ORDERS, &c., UNDER COAL MINES ACTS

The Coal Mines (Explosives) Order, 1951

1951 No. 1675

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The Minister of Fuel and Power (in this order referred to as " the Minister "), in exercise of the powers conferred upon him by section sixty-one of the Coal Mines Act, 1911(a), (in this order referred to as " the Act "), and of all other powers him enabling, hereby makes the following order:—

PART I

Application of order

1.—(1) This order applies to all mines in which coal is worked, or is intended to be worked.

(2) Nothing in this order except this article, article fifty-six and the first schedule applies to apparatus, or to cartridges of explosive, of a type approved for use in mines for destroying horses. The provisions set out in that schedule shall be complied with by every person concerned with the storage, taking below ground or use in any mine of any such apparatus or cartridge.

(a) 1 & 2 Geo. 5. c. 50.

PART II

Types of explosives and detonators, and their storage and conveyance

Types of explosives and detonators

2.—(1) No explosive (which expression does not in the provisions contained in this order include a detonator) shall be taken or used below ground in any mine, unless it is in the form of a cartridge.

(2) No explosive other than a permitted explosive (as defined in this order) shall be—

(*a*) taken below ground or used in any mine in any part of which safety lamps are required to be used ; or

(*b*) taken into or used in any part of a mine, being a part which is dry and dusty or in which safety lamps are being used as a temporary precaution.

(3) No explosive other than a permitted explosive shall be used in a main intake airway or coal transport road in any mine.

(4) Any dispute between the manager of a mine and the inspector of the division whether a part of the mine is dry and dusty shall be determined in manner provided under the Act for settling disputes ; and, until so determined otherwise, that part shall be deemed to be dry and dusty.

3.—(1) No detonator shall be used in firing a round of shots electrically, unless—

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

(*b*) it has copper leading wires.

(2) No delay detonator shall be taken or used below ground, unless the period of delay (which shall not exceed five seconds) is clearly marked thereon.

(3) In any mine or part of a mine in which permitted explosives are required to be used,—

(*a*) no detonator shall be used, unless it is an electric detonator with a copper tube ; and

(*b*) no delay detonator shall be used, except in a stone drift or sinking pit.

Storage of explosives and detonators

4.—(1) Every place appointed by the manager as a store for, or as premises for the keeping of, explosives or detonators shall be on the surface.

(2) For the deposit of explosives and detonators brought out of the mine at the end of each shift, there shall be at least one place so appointed situate conveniently near to each exit from the mine normally used by workmen.

(3) The manager shall appoint in writing one or more competent persons to have charge of each place so appointed, whenever explosives or detonators are required to be issued or returned.

5.—(1) No safety fuse intended to be used for firing shots shall be stored elsewhere than at a place appointed under article four.

(2) No safety fuse shall be capped with a detonator in or about a mine elsewhere than in a workshop subject to section forty-seven of the Explosives Act, 1875(a).

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

6.—(1) All detonators shall be in the sole charge of the manager, or, during any shift for which the manager has in writing appointed a competent person to have charge of the detonators at a place appointed under article four, of that person.

(2) No detonator shall be taken from any place so appointed, except by the written authority of the manager, or on issue for use as provided in this order.

Conveyance of explosives

7.—(1) Subject to the provisions of article eight, no explosive shall be taken into any mine, unless it is in a closed canister stoutly constructed and containing not more than five pounds of explosive:

Provided that nothing in this paragraph shall restrict the conveyance (subject to article forty-one) of primer cartridges fitted with detonators for the purpose of sinking operations from the surface.

(2) Every person having any canister of explosives in his possession or control shall ensure that it is not deposited except in a place of safety.

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

8.—(1) If a scheme for the conveyance of explosives in bulk (in this order referred to as a " scheme of transit ") is in operation under paragraph (2) for any mine or part of a mine, explosives packed at a place appointed as a store in securely locked canisters of any size may, subject to the provisions of this article, be conveyed in accordance with the scheme in a special carriage to one or more reserve stations in that mine or that part.

(2) No scheme of transit shall be operated, unless—

(*a*) it makes provision adequate for safety to the satisfaction of the inspector of the division for each of the matters specified in the second schedule to this order ; or

(*b*) it has been determined, in manner provided under the Act for settling disputes, to make provision adequate for safety for each of them.

(3) Where any scheme of transit is in operation, a copy thereof shall be attached to the copy of this order posted at or near the mine in pursuance of article fifty-three ; and a copy of the scheme shall be supplied to each shot firer employed at the mine.

(4) The total quantity of explosives conveyed into a mine under a scheme of transit in any period of twenty-four hours shall not exceed the quantity estimated to be required for use during the period of twenty-four hours next following.

(5) No explosives shall, while being conveyed in bulk, be taken nearer to a working face than the reserve station nearest to that face, unless the relevant scheme of transit expressly so provides.

(6) The person in charge of the explosives at any reserve station shall, before the end of his shift, ensure that any of the same remaining unused, and not delivered by him to a person appointed to have charge of them during the next following shift, are returned to the store from which they were taken into the mine.

Issue and conveyance of detonators

9.—(1) No person shall be in possession of any detonator, unless he is a person to whom it has been issued for use, or a person authorised to be in possession of it by the manager in writing.

(2) No detonator shall be issued for use except to a shot firer (as defined in article eleven).

10.—(1) No detonator shall be taken into the mine except in a securely locked detonator case, provided by the owner of the mine:

Provided that, subject to the precautions specified in article forty-one, primer cartridges may be fitted with detonators in a workshop subject to section forty-seven of the Explosives Act, 1875, and thereafter taken into the mine, for the purpose of sinking operations from the surface.

(2) No detonator shall be put into a detonator case which contains a detonator of any other type.

(3) No detonator case shall be issued to a shot firer, 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 therein to touch any metal which is exposed outside the case, or is in contact with any other metal so exposed.

PART III

Appointment, qualification and equipment of shot firers

Persons to fire shots

11.—(1) No person shall fire a shot in any mine, unless he has been appointed to fire shots by the manager in writing (any person so appointed being, in this order, referred to as a "shot firer").

