

1962. No. 180

[NC]

QUARRIES**Safety, Health, Equipment and Explosives**

RULES, DATED 12TH OCTOBER, 1962, MADE BY THE MINISTRY OF COMMERCE UNDER SECTIONS 10 AND 21 OF THE QUARRIES ACT (NORTHERN IRELAND), 1927.

The Ministry of Commerce, in exercise of the powers conferred on it by sections 10 and 21 of the Quarries Act (Northern Ireland), 1927(a), and of all other powers enabling it in that behalf, hereby makes the following Rules:—

PART I**GENERAL***Commencement and citation*

1. These Rules shall come into operation on 1st January, 1963, and may be cited as the Quarries (Safety, Health, Equipment and Explosives) Rules (Northern Ireland), 1962.

Interpretation

2. In these Rules the following expressions have the meanings hereby respectively assigned to them, that is to say—

“the Act” means the Quarries Act (Northern Ireland), 1927(a), as amended by the Minerals (Miscellaneous Provisions) Act (Northern Ireland), 1959(b).

“the Ministry” means the Ministry of Commerce.

Revocation

3. The Rules set forth in the First Schedule to the Act are hereby revoked.

PART II**GENERAL DUTIES**

4. Subject to the provisions of these Rules, the owner, occupier or agent of every quarry shall comply with these Rules and to the best of his power enforce the observance thereof. If the owner or occupier does not himself exercise close and effective supervision of all the operations at the quarry he shall appoint, in writing, an agent for the purpose.

5. It shall be the duty of the owner, occupier or agent to make and to ensure the efficient carrying out of arrangements to secure that every inspection, examination or other thing required by these Rules to be carried out or done by a competent person appointed by him is assigned to a competent person so appointed.

6. The owner, occupier or agent shall see that a sufficient supply of proper materials and appliances is at all times provided and maintained in an efficient state for the purpose of ensuring the safety of the quarry and the persons employed therein, and of complying with the requirements of the Act, these

and any other Rules made thereunder, and any directions given or arrangements made by the owner, occupier or agent in pursuance thereof.

7. The owner, occupier or agent, or some competent person or persons appointed by the owner, occupier or agent for the purpose, shall daily inspect:—

- (a) every working place and travelling road, and all adjacent places from which danger might arise, including the overburden or tops of, and all means of access to, the quarry;
- (b) the external parts of all plant, machinery and appliances, including all chains, ropes, chain and rope attachments and ladders used by persons employed.

If any danger is revealed by the inspection, steps shall at once be taken to remove it and, except for that purpose, any person exposed to the danger shall be withdrawn.

8.—(1) Subject to paragraphs (2) and (3), a true report of every such inspection shall be made and signed forthwith by the person who has made the inspection in a report book to be kept at the quarry for the purpose. Any danger revealed in the course of the inspection or any other danger observed by, or notified to, the owner, occupier or agent, together with the steps taken to remove the danger, shall be recorded in the report book and signed and dated by the person making the entry.

(2) In respect of any quarry at which fewer than six persons are employed at the same time and at which mechanical power is not used, this Rule shall apply only if, and in so far as, an inspector is satisfied that it is reasonably practical for the provisions thereof to be complied with and has served notice in writing on the owner, occupier or agent requiring compliance with the said provisions or any of them.

(3) An inspector may exempt any other quarry from all or any of the provisions of this Rule if he is satisfied that it is not reasonably practical for the owner, occupier or agent to comply with them.

9. All such books and forms as are by the Rules required to be kept at the quarry shall be provided by the owner, occupier or agent and shall be in the form approved for the purpose by the Ministry; and the books and forms or a correct copy thereof shall be kept at the quarry except the forms required to be kept under Rules 40 and 46 which, in the case of a group of quarries in the same ownership, shall be kept at a place to be approved by an inspector. Any inspector and anyone having the written authority of any inspector and any representative of the workmen employed at the quarry may, at all reasonable times, inspect and take copies of and extracts from any such books and forms; but nothing in this Rule shall be construed to impose the obligation of keeping any such book or copy thereof for more than twelve months after the book has ceased to be used for entries therein under the Rules or of keeping any such form or copy thereof for more than five years after the form has been used for an entry therein under the Rules.

10. It shall be the duty of the owner, occupier or agent of every quarry to secure that no person is employed thereat in any work otherwise than under the instruction and supervision of some person competent to give instruction in, and supervise, the doing of that work, unless the first-mentioned person has received adequate instruction in, and (where necessary) training for, the doing of that work and is competent to do it without supervision.

