which the use of lamps or lights, other than permitted lights, is unlawful or in the case of a shot firer on duty in a part of a mine in which safety-lamps are for the time being in use by way of temporary precaution, a break detector of a design approved by the Minister (which detector may incorporate the scraper required by the last preceding sub-paragraph).

(2) Where a shot firer is to fire, or supervise the firing of, shots by means of electric shot firing apparatus he shall be provided by the owner of the

mine with the necessary shot firing cable of a specification approved by the Minister—

(*a*) if shots are to be fired in a round, for multi-shot firing; or

(*b*) in any other case, for single-shot firing.

22. No person shall fire a shot in any mine by means of electric shot firing apparatus or cable not provided by the owner of the mine.

23.—(1) In any mine or part of a mine in which no explosives other than permitted explosives may be used, no person shall fire a shot except by means of electric shot firing apparatus of a type approved by the Minister—

(*a*) if shots are being fired in a round, for multi-shot firing with all explosives; or

(*b*) in any other case, for single-shot firing with all explosives:

Provided that if an inspector is of opinion in any case that it is expedient to allow the firing of a number of shots in a round, and no such multi-shot firing apparatus may be used to fire those shots by reason of the terms of the approvals of the apparatus, he may by notice served on the manager of the mine permit the use therefor of such electric shot firing apparatus as is specified in the notice, whether approved apparatus or otherwise.

(2) In a mine or part of a mine to which the preceding paragraph does not apply, no person shall fire a shot by means of electric shot firing apparatus other than apparatus of a type approved by the Minister—

(*a*) if shots are being fired in a round, for multi-shot firing with all explosives or with explosives which are not permitted explosives; or

(*b*) in any other case, for single-shot firing with all explosives or with explosives which are not permitted explosives.

(3) Nothing in this regulation shall prevent the use of shot firing apparatus in accordance with the following provisions of these regulations in connection with miss-fired shots and, in a case in which a shot or shots in a shaft are to be fired by means of shot firing apparatus on the surface, nothing in paragraph (1) shall prevent the use of apparatus of a type approved by the Minister for firing with explosives which are not permitted explosives.

24.—(1) A shot firer or trainee shot firer to whom any electric shot firing apparatus has been issued shall retain the removable handle or key in his own possession throughout his period of duty:

Provided that nothing in this paragraph shall make it unlawful for a shot firer to whom any such apparatus has been issued and who is supervising the firing of shots by a trainee shot firer to allow the trainee shot firer to have possession of the removable handle or key for so long as may be necessary to enable the trainee shot firer to fire those shots.

(2) Any person who is using any electric shot firing apparatus—

(*a*) shall not place the removable handle or key in position in the apparatus until he is about to fire a shot; and

(*b*) shall remove it from the apparatus immediately after firing each shot.

25.—(1) If any electric shot firing apparatus appears to be defective, the person in charge of it shall not use it further but shall cause it to be returned to the surface forthwith and shall report the circumstances to the manager in writing.

(2) If any electric shot firing apparatus approved for multi-shot firing fails to fire all the shots in any properly connected round at one operation, it shall be deemed to be defective for the purposes of the preceding paragraph but notwithstanding the provisions of that paragraph it may be used to fire the shots in that round in accordance with the provisions of regulation sixty-seven.

26. It shall be the duty of the manager of every mine in which electric shot firing apparatus is used to make and secure the efficient carrying out of arrangements to ensure that—

(*a*) all such apparatus is thoroughly cleaned and overhauled at intervals not exceeding three months by the manufacturer thereof or by a competent person appointed for that purpose by the manager;

(*b*) all multi-shot firing apparatus is tested at the surface at intervals not exceeding seven days in a manner approved by the Minister in respect of apparatus of that type;

(*c*) if in connection with the firing of a round of shots by means of any such apparatus any miss-fire in a round after firing occurs, that apparatus is tested at the surface in such a manner before it is again taken below ground;

(*d*) no such apparatus is taken or used below ground unless on the last previous test thereof it was found to be in satisfactory order; and

(*e*) the date of each cleaning and overhaul and the result of each test carried out in pursuance of this regulation are entered in a book provided for the purpose by the owner of the mine.

Misuse of equipment

27.—(1) No person shall open or tamper with any electric shot firing apparatus below ground.

(2) No person shall use shot firing cable for any purpose other than shot firing.

PART VII

SHOT FIRING—ALL MINES

Drilling and cleaning shot holes

28.—(1) No person shall drill a shot hole or any part thereof with a drill of which the diameter does not exceed by at least one eighth of an inch the diameter of any cartridge to be inserted in that shot hole.

(2) No person shall for the purpose of testing, cleaning out or charging any shot hole use any tool other than the appropriate tool provided for the purpose by the owner of the mine.

29.—(1) No person shall begin to charge any shot hole unless it has been thoroughly cleaned out.

(2) No person shall use compressed air to clean out any shot hole unless he ensures that the giving off of any dust is minimised.

Charging shot holes

30.—(1) No person shall charge a shot hole unless he is a shot firer or is doing so under the supervision of a shot firer, and no shot firer shall charge a shot hole, or permit a shot hole to be charged, before it is necessary to do so for the purpose of firing a shot.

(2) No person shall begin to charge any shot hole unless he has satisfied himself by taking all reasonable precautions that it is so placed and drilled as to be safe for the firing of a shot.