(2) No shot firer shall fire a shot in any mine by means of a delay detonator, or in a round of more than six shots, unless in his said written appointment he is expressly authorised to do so.

(3) No shot firer firing shots in the regular course of his employment in any mine or part of a mine in which permitted explosives are required to be used shall be paid by wages depending upon the amount of mineral, rock or other debris gotten:

Provided that this paragraph shall not apply—

(*a*) in a part of a mine where permitted explosives are required by reason only that safety lamps are being used as a temporary precaution; or

(*b*) to a master-sinker or chargeman employed on sinking operations.

Qualification

12.—(1) No person shall be qualified to be appointed or to be a shot firer in any mine, unless he—

(*a*) is twenty-two years of age or more (subject to such reduction, not exceeding one year, in respect of special qualification, as may be approved by the Minister, or by a person authorised by him in that behalf), and has had the experience specified in paragraph (2); or

(*b*) is the holder of a service certificate made under paragraph (6).

(2) The experience aforesaid is three years' practical experience below ground, including not less than eighteen months in the aggregate spent in—

(*a*) getting or cutting coal;

(*b*) ripping;

(*c*) setting or withdrawing supports at the coal face;

(*d*) hole boring or packing at the coal face;

(*e*) (for not more than six of the said eighteen months) driving stone drifts or repairing or enlarging roads; or

(*f*) (in so far as concerns a master-sinker or chargeman employed on them), sinking operations.

(3) No person shall be qualified to be appointed or to be a shot firer in any mine or part of a mine in which permitted explosives are required to be used (not being such a mine or part by reason only that safety lamps are being used as a temporary precaution), unless he is qualified under paragraph (1) and also—

(*a*) has the qualification specified in paragraph (4); and

(*b*) has within the last preceding five years obtained a certificate granted as prescribed in rules made by the Mining Qualifications Board, in relation to the qualification of deputies, in pursuance of section fifteen of the Act, as amended by the Coal Mines (Officials and Inspections) General Regulations, 1951(**a**), that he was then able to make accurate tests for inflammable gas (so far as practicable with a flame safety lamp).

(4) The qualification aforesaid is that either—

(*a*) he is the holder of a first or second class certificate of competency under the Act;

(*b*) he is the holder of a shot firer's certificate granted to him by the Minister (after receipt of a report by the Mining Qualifications Board that he possesses the necessary qualifications under the Act) and has spent not less than five shifts in practising shot firing in a mine under the close personal supervision of a shot firer; or

(*c*) his service certificate under paragraph (6) states that the mine concerned was a mine to which Part II of the Explosives in Coal Mines Order, 1934(**b**), applied.

(5) 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, during not less than five shifts, been employed in connection with the firing of such shots under the close personal supervision of a shot firer appointed to fire such shots, who was not then supervising any other person for the purposes of this paragraph.

(6) A service certificate made under this paragraph is a certificate on a form provided for the purpose by the Minister, made during the period beginning on the first day of April and ending on the thirtieth day of June, nineteen hundred and fifty-three, by the manager of a mine, and authenticated, within fourteen days of being made, by the owner of the mine or a representative of the owner superior to the manager, certifying that the holder is a person who at sometime before the said first day of April had regularly fired shots in the course of his employment in that mine, and who, immediately before that day, was qualified to do so under the provisions which then had effect.

(7) Any certificate required to be held as a qualification under this article by any person for the time being employed as a shot firer at any mine shall be kept at the office of the mine, and shall be produced on demand to any inspector, or to any person making an inspection in pursuance of an appointment by workmen under section sixteen of the Act.

(a) S.I. 1951 No. 848, p. 308 below. (b) S.R. & O. 1934 (No. 6) I, p. 221.

Tools, apparatus and equipment

13.—(1) For each shot firer on duty, there shall be provided—

(*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 a mine in any part of which safety lamps are required to be used, or in any part of a mine in which such lamps are being used as a temporary precaution, a break detector of an approved design (subject to paragraph (2)), which may incorporate the scraper.

(2) The requirement that a break detector is to be of an approved design shall not apply until the expiry of two years from the commencement of this order, so however that, after the expiry of six months from the said commencement, no new break detector shall be provided unless it is of an approved design.

14.—(1) No shot shall be fired in any mine except by means of apparatus or fuse provided by the owner.

(2) In any mine or part of a mine in which permitted explosives are required to be used, no shot shall be fired (otherwise than in sinking operations) except by means of electric shot firing apparatus of a type approved—

(*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, where the inspector of the division is satisfied that, for the time being, no apparatus approved for multi-shot firing with all explosives is available, shots may be fired in a round by means of other apparatus approved by him.

(3) In sinking operations or in a part of a mine where permitted explosives are not required to be used, no shot shall be fired except by means of—

(*a*) electric shot firing apparatus of a type approved—

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

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

(*b*) subject to the provisions of article forty-one, safety fuse as defined in this order.

(4) The two last foregoing paragraphs are subject to the provisions of articles forty-four and forty-eight (which permit shot firing apparatus of a type approved for multi-shot firing to be used in certain cases to determine whether a shot is a single-shot miss-fire, or to fire shots singly in the event of a miss-fire in a round).

(5) If a part of a mine in which permitted explosives are not required to be used was immediately before the commencement of this order a part in which they were not required to be used under the provisions which then had effect, electric shot firing apparatus shall not in that part be required to be of an approved type as aforesaid until the expiry of two years from the said commencement, so however that, after the expiry of six months from that commencement, no new apparatus shall be provided for firing shots there electrically unless it is of such a type,

(6) No electric shot firing apparatus shall be taken or used below ground, unless, at the last previous test thereof under article fifteen, it was found to be in proper order.

(7) Except where safety fuse capped with a detonator is used, no shot shall be fired by means of a detonator and safety fuse.

(8) Each shot firer appointed to fire any shot electrically shall be equipped with the necessary cable, provided by the owner and being of a specification approved—

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

(*b*) for single-shot firing, in any other cases:

Provided that nothing in this paragraph shall restrict the use of any cable which was in use, or was required to be delivered under a contract made, before the commencement of this order.

15.—(1) All electric shot firing apparatus shall, once at least in every three months, be thoroughly cleaned and overhauled by the manufacturer, or by a competent person appointed for the purpose by the manager in writing.