(3) Except in the case of shots to be fired in one round or of a relieving shot for the purposes of a miss-fire, no person shall charge a shot hole if there is a charged shot hole within ninety feet thereof measured in any plane.

(4) No person shall charge a shot hole to be fired as one of a round in a cross measure drift, heading or ripping or in a shaft or staple-pit until all shot holes for that round have been completely drilled.

31.—(1) No shot firer shall permit more than one canister of explosives to be open at any one time for the charging of shot holes by him or under his supervision.

(2) No person shall charge a shot hole—

(*a*) otherwise than with a complete cartridge or complete cartridges; or

(*b*) subject to the provisions of paragraph (3) of regulation sixty-three with cartridges of different diameters or of explosives of different descriptions.

(3) No person shall remove any of the external sheath from a sheathed explosive.

(4) No person shall violently or forcibly press any cartridge into a shot hole.

(5) Any person charging a shot hole shall to the best of his judgment ensure that it is not overcharged having regard to the task to be performed.

32.—(1) Except in accordance with the provisions of Part XI of these regulations in relation to a miss-fire, no person shall insert more than one detonator into a shot hole.

(2) No person shall fire a shot by means of a detonator other than an electric detonator or safety fuse capped with a detonator.

(3) No person shall use any detonator in firing a round of shots electrically in any mine unless—

(*a*) it is a low tension detonator or a delay detonator; and

(*b*) it has copper leading wires.

(4) No shot firer shall use a delay detonator unless it is clearly marked with a number which indicates the period of delay and that period does not exceed five seconds.

(5) Where a delay detonator is to be used and the charge is to consist of more than one cartridge, the person charging the shot hole shall insert the primer cartridge first with the detonator at the back of the hole.

33.—(1) Except where the shot is to be fired by the infusion method, any person charging a shot hole shall ensure that it is stemmed with sufficient suitable and non-inflammable stemming to prevent a blown out shot.

(2) Except where—

(*a*) a device for pneumatic stemming approved by the Minister is being used; or

(*b*) infusion apparatus is being inserted into the shot hole for the purpose of firing a shot by the infusion method; or

(*c*) a device approved by the Minister for removing a cartridge from a shot hole in the event of a miss-fire is being used in accordance with

the proviso to paragraph (1) of regulation sixty-three or the proviso to paragraph (1) of regulation sixty-six;

no person shall insert any tool not made entirely of wood into a shot hole containing explosive.

34.—(1) No person shall remove any stemming from any charged shot hole otherwise than by means of water.

(2) No person shall pull out any detonator lead from any charged shot hole.

(3) No person shall remove any explosive from any charged shot hole except—

(*a*) a cartridge or part of a cartridge which is left protruding out of the mouth of the hole as a result of the firing of a shot or round of shots; or

(*b*) in accordance with the proviso to paragraph (1) of regulation sixty-three or the proviso to paragraph (1) of regulation sixty-six.

Firing shots

35.—(1) No person shall fire any shot unless he has satisfied himself by taking all reasonable precautions that it is in a shot hole so placed and drilled as to be safe for the firing of a shot and is charged and stemmed in accordance with the provisions of these regulations.

(2) Subject to the provisions of the preceding paragraph, each shot firer shall, unless prevented by circumstances beyond his control, fire every shot which has been charged by him or by some person under his supervision and which has not been fired by a trainee shot firer.

36. Each shot firer and trainee shot firer shall keep a record of all shots fired by him on each shift of his in a book provided by the owner of the mine for that purpose.

Firing shots electrically

37.—(1) No shot firer shall, in any mine or part of a mine, fire a round of more than six shots in—

(*a*) a coal face; or

(*b*) any other place if an inspector has by notice served on the manager directed that no round of more than six shots shall be fired in that place.

The provisions of Part XV of the Act with respect to references upon notices served by inspectors shall apply to a notice served under this paragraph, and the relevant ground of objection to such a notice shall be that compliance therewith is wholly, or to a particular extent, unnecessary for securing the safety of persons employed at the mine.

(2) Where a round of shots is to be fired by means of electric shot firing apparatus, the person who is to fire the round shall ensure that—

(*a*) the detonators are connected in series;

(*b*) no additional wire is used for connecting any detonator leads to each other.

(3) No person shall use any cable for firing shots if its length is less than any one of the following lengths which are applicable to the cable—

(*a*) sixty feet when a single shot is being fired otherwise than in a shaft in the course of being sunk;

(*b*) one hundred and fifty feet when a round of shots is being fired in coal;

(*c*) two hundred and ten feet when a round of six shots or less is being fired in stone;

(*d*) three hundred feet when a round of more than six shots is being fired in a ripping;

(*e*) six hundred feet when a round of more than six shots in a cross measure drift, or any shot in a shaft in the course of being sunk, is being fired.

(4) Any person who is about to use shot firing cable shall ensure that it is not in, and cannot make, contact with any other cable or electric apparatus.

(5) No person other than a shot firer or trainee shot firer shall couple any shot firing cable to any detonator or to shot firing apparatus.

(6) No person shall couple a shot firing cable to shot firing apparatus for the purpose of firing a shot unless the cable has already been coupled by him to the detonator or detonator circuit.

(7) No person shall fire any round of shots by means of electric shot firing apparatus unless he has tested the circuit for continuity by means of a testing device approved by the Minister and has found it to be satisfactory. No person shall make any such test unless all persons in the vicinity have withdrawn to a place of safety, and he himself has taken proper shelter.

Firing shots by fuse

38.—(1) No shot firer shall fire a single shot by fuse less than three feet in length or any shot in a round by fuse less than four feet in length.

(2) Not more than one shot firer shall charge shot holes with shots to be fired by fuse or permit shot holes to be so charged or fire shots by fuse at any one time in any working place or at any working face which does not exceed one hundred and fifty feet in length.

(3) At any working face exceeding one hundred and fifty feet in length no shot firer shall fire any shot by fuse within one hundred and fifty feet of another charged shot hole unless he has satisfied himself that no other shot firer is about to fire that other shot.

(4) No shot firer shall fire or attempt to fire more than four shots at one time by fuse except by means approved by the Minister for that purpose.

(5) Where any shot is to be fired by fuse the shot firer shall ensure that—

(*a*) no naked light or person who is smoking is directly above, or within four feet in any other direction of, any shot hole, explosive or detonator;

(*b*) all surplus explosives are removed from the vicinity of the shot hole before a light is brought near to it for the purpose of lighting the fuse.

Infusion shot firing

39.—(1) No shot firer shall fire a shot by the infusion method unless he has satisfied himself by taking all reasonable precautions that—

(*a*) the shot is in a shot hole which, immediately before he fires the shot, is filled with water, and

(*b*) the infusing apparatus used is so secured in the shot hole, or is so constructed, that it is not likely to be blown out by the shot.

(2) No shot firer shall fire a shot by the infusion method unless the explosives and detonators used for the purpose are each of a type approved by the Minister for use when firing shots by that method.

Warning and shelter

40. In every case where a shot may blow through into another place the person who is about to fire the shot shall cause due warning to be given to all persons in that place, and he shall after firing the shot cause notice to be given to them that the period of danger is ended.

41.—(1) Any person proposing to fire a shot shall before firing determine the danger zone likely to be created.

(2) No person shall fire any shot unless he has—

(*a*) at each entrance to that danger zone either posted a sentry or placed an appropriate fence conspicuously marked with the words "danger" and "shot firing";

(*b*) ensured that all persons have withdrawn from that zone or have taken proper shelter; and

(*c*) himself taken proper shelter.

42.—(1) No person who has been posted as a sentry in pursuance of regulation forty-one shall leave the place where he was posted until the person who so posted him has personally directed him to do so.

(2) No person shall pass a danger sign exhibited for the purpose of shot firing without the authority of the shot firer or trainee shot firer concerned, or shall pass a sentry who has forbidden him to do so.

Precautions after shot firing

43.—(1) Every person who has fired a shot shall thereafter—

(*a*) ascertain by a personal examination whether it is safe for ordinary working to be resumed in each working place affected by that shot; and

(*b*) ensure that any necessary action is taken to make each such place safe for such working.

(2) Where a round of shots has been fired the person who fired the round—

(*a*) shall not make that examination, if it was a round of six shots or less, before the expiry of five minutes or, in any other case, before the expiry of ten minutes;

(*b*) shall in the course of his examination examine for sockets in the face, for any explosive remaining in any such socket and, if he has reason to think that any shot may not have completely exploded, for any unexploded charge in the material brought down.

PART VIII

SHOT FIRING—ADDITIONAL PROVISIONS FOR CROSS MEASURE DRIFTS

44.—(1) Nothing in paragraph (2) of regulation seventeen or in paragraph (3) of regulation nineteen shall make it unlawful for a shot firer, in preparing to fire a round of shots in a cross measure drift, to prime the cartridges to be used in firing that round at a place which is at least one hundred and fifty feet away from the face, provided that—

(*a*) the place has been appointed for that purpose by the manager; and

(*b*) the shot firer has been appointed in writing by the manager to prime cartridges at a place other than a face.

(2) Such a shot firer, in the circumstances mentioned in the preceding paragraph, shall—

(*a*) immediately he has removed a detonator from a detonator case for the purpose of priming a cartridge, so twist together the leads of the detonator as to cause a short circuit;

(*b*) immediately he has primed each cartridge, place the cartridge in a box provided for the purpose by the owner of the mine;

(*c*) immediately after all the cartridges required for the round have been primed and placed in a box or boxes as aforesaid, securely lock every such box;

(*d*) ensure that thereafter every such box remains locked until the cartridges are required immediately for charging the shot holes; and

(*e*) charge the shot holes as soon as it is practicable to do so in accordance with Part VII of these regulations.

(3) No shot firer in complying with the requirements of sub-paragraph (*b*) of the last preceding paragraph shall put detonators of different periods of delay in the same compartment of a box.

(4) No shot firer shall begin priming the cartridges in the circumstances mentioned in paragraph (1) of this regulation unless he is satisfied on reasonable grounds that the shot holes to be charged therewith will be ready to be charged as soon as he has finished priming the cartridges.

(5) It shall be the duty of the manager to ensure that every such box as is referred to in paragraph (2) of this regulation is—

(*a*) of stout construction;

(*b*) fitted with a lock;

(*c*) divided into separate compartments; and

(*d*) so constructed and maintained that its contents are protected from shock and when it is closed it is impossible for any detonator or the leads of any detonator contained in the box to touch any metal part thereof which is exposed outside the case or is in contact with any other metal part so exposed.

(6) Any shot firer to whom any such box as is referred to in paragraph (2) of this regulation has been issued shall retain the key thereof in his own possession throughout the period during which he is on duty.