(2) All electric multi-shot shot firing apparatus shall, once at least in every seven days, be tested at the surface in the manner prescribed in the third schedule to this order.

(3) If, in connection with the firing of a round of shots electrically, any miss-fire in a round after firing occurs (as defined in article forty-eight), the shot firing apparatus used shall be tested in the manner aforesaid before it is again taken below ground.

(4) The dates of all cleaning and overhauls, and the results of all tests, carried out in pursuance of this article shall be recorded in a book to be kept at the mine for the purpose.

PART IV

Shot firing (all mines)

Explosives

16.—(1) No shot firer shall allow more than one canister of explosives to be open at any one time for charging shot holes for which he is responsible.

(2) Any person having any surplus explosives in his possession at the end of his shift shall return the same personally—

(*a*) if the explosives were issued from a reserve station, to that station, or to the person appointed under the relevant scheme of transit to be in charge of the explosives ; or

(*b*) in any other case, to a place appointed by the manager under article four as a store for, or as premises for the keeping of, explosives or detonators.

Detonators

17.—(1) Any 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 while he is on duty ;

(*b*) ensure that, apart from any check sheet of shots fired by him in the shift then current, nothing except detonators is kept in it ;

(*c*) keep it separate from any other receptacle containing explosives ; and

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

(2) No shot firer shall remove any detonator from the detonator case, unless it is required for immediate use.

(3) Any shot firer or other person having any detonator in his possession at the end of his shift shall return it personally to a place appointed under article four.

Shot holes, generally

18.—(1) No shot hole shall be drilled except by means of a drill or drills whereof the diameter, throughout the drilling, exceeds the diameter of any cartridge to be inserted by not less than one eighth of an inch.

(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.

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

(2) No person shall use compressed air to clean out a shot hole, unless he takes reasonable measures for the suppression of dust.

Charging shot holes

20.—(1) So far as is practicable, a shot hole shall be charged, and the shot fired, in the same shift and by, or under the supervision of, the same person.

(2) No shot hole shall be charged until the shot is about to be fired.

(3) 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.

(4) Except in the case of shots to be fired in one round (as defined in article fifty-five), or of a relieving shot for the purposes of a miss-fire, no shot hole shall be charged if there is a charged shot hole within thirty yards.

(5) No shot hole shall be charged as one of a round in a stone drift, heading, ripping or sinking pit, until all shot holes for that round have been completely drilled.

21.—(1) The charge shall consist of one or more complete cartridges of the same diameter and the same description of explosive.

(2) The 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.

(3) Except as provided in article forty-six or forty-nine in relation to a miss-fire, no charged shot hole shall contain more than one detonator.

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

(5) No person shall remove any external sheathing from a sheathed explosive.

(6) No explosive shall be forcibly pressed into a shot hole.

(7) The charge shall be stemmed with sufficient suitable and non-inflammable stemming to prevent a blown out shot.

22.—(1) Except where an approved device for pneumatic stemming is being used, no person shall insert any tool not made entirely of wood into a shot hole containing explosive.

(2) No person shall from any charged shot hole—

(*a*) remove any stemming otherwise than by means of water or of an approved device;

(*b*) pull out any detonator lead; or

(*c*) remove any explosive.

Firing shots

23. No shot firer 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 this order.

24. Each shot firer shall keep a daily record in a prescribed form of all shots fired by him.

25.—(1) This article shall apply in relation to all shots fired electrically.

(2) No person shall open or interfere with any shot firing apparatus below ground.

(3) A shot firer to whom any shot firing apparatus has been issued—

(*a*) shall retain the removable handle or key in his own possession throughout the period while he is on duty;

(*b*) shall not place it in position in the apparatus unless he is about to fire a shot, and shall remove it from the apparatus immediately after firing each shot.

(4) No shot firing apparatus shall be used which is defective; and if any such apparatus is found to be defective, or fails to fire all the shots in any properly connected round at one operation, the shot firer shall cause it to be returned to the surface as soon as practicable, and shall report the circumstances to the manager in writing.

(5) Except in a stone drift or a sinking pit, not more than six shots shall be fired in any one round.

(6) Detonators in a round shall be connected in series; no detonator shall be so connected, unless it has leading wires of sufficient length for any necessary connection to an adjoining detonator to be made without the insertion of additional wire.

(7) No cable shall be used for firing shots, unless it is cable provided by the owner for that purpose.

No person shall use for any other purpose any cable so provided.

(8) No cable shall be used for firing shots, if its length is less than—

(*a*) twenty yards, when a single shot (not in a sinking pit) is being fired;

(*b*) fifty yards, when a round of shots in coal is being fired;

(*c*) seventy yards, when a round in stone of six shots or less is being fired; or

(*d*) two hundred yards, when a round in stone of more than six shots, or any shot in a sinking pit, is being fired.

(9) The shot firer concerned shall ensure that a cable used for firing shots cannot make contact with any other cable or electrical apparatus.

(10) No person other than the shot firer shall couple any shot firing cable to the shot firing apparatus, or to any detonator; no shot firer shall couple a shot firing cable to shot firing apparatus for the purpose of firing any shot, unless the cable has already been coupled to the detonator or detonator circuit.

(11) No shot firer shall fire any round, unless he has successfully tested the circuit for continuity by means of an approved testing device, but he shall make no such test unless—

(*a*) all persons in the vicinity have withdrawn to a place of safety; and

(*b*) he is himself either not nearer to the shots than the firing station, or in a shelter placed at a safe distance from the shots.

(12) In the event of a test in pursuance of paragraph (11) being unsuccessful, the provisions of the seventh part of this order (which relates to misfires) shall apply.

26.—(1) This article shall apply in relation to all shots fired by fuse.

(2) No shot shall be fired by a fuse shorter, for a single shot, than three feet, or, for a round, than four feet.

(3) Not more than one shot firer shall fire shots at any one time in any working place, or at any working face which does not exceed fifty yards in length.

(4) At any working face exceeding fifty yards in length, no shot firer shall fire any shot within fifty yards of a charged shot hole, unless he has satisfied himself that no other shot firer is about to fire it.