PART IX

SHOT FIRING—ADDITIONAL PROVISIONS FOR MINES IN WHICH ONLY PERMITTED EXPLOSIVES MAY BE USED

Shot firer's maximum number of shots

45.—(1) For each shot firer firing shots or supervising the firing of shots in the regular course of his employment in any mine or part of a mine in which no explosives, other than permitted explosives, may be used, the manager shall from time to time fix the maximum number of shots which he may fire or permit to be fired under his supervision in any one hour and in any one shift, and shall at all times ensure that the number for the time being so fixed shall, in each case, be one which is consistent with the requirements of safety:

Provided that the numbers so fixed shall not apply to shots fired in a round of more than six shots.

(2) If the manager proposes to fix a maximum exceeding ten for any one shift for a shot firer who is a deputy assigned to a district for that shift he shall give to the inspector for the district notice thereof in such form as may be specified by the Minister.

(3) If an inspector is of opinion that the firing of more than ten shots in a shift by or under the supervision of a shot firer referred to in a notice given under the last preceding paragraph is inconsistent with the requirements of safety, he may within fourteen days of the receipt of that notice serve on the manager a notice requiring him not to fix a number for that shot firer exceeding a number specified therein, and any such notice shall, if it is so specified therein, become operative forthwith.

(4) If an inspector is of opinion that any maximum number of shots fixed by the manager for any shot firer is inconsistent with the requirements of safety, he may serve on the manager a notice requiring him to reduce that number to a number not exceeding that specified in the notice:

Provided that an inspector shall not serve a notice under this paragraph in relation to a number of which notice was given under paragraph (2) unless there has been a material change in the circumstances since the date of that notice.

(5) The provisions of Part XV of the Act with respect to references upon notices served by inspectors shall apply to a notice served under either of the two last preceding paragraphs and the relevant ground of objection to such a notice shall be that the firing by or under the supervision of the shot firer in question of the maximum number of shots fixed or proposed to be fixed will not be inconsistent with the requirements of safety.

46.—(1) The manager shall give notice to each shot firer of each maximum fixed under the last preceding regulation in relation to him and shall record each such maximum in a book provided by the owner of the mine for the purpose.

(2) No shot firer shall in any one hour or in any one shift fire or permit to be fired under his supervision a greater number of shots than the permitted maximum notified to him under the preceding paragraph:

Provided that those numbers shall not apply to shots fired in a round of more than six shots.

Restrictions on shot firing where inflammable gas is present

47.—(1) If any determination of firedamp content made in pursuance of Part II of the Coal and Other Mines (Ventilation) Regulations, 1956(a), at any point in any part of a mine shows a firedamp content exceeding one and a quarter per cent., the manager shall take such steps as are necessary for securing that no person fires a shot in that part of the mine on the return side of that point during the period described in paragraph (4) of this regulation.

(2) If any deputy to whom a deputy's district is assigned in a mine in which the use of lamps or lights, other than permitted lights, is unlawful finds at any place a firedamp content exceeding one and a quarter per cent.

(a) S.I. 1956/1764 (1956 I, p. 1295).

or can see at any place in the general body of the air an indication of gas on the lowered flame of a safety-lamp, he shall ensure—

(*a*) that no shot is fired or shot hole charged in his district on the return side of that place during the period described in paragraph (4) of this regulation; and

(*b*) if the air in question will ventilate any part of any other deputy's district, that the deputy in charge thereof is informed of the facts.

(3) A deputy to whom such information is given shall ensure that no shot is fired or shot hole charged in any part of his district ventilated by air which has been found to contain inflammable gas as aforesaid during the period described in paragraph (4) of this regulation.

(4) Any prohibition imposed by this regulation shall continue as regards any place until the senior official on duty at the mine has satisfied himself that the firedamp content at the place at which it was found does not exceed one and a quarter per cent. and has authorised the resumption of shot firing.

(5) The manager shall forthwith give to the inspector for the district notice of any occasion on which shot firing is required to be suspended by this regulation by virtue of a firedamp content at any place exceeding one and a quarter per cent. unless such content was caused by the temporary derangement of the ventilation.

Restrictions on certain shots

48. If the face of any cross measure drift in a part of a mine in which no explosives, other than permitted explosives, may be used—

(*a*) contains a seam of coal more than twelve inches thick, or

(*b*) is in waste more than twelve inches thick or is known to have approached within fifteen feet of any waste,

no shot firer shall, in that drift, use any delay detonator, unless

(i) all the detonators and explosives used in the round in question are of a type approved by the Minister for the purposes of this regulation; or

(ii) in the circumstances referred to in paragraph (*a*) of this regulation, the following conditions are fulfilled, that is to say—

(A) any dust which can be raised in the air in any part of the drift which is within three hundred feet of the face thereof contains not less than seventy-five per cent. of incombustible matter;

(B) the face of the drift has been fixed by the manager under regulation six of the Coal and Other Mines (Ventilation) Regulations, 1956, as a suitable point for the determination of the firedamp content in that drift and, notwithstanding any different intervals which may apply by virtue of paragraph (1) of regulation seven of those regulations, firedamp determinations are made at that point, so far as practicable while operations are being carried out in the drift, at intervals not exceeding twenty-four hours by means of apparatus approved by the Minister under sub-paragraph (*a*) of paragraph (1) of regulation four of those regulations; and

(C) where the round of shots includes any shot fired in coal, the estimated period of delay between the first and last shots of the round calculated by reference to the markings on the detonators does not exceed 0·75 seconds; or

(iii) in the circumstances referred to in paragraph (*b*) of this regulation, an inspector by notice served on the manager has consented thereto.