(5) Except where an approved means of firing a round is used, no shot firer shall attempt to fire more than four shots at any one time.

(6) The shot firer concerned shall ensure that—

(*a*) no person handling any explosive, or charging any shot hole, either smokes or allows any naked light to be directly above, or within four feet of, any explosive or detonator, or within four feet of any shot hole;

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

Warning and shelter

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

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

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

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

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

(*c*) himself taken proper shelter.

29.—(1) Every person to whom a shot firer gives any instruction with respect to taking shelter shall comply therewith.

(2) No person posted to be a sentry for the purposes of shot firing shall leave the place where he was posted, unless personally authorised to do so by the shot firer concerned.

(3) No person shall pass a danger sign exhibited for the purposes of shot firing, or a sentry who has forbidden him to pass, unless authorised to do so by the shot firer concerned.

Precautions after firing

30.—(1) Subject to the provisions of paragraph (2) of this article, any shot firer who fires a shot shall thereupon—

(*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 all necessary action is taken to make each such place safe for such working.

(2) Where shots have been fired in a round—

(*a*) the examination aforesaid shall not be made, 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*) the shot firer shall, in the course of his examination, examine—

(i) for sockets in the face, and for any explosive remaining in any such socket ; and,

(ii) if he has reason to think that any shot may not have exploded, for any unexploded charge in the material brought down.

31. After a shot has been fired, no person shall enter the danger zone determined by the shot firer concerned for the purposes of shelter, until authorised by him to do so.

PART V

Shot firing (additional provisions, permitted explosives)

Application of Part V

32. Except where the application of provisions is limited by reference to the use of safety lamps, this part of this order shall apply to any shot fired in any mine or part of a mine in which permitted explosives are required to be used.

Shot firer's maximum number of shots

33.—(1) For each shot firer firing shots in the regular course of his employment, the manager shall, subject to the provisions of paragraphs (3) and (4) of this article, fix the maximum number of shots which he may fire in any one hour and in any one shift, being in each case a number consistent with the requirements of safety:

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

(2) If the manager proposes to fix a maximum exceeding ten for any one shift for any deputy in charge of a district, he shall give notice in writing of the maximum proposed to the inspector of the division, on a prescribed form.

(3) If the inspector of the division, before the expiry of fourteen days from his receipt of a notice under paragraph (2), notifies the manager that

in his opinion the maximum proposed does not comply with paragraph (1), no maximum exceeding ten shall be fixed for the deputy concerned unless it is agreed by the inspector and the manager, or determined in manner provided under the Act for settling disputes, to be consistent with the requirements of safety.

(4) The inspector of the division may object to any maximum fixed under this article, on the ground that that maximum does not comply with paragraph (1); and, if, in any such case, the manager does not fix another maximum for the shot firer concerned to the satisfaction of the inspector, the matter shall be determined in the manner aforesaid:

Provided that this paragraph shall not apply to any maximum to which paragraph (2) or (3) applies, unless there has been a material change of circumstance since the date of the notice or of the agreement or determination, as the case may be.

(5) Each maximum fixed under this article shall be notified in writing to the shot firer concerned, and shall be recorded in a book to be kept at the mine for the purpose.

(6) No shot firer shall in any one hour or in any one shift fire a greater number of shots than the appropriate maximum notified to him under paragraph (5).

Firedamp content

34.—(1) This article shall apply only to mines in any part of which safety lamps are required to be used.

In this article, the expression "firedamp content" has the meaning assigned by the Coal Mines (Ventilation) General Regulations, 1947(a) (namely, "percentage of inflammable gas present in the general body of the air"); and the provisions of regulations one to five of those regulations shall apply in relation to determinations required under this article, as they apply in relation to determinations under those regulations.

(2) No shot shall be fired in any ventilation district, unless determinations of the firedamp content are regularly being made in that district.

(3) If, on any such determination in any ventilation district, the firedamp content is found to exceed one and one quarter per centum, no shot shall thereafter be fired in that district on the return side of the place where the determination was made, except as provided in paragraph (6).

(4) If the deputy in charge of a deputy's district finds that at any place in an air current the firedamp content exceeds one and one quarter per centum, or any gas cap can be seen on the lowered flame of a safety lamp, he shall forthwith—

(*a*) ensure that no shot is fired, or shot hole charged, in his district on the return side of that place, except as provided in paragraph (6); and

(*b*) cause notice of the same to be given to the deputy in charge of each deputy's district whereof any part is in the ventilation district concerned and on the return side of the said place.

(5) Each deputy to whom notice is given in pursuance of sub-paragraph (*b*) of paragraph (4) shall ensure that no shot is fired, or shot hole charged, in any part of his district which is in the same ventilation district as, and on the return side of, the place concerned, except as provided in paragraph (6).

(a) S.R. & O. 1947 (No. 974) I, p. 337.

(6) Any prohibition of the charging of shot holes or the firing of shots in places on the return side as mentioned in paragraph (3), (4) or (5) shall continue until, with respect to any place, the senior official on duty at the mine has satisfied himself that the firedamp content in that place has been reduced below one and one quarter per centum, and has authorised the resumption there of shot firing.

(7) Except where an excess of the firedamp content over one and one quarter per centum was caused by a temporary derangement of the ventilation which has been remedied, the manager shall forthwith give notice to the inspector of the division of any prohibition operating under this article.

Restriction or prohibition on certain shots

35.—(1) If the face of any stone drift is in a seam of coal more than twelve inches thick, or in any goaf, or is known to have approached within five yards of any such seam or goaf, no shot firer shall in that drift—

(*a*) use any delay detonator, or

(*b*) fire any round of more than six shots,

except with the consent in writing of the inspector of the division.

(2) In a mine in any part of which safety lamps are required to be used, or in any part of a mine in which such lamps are being used as a temporary precaution, no shot shall be fired—

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

(*b*) in any waste.

Precautionary examinations

36.—(1) This article shall apply only to mines in any part of which safety lamps are required to be used, and to parts of a mine in which such lamps are being used as a temporary precaution.

(2) No shot firer shall fire any shot, unless he has at the places and times specified in this article carried out an examination for general safety, and tests for the presence of inflammable gas. Every such test for gas shall be made with a locked safety lamp of a type approved for the purpose of deputies' inspections, an approved methanometer, or other apparatus approved for the purpose.