49. In a mine in which the use of lamps or lights, other than permitted lights, is unlawful or in any part of a mine being a part in which safety-lamps are for the time being in use by way of temporary precaution, no person shall fire a shot—

(*a*) in the roof of any longwall working between the coal face and the waste; or

(*b*) in that waste:

Provided that the provisions of paragraph (*a*) of this regulation shall not apply in the case of a shot fired for the sole purpose of ripping the roof of a dummy gate by means of explosives and detonators of types approved for that purpose by the Minister.

Precautionary examinations

50.—(1) The provisions of this regulation shall apply to every mine in which the use of lamps or lights, other than permitted lights, is unlawful and to every part of a mine being a part in which safety-lamps are for the time being in use by way of temporary precaution.

(2) No person shall fire a shot unless he has carried out with respect to it an examination for general safety and tests for the presence of inflammable gas in accordance with the following provisions of this regulation. Every such test for inflammable gas shall be made with a locked flame safety-lamp of a type approved by the Minister for the purpose of deputies' inspections, a methanometer of a type approved by the Minister or other apparatus of a type approved by the Minister for the purpose.

(3) No person shall fire a shot or charge a shot hole if on any such test made with respect to it he finds a percentage of inflammable gas exceeding one and a quarter or he can see an indication of gas on the lowered flame of a safety-lamp.

(4) If shots are to be fired singly in succession in coal along a longwall face, the person who is to fire the shots shall arrange them in groups of not more than six and shall fire all the shots in any such group so far as practicable without interruption for duties other than shot firing.

(5) Any person who intends to fire shots in one or more rounds or groups in any area shall—

(*a*) before shot firing in that area is begun carry out an examination for general safety and test for the presence of inflammable gas over the whole of that area and the approaches thereto;

(*b*) immediately before the first shot hole of any round or group is charged, test for gas—

(i) in every accessible place within thirty feet of each of the two shot holes in the round or group which are farthest apart;

(ii) at the mouth of each shot hole in the round or group; and

(iii) if the shots are to be fired at a face and there is waste in the vicinity, throughout that part of the workings which is between the face and the waste and between those two shot holes;

(*c*) immediately before firing any round or any shot in a group, test for gas in the vicinity of each shot hole and at the edge of any waste opposite.

(6) Any person who intends to fire a single shot otherwise than as one of a group shall—

(*a*) immediately before the shot hole is charged, carry out an examination for general safety and test for gas—

(i) in the vicinity and at the mouth of the shot hole;

(ii) if the shot hole is in a longwall face, throughout every accessible place within, if the shot hole is not within sixty feet of the end of the face, thirty feet from the shot hole, or, if it is within sixty feet of the end of the face, sixty feet therefrom;

(*b*) immediately before firing, test for gas in the vicinity of the shot hole and at the edge of any waste opposite.

Preparation and charging of shot holes

51. Unless an inspector by notice served on the manager consents thereto, no person shall charge a shot hole in any coal face in a part of a mine in which no explosives, other than permitted explosives, may be used unless the coal has been holed or sheared to a depth greater than the depth of the shot hole:

Provided that this regulation shall not apply to a shot hole in anthracite or to any shot hole in a cross measure drift, or where the shot is to be fired by the infusion method or in pursuance of sub-paragraph (*c*) (ii) of paragraph (1) of regulation sixty-three or sub-paragraph (*c*) (ii) of paragraph (1) of regulation sixty-six.

52.—(1) In a mine in which the use of lamps or lights, other than permitted lights, is unlawful and in any part of a mine being a part in which safety-lamps are for the time being in use by way of temporary precaution, any person drilling a shot hole in coal or in a ripping and finding a break along or across it which exceeds one eighth of an inch in width shall mark the hole concerned in a distinctive manner. No person shall charge any shot hole so marked.

(2) In any such mine or part of a mine no person shall charge any shot hole in coal or in a ripping unless he has tested, with the break detector with which he is provided, for breaks running along or across it and has satisfied himself that no such break exceeding one eighth of an inch in width exists.

(3) The provisions of the preceding paragraphs of this regulation shall not apply in any case where the shot in question is to be fired by the infusion method.

53.—(1) No person other than a shot firer or trainee shot firer shall charge any shot hole in a part of a mine in which no explosives, other than permitted explosives, may be used:

Provided that nothing in this paragraph shall make it unlawful for any person in a cross measure drift or a shaft in the course of being sunk to insert in a shot hole any part of the charge, not being a primer cartridge, if he has been appointed in writing by the manager so to do, and, in so doing, he is working under the close personal supervision of a shot firer.

(2) No person shall stem any such shot hole unless he is a shot firer or is doing so under the supervision of a shot firer.

54.—(1) No person shall charge a shot hole in a part of a mine in which no explosives, other than permitted explosives, may be used with an aggregate

weight or length of explosive exceeding the maximum specified on any cartridge forming part of the charge.

(2) No person shall use in any such part of a mine—

(*a*) any detonator except an electric detonator with a copper tube;

(*b*) except in a cross measure drift or in a shaft in the course of being sunk any delay detonator unless—

(i) if the round in question is being fired otherwise than by the infusion method, all the explosives and detonators used to fire the round are of a type approved by the Minister for the purposes of this sub-paragraph;

(ii) the estimated period of delay between the first and last shots of the round calculated by reference to the markings on the detonators does not exceed 0·1 seconds; and

(iii) in the case of shots fired in a ripping, there is not, in the same seam, a coal face which is more than eighteen feet but less than four hundred and fifty feet from the ripping.

55. In a mine in which the use of lamps or lights, other than permitted lights, is unlawful and in any part of a mine being a part in which safety-lamps are for the time being in use by way of temporary precaution, no person shall—

(*a*) begin to charge any shot hole in under-cut coal or in a roof ripping within three hundred feet of a coal face unless he has inserted a plug of sand or clay or other similar non-inflammable material at the back of the hole; or

(*b*) charge any shot hole in a roof ripping within sixty feet of the face otherwise than with sheathed explosive;

except where the shot in question is to be fired by the infusion method.

PART X

SHOT FIRING—ADDITIONAL PROVISIONS FOR SHAFTS AND STAPLE-PITS

56. No person shall take any explosive into a shaft or staple-pit for use therein unless it is immediately required for charging a shot hole.

Primer cartridges

57. No person other than a shot firer or trainee shot firer shall take a primer cartridge fitted with a detonator into a shaft in the course of being sunk and no shot firer or trainee shot firer shall take such a cartridge so fitted into such a shaft otherwise than in a thick felt bag or other receptacle suitable for protecting it from shock.

Detonators

58. No person shall fire a shot in a shaft or staple-pit except by means of an electric detonator.

Precautions before firing

59.—(1) No person shall couple a shot firing cable to a detonator in a shaft or staple-pit provided with winding apparatus unless—

(*a*) the kibble is conveniently placed for men in the shaft or staple-pit to enter it; and

(*b*) he has satisfied himself that the person operating the winding apparatus is ready to raise the kibble.

(2) No person shall couple a shot firing cable to shot firing apparatus for the purpose of firing any shot in a shaft or staple-pit unless all persons who may be affected are in a place of safety.

Precautions after firing

60. No person, other than the shot firer and any trainee shot firer concerned, shall enter a staple-pit after a shot has been fired therein until the examination referred to in paragraph (1) of regulation forty-three has been carried out:

Provided that on such an examination the person who fired the shot may be accompanied by not more than two competent persons as assistants.

PART XI

MISS-FIRES

A. Single shots

Meaning of "single-shot miss-fire"

61.—(1) For the purposes of this Part of these regulations, all shots fired by fuse shall be deemed to be single shots.

(2) A shot being fired as a single shot shall be treated as a miss-fire (in these regulations referred to as a "single-shot miss-fire"), if it fails to explode, in the case of a shot being fired—

(*a*) by fuse, after the shot firer has withdrawn after once lighting or attempting to light the fuse; or

(*b*) electrically, after the person attempting to fire the shot, having been unsuccessful in doing so, has followed the procedure described in paragraph (3) of this regulation.

(3) The said procedure is that the person who attempted to fire the shot shall—

(*a*) disconnect from the shot firing apparatus the removable handle or key and the shot firing cable;

(*b*) after waiting five minutes, examine the cable and connections for any defect, and remedy any defect so found;

(*c*) make a further attempt to fire the shot, for which purpose he may use shot firing apparatus of a type approved by the Minister for multi-shot firing with the explosives concerned, not being apparatus approved only for use in a cross measure drift or shaft in the course of being sunk.

Single-shot miss-fires—general precautions

62. In the event of a single-shot miss-fire, no person shall approach the shot hole until, if the shot is being fired—

(*a*) by fuse, there have elapsed, from the lighting of the fuse or the attempt to light it, not less than thirty minutes; or

(*b*) electrically, the removable handle or key and the shot firing cable have been disconnected from the shot firing apparatus, and there have elapsed, from the last attempt to fire the shot, not less than five minutes.

Single-shot miss-fires—remedial action

63.—(1) In the event of a single-shot miss-fire, the shot firer or trainee shot firer concerned shall ensure that—

(*a*) the procedure described in paragraph (2) of this regulation is complied with; or

(*b*) in a case where the shot was being fired otherwise than by the infusion method, the stemming is removed with water, an additional primer inserted in the shot hole with proper stemming, and the shot then duly fired otherwise than by the infusion method; or

(*c*) in a case where the shot was being fired by the infusion method, the infusion tube is removed and either—

(i) an additional primer is inserted in the shot hole, the infusion tube replaced, and the shot then duly fired by the infusion method; or

(ii) an additional primer of the same explosive, or of a type approved for the purpose of this paragraph by the Minister, is inserted in the shot hole with proper stemming, and the shot then duly fired otherwise than by the infusion method:

Provided that, in a case where, in the opinion of the shot firer or trainee shot firer concerned, to insert a second primer in a shot hole in accordance with sub-paragraph (*b*) or sub-paragraph (*c*) of this paragraph without removing a cartridge already in the shot hole would over-charge the shot hole, a cartridge may be removed from the shot hole, by means of a device approved for the purpose by the Minister, immediately after the stemming or the infusion tube, as the case may be, has been removed and before the second primer is inserted.