(3) No shot shall be fired, or shot hole charged, if, at any test made with respect to it under this article, the percentage of inflammable gas present is found to exceed one and one quarter per centum, or if any gas cap can be seen on the lowered flame of a safety lamp.

(4) If a succession of shots is to be fired singly in coal along a longwall face, the shot firer concerned shall arrange the shots in groups of not more than six.

Paragraph (5) of this article shall apply to each such group as if it was a round of shots; and the shot firer shall fire all the shots in any group without interruption for duties other than shot firing.

(5) If shots are to be fired in one or more rounds or groups, the shot firer concerned shall—

(*a*) before shot firing in an area is begun, carry out an examination for general safety (including tests for 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) throughout that part of the workings which is between the face and the waste and between the two shot holes of the round or group which are farthest apart;

(ii) in every accessible place within ten yards of either of those shot holes; and

(iii) at the mouth of each shot hole; and

(*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) In the case of any other shot, the shot firer shall—

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

(i) at the place where the shot is to be fired; and also

(ii) if the shot hole is in a longwall face but not within twenty yards of the end of it, throughout all accessible places within ten yards from the shot hole, or, otherwise, throughout all accessible places within twenty yards therefrom; and

(*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

37. Except with the consent of the inspector of the division, no shot hole in coal shall be charged, unless the coal has been holed or sheared to a depth greater than the depth of the shot hole:

Provided that this article shall not apply in any anthracite mine or seam, or in a stone drift crossing a seam of coal.

38.—(1) This article shall apply only to mines in any part of which safety lamps are required to be used, and to parts of a mine in which safety lamps are being used as a temporary precaution.

(2) 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 some distinctive manner.

No hole so marked shall be charged.

(3) No person shall charge any shot hole in coal or in a ripping (being a shot hole to which the foregoing paragraph does not apply), unless he has tested with the break detector provided for the purpose for breaks running along or across it, and has satisfied himself that no such break exceeding one eighth of an inch in width exists.

39.—(1) Every shot hole shall be charged by, and shall be stemmed by or under the supervision of, the shot firer concerned or another person duly appointed to be a shot firer:

Provided that nothing in this paragraph shall restrict any holder of a shot firer's certificate from charging a shot hole under the close personal

supervision of the shot firer concerned, if that holder is practising shot firing in the pit for the purpose of qualification under paragraph (4) of article twelve.

(2) No shot hole shall be charged with an aggregate weight or length of explosive exceeding the maximum specified on any cartridge forming part of the charge.

(3) In a mine in any part of which safety lamps are required to be used, or in any part of a mine in which such lamps are being used as a temporary precaution—

(*a*) no person shall begin to charge any shot hole in under-cut coal, or in a roof ripping within one hundred yards of a coal face, unless he has inserted a plug of stemming at the back of the hole ;

(*b*) no shot hole shall be charged in a roof ripping within twenty yards of the face otherwise than with sheathed explosive.

PART VI

Shot firing (additional provisions, shafts and staple pits)

Application of Part VI

40. This part of this order shall apply to all shafts in the course of being sunk, deepened or widened (including any part of a shaft being driven upwards), and to all staple pits.

Explosives and detonators

41.—(1) No shot shall be fired otherwise than electrically.

(2) No explosive shall be taken into the shaft or pit, unless required for immediate use.

(3) No person other than a shot firer shall take any primer cartridge fitted with a detonator into a shaft.

(4) No such cartridge shall be so taken otherwise than in a thick felt bag, or other receptacle sufficient to protect it from shock.

Precautions before firing

42.—(1) No shot firer shall couple a shot firing cable to any detonator, unless—

(*a*) the hoppit is conveniently placed for men in the shaft or pit to enter ; and

(*b*) the chargeman has been notified that the winder is ready to raise it.

(2) No shot firer shall couple a shot firing cable to shot firing apparatus, unless all persons are in a place of safety.

Precautions after firing

43.—(1) No person shall enter the shaft or pit after a shot has been fired, until the chargeman (accompanied if necessary by not more than two persons) has ascertained that it is safe for work to be resumed.

(2) Any examination in pursuance of the foregoing paragraph, shall, if inflammable gas has been, or is likely to be, found in the workings, be made with a locked flame safety lamp of a type which will indicate the presence of such gas.

PART VII

Miss-fires

A. Single shots

Meaning of "single-shot miss-fire"

44.—(1) For the purposes of this part of this order, 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 this order, 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 the fuse; or

(*b*) electrically, after the shot firer, having attempted unsucessfully to fire the shot, has followed the procedure prescribed in paragraph (3) of this article.

(3) The said procedure is that the shot firer 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 defects, and remedy the same;

(*c*) make a further attempt to fire the shot (for which purpose he may, notwithstanding the provisions of article fourteen, use shot firing apparatus of a type approved for multi-shot firing for not more than six shots with the appropriate explosive).

Single-shot miss-fires, general precautions

45.—(1) 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 last attempt to fire the shot, 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.

(2) The shot firer concerned shall, if he leaves the working place before article forty-six has been complied with:—

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

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

Single-shot miss-fires, remedial action

46.—(1) No person shall attempt to remove any part of the charge from the shot hole of any single-shot miss-fire.

(2) In the event of any such miss-fire, the shot firer concerned shall ensure that either—

(*a*) the procedure prescribed in paragraph (3) of this article is complied with; or

(*b*) the stemming is removed with water or with an approved device, an additional primer inserted in the shot hole with proper stemming, and the shot then duly fired, as provided in this order.

(3) The said procedure is as follows:—

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

(*b*) if the miss-fire 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 aforesaid ;

(*d*) if the miss-fire is dislodged, a search, under the supervision of the shot firer or of an official of the mine, shall, before any person resumes work, be made for the detonator (if any) and charge thereof, and, if any detonator or cartridge is not found, all stone or mineral so dislodged shall, under supervision as aforesaid, be conveyed out of the mine separately from any other stone or mineral ;

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

B. Shots in a round

Circuit not continuous

47.—(1) If, when the circuit of a round is tested in pursuance of paragraph (11) of article twenty-five, it is found not to be continuous, the shot firer shall—

(*a*) comply with the following procedure, that is to say—

(i) 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) ;

(ii) remedy any defect so found ; and

(iii) subject to the provisions of the said paragraph (11), test the circuit again for continuity ; and

(*b*) if he leaves the working place before the said test is completed, take action as prescribed in paragraph (2) of article forty-five.

(2) If the test aforesaid is successful, the provisions of this part of this order shall not apply further in relation to that round, unless one or more of the shots fails to explode when fired.

(3) If the said test is unsuccessful, the shot firer shall, by individual tests for continuity (which shall be subject to the provisions of paragraph (11) of article twenty-five), determine the faulty shot or shots.

Meaning of " miss-fire in a round ", etc., and general provisions

48.—(1) A shot being fired in a round shall be treated as a miss-fire (in this order referred to as a " miss-fire in a round "), if—

(*a*) by the individual tests under paragraph (3) of article forty-seven, it is found to be a faulty shot (any such shot being, in this order, 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 this order, referred to as a " miss-fire in a round after firing ").

(2) In the event of any miss-fire in a round—

(*a*) no person shall attempt to remove any part of the charge from the shot hole ;

(*b*) the shot firer concerned shall, if he leaves the working place before the remedial action specified in article forty-nine or fifty, as the case may be, has been completed, take action as prescribed in paragraph (2) of article forty-five.

(3) Whenever, in the event of any miss-fire in a round, any shot forming part of the round is, for the purposes of remedial action under article forty-nine or fifty required to be fired singly, it may, notwithstanding the provisions of article fourteen, be fired by means of the shot firing apparatus used for firing the round.

Remedial action

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

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

(*b*) the stemming is removed with water or with an approved device, an additional primer inserted in the shot hole with proper stemming, and the round duly connected up, tested and fired, as provided in this order.

(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 higher period of delay) shall be duly connected up, tested and fired, as provided in this order ;

(*c*) if it has been dislodged, the provisions of sub-paragraph (*d*) of paragraph (3) of article forty-six shall apply to the recovery and disposal of the detonator and charge ; and any shots having a higher period of delay shall thereafter be duly connected up, tested and fired ;

(*d*) if it has not been dislodged—

(i) if there were any shots having a higher period of delay, they shall be fired in turn, in ascending order of delay (in each delay period, the shot which is nearest to the miss-fire being fired first), so however that, if it is dislodged before all such shots have been fired, the provisions of sub-paragraph (*c*) of this paragraph shall then apply ; and

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

50.—(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 shot firer concerned shall at the expiry of the period specified in article thirty make a personal examination as provided in that article, whether or not any shot in the round has exploded.

(2) If there was more than one miss-fire, the shot firer shall connect them in series and fire them as a round as provided in this order.

(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 shall fire it, or each of them, 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.

51.—(1) Whenever, in pursuance of this part of this order, in relation to any round of shots, any shot in the round is fired while one or more shots already charged remain unexploded, the shot firer concerned shall, in the course of his examination made in pursuance of article thirty, ascertain whether any such shot has been dislodged.

(2) The provisions of sub-paragraph (*d*) of paragraph (3) of article forty-six shall apply to the recovery and disposal of the detonator and charge of any shot so dislodged.

C. All miss-fires

Miss-fires to be reported

52. In the event of any miss-fire, the shot firer 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 VIII

General

Copies of the order

53.—(1) A copy of this order shall be kept posted at or near every mine, in some conspicuous place where it may conveniently be seen by persons employed at the mine.

(2) A copy of this order shall be supplied to each shot firer.

Exemptions

54.—(1) The Chief Inspector of Mines, or a deputy chief inspector on his behalf, may exempt any mine or part of a mine, or any class or description of mines, from the application of any provision of this order, in any case where he is satisfied that compliance therewith is not reasonably practicable, or not requisite in the interests of safety.

(2) The provisions of section one hundred and nineteen of the Act shall apply in relation to any exemption granted under this order, as they apply in relation to an exemption granted under that section by the inspector of the division.

Interpretation

55.—(1) In this order, unless the context requires otherwise, the following expressions have the meanings hereby assigned to them respectively:—

" the Act " means the Coal Mines Act, 1911 ;

" approved " means approved by the Minister ;

" coal transport road " means any road which is, or during the last previous six months has been, used for moving coal by mechanical power or gravity, and includes any place within ten yards of the road other than (in the case of a road leading to the face of a seam) the roadhead ;

" detonator " includes safety fuse capped with a detonator ;

" explosive " does not in the provisions contained in this order include a detonator ;

" face " means the exposed surface from which mineral or stone is worked ;

" firedamp content " has the meaning assigned by paragraph (1) of article thirty-four ;

" the Minister " means the Minister of Fuel and Power ;

" miss-fire in a round ", " miss-fire in a round by broken continuity " and " miss-fire in a round after firing " have the meanings respectively assigned by paragraph (1) of article forty-eight ;

" permitted explosive " means an explosive of a type and description approved for use in places hazardous by reason of the presence or possibility of inflammable gas, or of combustible dust ;

" prescribed " means prescribed by the Minister ;

" road " means any part, not within ten yards of the face, of a passage maintained in connection with the working of the mine ;

" roadhead " means a space at the end of a road leading to the face of a seam, the space being equal in width to the width of the road at the end nearest to the face and extending from that end to the face ;

" round ", in relation to shots, means (subject to the provisions of paragraph (1) of article forty-four) a number of shots fired—

(*a*) electrically in series, either simultaneously or by means of delay detonators ;

(*b*) by fuse, by means of an apparatus approved for firing a number of shots by fuse simultaneously ; or

(*c*) where the number does not exceed four, by fuses lighted at the same time ;

" safety fuse " means a 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 yard of fuse ;

" scheme of transit " has the meaning assigned by paragraph (1) of article eight ;

" 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 by paragraph (1) of article eleven ;

" single shot miss-fire " has the meaning assigned by paragraph (2) of article forty-four.

(2) Expressions to which meanings are assigned by the Act or by this order shall (unless the contrary intention appear) bear the same meanings in any document issued or made under this order.