(2) The said procedure is as follows—

(*a*) a shot hole shall be drilled not nearer to the shot hole containing the miss-fire than twelve inches, and, so far as is practicable, parallel to, and of equal depth to, that shot hole;

(*b*) if the shot hole containing the miss-fire also contains a detonator, the leads or fuse thereof shall be attached by a string to the shot firing cable, or to some distinctive marker;

(*c*) a shot shall be duly fired in the shot hole drilled as aforesaid;

(*d*) if the miss-fire is not dislodged, the procedure herein described shall be repeated.

(3) A primer of a type approved by the Minister for the purpose of sub-paragraph (*c*) (ii) of paragraph (1) of this regulation, or for the purpose of sub-paragraph (*c*) (ii) of paragraph (1) of regulation sixty-six, may be inserted in a shot hole in accordance with either of the said sub-paragraphs notwithstanding that it is of a different diameter from that of the cartridges already in the shot hole or that it contains explosive of a different description from that already in the shot hole.

B. Shots in a round

Circuit not continuous

64.—(1) If, when the circuit of a round is tested in pursuance of paragraph (7) of regulation thirty-seven, it is found not to be continuous, the

person who has made the test shall comply with the following procedure, that is to say, he shall—

(*a*) examine the shot firing cable and connections for defects (after disconnecting the cable from the shot firing apparatus, if the testing device formed part of it);

(*b*) remedy any defect so found; and

(*c*) subject to the provisions of the said paragraph (7), test the circuit again for continuity.

(2) If the circuit passes the last mentioned test successfully, the provisions of this Part of these regulations shall not apply in relation to that round, unless one or more of the shots fails to explode when fired.

(3) If the circuit does not pass the said test successfully, the shot firer or trainee shot firer concerned shall, by tests for continuity (which shall be subject to the provisions of paragraph (7) of regulation thirty-seven), determine the faulty shot or shots.

Miss-fires by broken continuity or after firing

65.—(1) A shot being fired electrically in a round shall be treated as a miss-fire if—

(*a*) by the tests under paragraph (3) of regulation sixty-four, it is found to be a faulty shot (any such shot being in these regulations referred to as a "miss-fire in a round by broken continuity"); or

(*b*) when the round is fired, it fails to explode, whether or not all other shots in the round have exploded, (any such shot being in these regulations referred to as a "miss-fire in a round after firing").

(2) Whenever, in the event of any miss-fire in a round by broken continuity or miss-fire in a round after firing, any shot forming part of the round is, for the purposes of remedial action under regulation sixty-six or regulation sixty-seven, required to be fired singly, it may be fired by means of the shot firing apparatus used for firing the round.

Remedial action

66.—(1) In the event of a miss-fire in a round by broken continuity, the shot firer or trainee shot firer concerned shall ensure that either—

(*a*) the procedure described in paragraph (2) of this regulation is complied with; or

(*b*) in a case where the round in question was being fired otherwise than by the infusion method, the stemming is removed with water, an additional primer inserted in the shot hole with proper stemming, and the round duly connected up, tested and fired otherwise than by the infusion method; or

(*c*) in a case where the round in question was being fired by the infusion method, the infusion tube is removed and either—

(i) an additional primer is inserted in the shot hole, the infusion tube replaced, and the round then duly connected up, tested and fired by the infusion method; or

(ii) an additional primer of the same explosive, or of a type approved for the purpose of this paragraph by the Minister, is inserted in the shot hole with proper stemming, and the round then duly connected up, tested and fired:

Provided that, in a case where, in the opinion of the shot firer or trainee shot firer concerned, to insert a second primer in a shot hole in accordance with sub-paragraph (*b*) or sub-paragraph (*c*) of this paragraph without removing a cartridge already in the shot hole would over-charge the shot hole, a cartridge may be removed from the shot hole, by means of a device approved for the purpose by the Minister, immediately after the stemming or the infusion tube, as the case may be, has been removed and before the second primer is inserted.

(2) The said procedure is as follows—

(*a*) the leads of the detonator of the miss-fire shall be attached by a string to the shot firing cable, or to some distinctive marker;

(*b*) the other shots in the round (excluding, where delay detonators are being used, any shot having a longer period of delay) shall be duly connected up, tested and fired, as provided in these regulations;

(*c*) if the miss-fire becomes dislodged, and if there are any shots having a longer period of delay, they shall be duly connected up, tested and fired;

(*d*) if it has not become dislodged—

(i) if there are any shots having a longer period of delay, they shall be fired in turn, in increasing order of delay (in each delay period, the shot which is nearest to the miss-fire being fired first); and

(ii) in any other case, it shall be treated as a single-shot miss-fire.

67.—(1) In the event of a miss-fire in a round after firing—

(*a*) no person shall approach the shot hole unless the removable handle or key and the shot firing cable have been disconnected from the shot firing apparatus; and

(*b*) the person who fired the round shall at the expiry of the appropriate period specified in regulation forty-three make a personal examination as provided in that regulation, whether or not any shot in the round has exploded.

(2) If there were more than one miss-fire, the person who fired the round shall connect them in series and fire them as a round as provided in these regulations.

(3) If there was one miss-fire only, or if one or more miss-fires, fired as a round in pursuance of paragraph (2), fails or fail to explode, the shot firer or trainee shot firer concerned shall fire the miss-fire, or each of the miss-fires, as the case may be, singly.

(4) Any miss-fire, fired singly as aforesaid and failing to explode, shall be treated as a single-shot miss-fire.