(3) The Interpretation Act, 1889(**a**), shall apply to the interpretation of this order as it applies to the interpretation of an Act of Parliament.

Revocation

56.—(1) In so far as concerns mines in which coal is worked, or is intended to be worked, the following orders shall cease to have effect:—

(*a*) the Explosives in Coal Mines Order, 1934, as amended(**b**) ; and

(*b*) the Explosives in Coal Mines (Horse Killers) Order, 1931(**c**).

(2) The provisions of any order made under section sixty-one of the Act authorising—

(*a*) the charging of shot holes in any mine with explosive in a quantity exceeding the quantity otherwise permitted,

(*b*) the taking below ground in any mine in an explosives carriage of cases or canisters of explosives for use in any stone drift or working place,

are hereby revoked.

(3) Any approval or consent given by the Minister or any inspector under any provision of either of the orders specified in paragraph (1) of this article, which relates to any mine in which coal is worked, or is intended to be worked,

(**a**) 52 & 53 Vict. c. 63.

(**b**) *See* S.R. & O. 1934 (No. 6) I, p. 221, S.R. & O. 1937 (No. 1049) p. 402, S.R. & O. 1938 (No. 1409) I, p. 587, S.R. & O. 1940 (No. 1700) I, p. 185, S.R. & O. 1943 (No. 1360) I, p. 95, S.R. & O. 1946 (No. 2060) I, p. 292 and S.I. 1948 (No. 181) I, p. 528.

(**c**) S.R. & O. 1931 (No. 521) p. 104.

and is in operation at the commencement of this order, shall, if there be any corresponding provision in this order, be deemed (in so far as concerns that mine) to have been given under that last mentioned provision, and shall, with the requisite modifications, have effect accordingly.

Commencement and citation

57.—(1) This order may be cited as the Coal Mines (Explosives) Order, 1951.

(2) This order shall come into operation on the first day of February, nineteen hundred and fifty-two:

Provided that the provisions of article twelve, and the revocation of so much of the Explosives in Coal Mines Order, 1934, as prescribes the qualification for a person to be appointed or to be a shot firer in a mine to which Part II of that order applied, shall not have effect until the first day of April, nineteen hundred and fifty-three.

Dated this 17th day of September, nineteen hundred and fifty-one.

G. L. Watkinson,
Deputy Secretary
to the Ministry of Fuel and Power.

FIRST SCHEDULE Art. 1 (2)

Apparatus and explosives for horse killing

1. No apparatus or cartridge of explosive of a type approved for use in mines for destroying horses shall be taken or used below ground for any other purpose.

2. Any such apparatus shall be—

(*a*) kept in the custody of a competent person, appointed for the purpose by the manager in writing, and used only by him or under his immediate supervision;

(*b*) cleaned and examined immediately after use; and

(*c*) maintained in efficient and safe working order.

3. Any such cartridge shall be—

(*a*) stored at a place appointed by the manager as a store for, or as premises for the keeping of, explosives, in the charge of the person appointed to have charge of that place;

(*b*) issued only to a person appointed to have custody of an apparatus to which this schedule applies;

(*c*) kept after issue in a case or box, provided by the owner, which contains no other type of explosive, and is kept locked and separated from any other case or box containing explosives or detonators; and

(*d*) removed from the said case or box only when required for immediate use, or for return to store.

4. In a mine in any part of which safety lamps are required to be used, or in any part of a mine in which such lamps are being used as a temporary precaution, no shot shall be fired with any such apparatus, unless, immediately before firing, the person having custody of it, or a shot firer, deputy or superior official of the mine, has made tests for gas throughout all accessible places within ten yards of the place where the shot is to be fired, and satisfied himself that it is safe to fire the shot.

5. Any test for gas under the foregoing paragraph shall be made with a locked safety lamp of a type approved for deputies' inspections, an approved methanometer, or other apparatus approved for the purpose; and, if, on any such test, the percentage of inflammable gas present is found to exceed one and one quarter per centum, or if any gas cap can be seen on the lowered flame of a safety lamp, it shall not be regarded as safe to fire a shot.

SECOND SCHEDULE Art. 8 (2)

Matters to be covered by a scheme of transit

1. Reserve stations, location, construction and marking.
2. Explosives carriage, design and construction.
3. „ , supervision in transit and at reserve stations (including custody of keys).
4. „ , precautions during transit.
5. „ , provision (if any) for conveyance in bulk to the working face.
6. „ , maximum quantities to be held at reserve stations.
7. „ , control of issues from reserve stations.
8. „ , requirements for return to reserve stations.

THIRD SCHEDULE Art. 15 (2)

Test for electric multi-shot shot firing apparatus

Apparatus and equipment required

1. A fuse head testing set comprising—

(*a*) Twelve (or, if the apparatus to be tested is of a type approved for firing not more than six shots, six) metal clips (each arm of each clip being insulated from the other), designed to hold "Testex" low tension fuse heads in a vertical position;

(*b*) two metal clips designed to hold a length of wire horizontally above and close to, or touching, the fuse heads when in position in their clips;

(*c*) a non-inductive resistor, such that the total resistance of the set is equivalent to that of a shot firing circuit containing the maximum number of detonators which the apparatus to be tested is designed to fire;

(*d*) connections joining the fuse head clips in series with the horizontal wire and the resistor to two terminals suitable for connection to the apparatus to be tested.

2. "Testex" low tension fuse heads, as necessary.

3. Fine wire of material and diameter such that it will rupture when carrying the current necessary to fire the maximum number of detonators which the apparatus to be tested is designed to fire.

Method of test

1. Fuse heads to the full capacity of the set must be placed in position in the fuse head clips, and a length of the appropriate fine wire stretched horizontally on the clips above them.

2. The apparatus to be tested must be connected to the terminals of the set, and a test of the continuity of the circuit made.

3. The apparatus must then be operated by using the removable handle or key.

The test

The apparatus is not in satisfactory order unless, when the removable handle or key is used, all the fuse heads in the set are fired and the fine wire ruptured.

EXPLANATORY NOTE

(This note is not part of this order, but is intended to indicate its general purport.)