68.—(1) Whenever, in pursuance of any provision of this Part of these regulations relating to any round of shots, any shot in the round is fired while one or more shots already charged remain unexploded, the person firing the shot shall, in the course of his examination made in pursuance of regulation forty-three, ascertain whether any such shot has been dislodged.

(2) The provisions of regulation seventy-one shall apply to the recovery and disposal of the detonator and charge of any shot so dislodged.

C. All miss-fires

69. No person shall attempt to remove any part of the charge from the shot hole of any shot which is to be treated as a miss-fire except—

(*a*) a cartridge or part of a cartridge which is protruding out of the shot hole as a result of the firing of a shot or round of shots; or

(*b*) in accordance with the proviso to paragraph (1) of regulation sixty-three or the proviso to paragraph (1) of regulation sixty-six.

70. In the case of any shot which is to be treated as a miss-fire or any round of shots of which the circuit has been found not to be continuous, if the shot firer concerned leaves the working place before the shot or shots have been fired, or after the detonator and cartridges have been dislodged and before the provisions of the next following regulation have been complied with, he shall—

(*a*) cause notice of the circumstances to be given to the deputy in charge of the district; and

(*b*) ensure that sufficient fences and danger notices are erected to warn any person approaching the place.

71. Whenever any miss-fire is dislodged by the firing of another shot there shall be made under the supervision of the person who fired that shot or an official of the mine before any person resumes work and before any further shot is fired at or near that place a search for the detonator (if any) and the charge thereof and if any detonator or cartridge is not found all mineral so dislodged shall be conveyed out of the mine separately from any other mineral and under the like supervision.

72. In the event of any miss-fire, the person who attempted to fire the shot in question shall, before leaving the mine, report the circumstances thereof to the senior official on duty at the mine, and shall record the fact of the miss-fire in his daily record of shots.

PART XII

APPARATUS AND EXPLOSIVES FOR KILLING HORSES

73.—(1) Nothing in Parts III to XI of these regulations except regulation thirteen shall apply to such apparatus or such cartridges of explosive as are approved by the Minister for use in mines for destroying horses.

(2) No person shall take or use below ground in any mine for any other purpose any such apparatus or cartridge.

74. The manager of every mine shall ensure that horse killing apparatus is—

(*a*) kept in the custody of a competent person appointed by him and used only by that person or under his close personal supervision;

(*b*) cleaned and examined immediately after use on any occasion.

75.—(1) The manager of every mine shall ensure that cartridges for horse killing are issued from the explosives store only to a person appointed to have custody of horse killing apparatus and in a case or box with a lock provided by the owner of the mine.

(2) No person shall put any cartridge for horse killing into a receptacle containing any other kind of explosive or a detonator.

(3) Every person having a case or box of cartridges for horse killing shall keep it separate from any other receptacle containing explosive or detonators and shall keep it locked except for the purposes of the following paragraph.

(4) No person shall remove any cartridge for horse killing from its case or box below ground until it is required for immediate use.

76.—(1) In any mine in which the use of lamps or lights, other than permitted lights, is unlawful or in any part of a mine being a part in which safety-lamps are for the time being in use by way of temporary precaution, no person shall fire a shot with horse killing apparatus unless immediately before firing a competent person has made tests for the presence of inflammable gas throughout every accessible place within thirty feet of the place where the shot is to be fired and it has been found safe for the firing of that shot.

(2) Every such test shall be made with a locked flame safety-lamp of a type approved by the Minister for the purpose of deputies' inspections, a methanometer of a type approved by the Minister or other apparatus of a type approved by the Minister for the purpose.

(3) No person shall fire a shot with horse killing apparatus if on any such test made with respect to that shot there has been found a firedamp content exceeding one and a quarter per cent. or an indication of gas on the lowered flame of a safety-lamp has been seen at any place.

Dated this twenty-sixth day of April, nineteen hundred and sixty-one.

Richard Wood,
Minister of Power.

EXPLANATORY NOTE

(This note is not part of the regulations, but is intended to indicate their general purport.)

These regulations, made by the Minister of Power under the Mines and Quarries Act, 1954, replace, with amendments, the Coal Mines (Explosives) Regulations, 1956. They apply to mines of coal and relate to the storage, issue, conveyance and use of explosives and detonators, and to the appointment, qualifications, equipment and duties of shot firers at such mines. The principal changes from the provisions of the 1956 Regulations relate to:—

(*a*) The use of approved types of detonators (Reg. 7).

(*b*) The qualifications required for firing shots (Regs. 8, 10 and 11).

(*c*) The care of explosives below ground (Reg. 20).

(*d*) The firing of rounds of more than six shots (Reg. 37).

(*e*) The pulsed infusion method of firing (Reg. 39).

(*f*) The priming of rounds in cross measure drifts (Reg. 44).

(*g*) The use of delay detonators (Regs. 48 and 54)

(*h*) Restriction on shots in certain parts of mines (Reg. 49).

(*i*) The stemming of shot holes in certain parts of mines (Reg. 55).

(*j*) The re-entry of workmen into staple-pits after shot firing (Reg. 60).

(*k*) Remedial action in the event of a miss-fire (Regs. 63, 66 and 69).

Exemptions, approvals, authorities, etc., granted for the purposes of the Coal Mines (Explosives) Regulations, 1956, are saved (Reg. 5); and all special regulations varying the application of those Regulations in relation to particular mines have effect as if they referred to the corresponding provisions of these regulations (Reg. 2 (4)).