1. This order consolidates, for the mines to which it applies (viz. mines in which coal is worked, or is intended to be worked), the various Explosives in Coal Mines Orders made between 1934 and 1948 and the Explosives in Coal Mines (Horse Killers) Order, 1931, with amendments. The provisions

replacing the latter order are all in the first schedule; and provisions in the body of the order do not apply to shot firing apparatus and explosives of the special types approved for destroying horses.

2. A distinction is still made between shots fired in places where there are hazards connected with inflammable gas or combustible dust and shots fired elsewhere. All explosives except special types, known as "permitted explosives", are still prohibited for the former, but not for the latter. But the provisions prescribing where permitted explosives are to be used are amended. They now cover all shots fired in mines in any part of which safety lamps are required to be used, in parts of mines which are dry and dusty or in which safety lamps are being used as a temporary precaution, or in main intake airways and coal transport roads (art. 2 (2)).

3. Storage is dealt with in arts. 4 to 6. Under arts. 7 and 8, schemes for conveyance of explosives in bulk may be put into operation if they make adequate provision to the satisfaction of the inspector of the division (or, in case of dispute, of the referee) for each of a number of matters set out in the second schedule. In the absence of such schemes, explosives taken into the mine are still to be taken in in separate small canisters.

Detonators are not to be issued for use except to appointed shot firers (art. 9 (2)), and are to be kept in special detonator cases (art. 10).

4. Under Part III (appointment, qualification and equipment of shot firers), no one is to fire a shot unless he has been appointed by the manager in writing (art. 11 (1)). No one may be appointed a shot firer for any mine unless he is 22 years of age (which with appropriate qualifications may be reduced by one year) and has certain experience (art. 12 (1) (2)). In addition, if he is to fire shots where permitted explosives only are allowed to be used, he must either hold a certificate of competency or a shot firer's certificate (introduced as a new requirement, and to be granted by the Minister of Fuel and Power after a report from the Mining Qualifications Board as to possession of the necessary qualifications) (art. 12 (4)). These shot firers must also hold certificates, renewed every five years, of ability to test for gas with a flame safety lamp (ibid). For firing shots in any mine by delay detonators or in large rounds, previous instruction in firing such shots is required (art. 12 (5)). There are transitional provisions for the benefit of those appointed before the commencement of the order (art. 12 (6)).

5. New requirements are introduced regarding shot firing apparatus (art. 14). Where permitted explosives only are allowed to be used, and also in shafts and staple pits, all shots must be fired electrically (art. 12 (2) (3)). Electric shot firing apparatus must be of a type approved by the Minister even where non-permitted explosives are being used. Different types will be approved for use with all explosives and for use with explosives which are not permitted explosives (though the latter may (art. 14 (2)) be used with permitted explosives in sinking operations). Further, as firing in rounds of up to six shots is now allowed universally, there will be different types in each category for multi-shot firing and for single-shot firing. A period of grace is given for the provision of apparatus of an approved type in mines where it is now required for the first time (art. 14 (5)). Detonators are not to be used with safety fuse unless capping of the fuse to the detonators is carried out before they are taken into the mine (art. 14 (7)). Squibs are no longer permitted generally. Shot firing cables are to be of an approved specification, but cables in use or on order at the commencement of the order may be used for their lifetime (art. 14 (8)).

6. Part IV lays down rules for shot firing in all mines. Except for the provisions (see above) as to permitted explosives, the previous restrictions on shot firing in main intake airways and main haulage roads are not re-enacted.

If practicable, charging a shot hole and firing the shot are to be done in the same shift, and by or under the supervision of the same person (art. 20 (1)). Provisions about firing shots electrically are in art. 25; for a round of shots, a test of continuity is to be made with an approved testing device (art. 25 (10)). Provisions about firing by fuse are in art. 26; shot firers must not be too close together (art. 26 (3) (4)); except when using approved devices, no shot firer is to fire more than four shots at a time (art. 26 (5)). Special provisions about warning and shelter are in arts. 27 and 28, and about precautions after firing in arts. 29 to 31.

7. Part V contains additional provisions for permitted explosives. The manager is to fix for each regular shot firer a maximum number of shots for each hour and for each shift; advance notice of any maximum exceeding ten in one shift for a deputy is to be given to the inspector of the division; the inspector can object to any maximum (art. 33). If safety lamps are required to be used in any part of a mine, determinations of the percentage of inflammable gas present in the general body of the air must be made regularly throughout the ventilation district in which any shots are to be fired (art. 34). If any excess over 1¼ per cent. is found on a determination, or if at any time such an excess is found in an air current, shot firing must cease on the return side of the place concerned, until the senior official on duty at the mine is satisfied that the excess has been rectified (ibid). Art. 35 contains restrictions on certain shots, some wherever permitted explosives are required to be used, some only where safety lamps are required to be used, or are being used as a temporary precaution. In the latter case, there is a further requirement (art. 36) that, before shots are fired, there must be examinations for general safety and tests for inflammable gas. For rounds (and for groups of shots in a longwall face), there must be an examination over the whole of an area before shot firing is begun in it; there must also be limited examinations before charging, and further examinations before firing (art. 36 (5)). For single shots, there must be a general examination before charging, and a limited examination before firing (art. 36 (6)). Arts. 37 to 39 provide for various precautions while shot holes are being prepared and charged; the previous requirement for stone-dusting round each shot hole is not re-enacted.

8. Part VI contains additional provisions for shafts and staple pits.

9. Part VII deals with miss-fires. Single-shot miss-fires are defined in art. 44 (2); general precautions are prescribed in art. 45, and remedial action in art. 46. Miss-fires in a round include the occurrence of broken continuity; some preliminary tests are prescribed in art. 47; and the two categories, miss-fire in a round by broken continuity and miss-fire in a round after firing, are defined in art. 48 (1). Remedial action for the former is prescribed in art. 49, and for the latter in art. 50. In both, provision is made for firing the remaining shots of the round, with special action if the miss-fire is dislodged, but not found.

All miss-fires of any kind are to be reported to the senior official on duty at the mine (art. 52).

10. The order comes into operation on 1st February, 1952, except for the provisions relating to qualification of shot firers (including revocation of the corresponding provisions of the previous orders). These only come into operation on 1st April, 1953.