11. Every person employed at the quarry shall comply with the requirements of the Act, these and any other Rules made thereunder and any

directions given or arrangements made by the owner, occupier or agent in pursuance thereof and with such directions concerning safety and discipline as may be given to him by those in authority over him.

12. Every workman employed at the quarry shall, before commencing work, and during the course of it, and especially after blasting, make a careful examination of his working place and remove any loose rock, stones or ground which might be dangerous.

13. Every person employed at the quarry who notices anything that appears unsafe or likely to cause danger shall remedy the matter if it is within the scope of his duty and, if not, shall forthwith report it to the owner, occupier or agent.

14. No person employed at the quarry shall throw down rock, stones, ground or other material so as to endanger other persons.

15. Every person working on the face of the quarry, or standing on a narrow ledge, where he may fall fifteen feet or more shall secure himself against falling by means of a rope or other suitable appliance which shall be provided by the owner, occupier or agent. Every such person shall, before commencing work, satisfy himself as to the safety of the rope or other appliance provided for his use, and shall not use anything that he finds unsafe.

PART III

SAFE WORKING AND ACCESS

16. Without prejudice to the obligation imposed by sub-section (a) of Section 1 of the Act, (which requires that the working of the sides and of the overburden of the quarry shall be carried on so as to prevent dangerous falls of material) it shall be the duty of every owner, occupier or agent of a quarry to secure that the overburden at or near the top of a face or side of the quarry shall be cleared back to a sufficient distance and depth to avoid such a danger.

17. If an inspector is satisfied, having regard to the position of the boundary of the quarry, the natural conditions thereat, or other special circumstances thereof, that to require such a clearance as is referred to in the foregoing Rule is unnecessary, he may, by notice served on the owner, occupier or agent of the quarry, exempt the quarry or such part thereof as may be specified in the notice from that requirement.

18. Except with the approval of, and subject to conditions laid down in writing by an inspector, the face of the quarry or of any gallery shall not be worked so that it assumes an overhanging position.

19. Secure means of access by which all persons employed can go to or from their working places shall be provided and maintained in good condition by the owner, occupier or agent. No ladder used as a means of access to, or egress from, the quarry shall be fixed in an overhanging position nor at an inclination to the horizontal of more than seventy-five degrees. Every such ladder in regular use shall have substantial platforms at intervals of not more than ten yards and a strong hold-fast at each platform, and the ladder shall project at least three feet above the platform in every case; and, where necessary for safety, a handrail shall be provided in the case of a ladder of a permanent character.

20. There shall be a clear space between the outside rails of tramways and the edges of galleries sufficient to prevent both the falling of stones or other material from the wagons and the falling of the men themselves to galleries below. Where such a space is impossible the edges shall be securely fenced.

PART IV

MACHINERY, PLANT AND APPARATUS

General

21. All parts and working gear, whether fixed or moveable, including the anchoring and fixing appliances, of all machinery and apparatus used as, or forming, part of the equipment of a quarry, and all foundations in or to which any such appliances are anchored or fixed shall be of good construction, suitable material, adequate strength and free from patent defect, and shall be properly maintained.

22. All apparatus used as or forming part of the equipment of a quarry, being apparatus which contains or produces air, gas or steam at a pressure greater than atmospheric pressure shall be so constructed, installed, maintained and used as to obviate any risk from fire, bursting, explosion or collapse or the production of noxious gases.

23. Lines of rails and points shall be kept in efficient order, having regard to the nature of the traffic.

24. Sprags and scotches shall be supplied and used, as and when required, on railways and tramways.

25. The rails on the top of all inclines and on all landing tables shall, except when the rope or chain is not detached from the wagon, be provided with proper stops, or other appliances for preventing the wagons from running away.

26. No person shall remain under a suspended wagon or load. No person shall travel or be allowed to travel by means of an aerial ropeway without special permission from the owner, occupier or agent.

27. Where machinery is used for raising or lowering persons, directions shall be given by the owner, occupier or agent to suit the special circumstances of the case, copies of which shall be kept constantly affixed in the office at the quarry and in a convenient place adjacent to the said machinery.

Fencing

28. Every flywheel and all exposed and dangerous parts of machinery shall be kept securely fenced.

29. The top of every hopper and kiln shall be kept securely fenced.

30. All gantries and platforms (other than platforms from or to which trucks and other transport vehicles are loaded or unloaded and temporary wheeling planks), where dangerous, shall be securely fenced on each open side and shall have on each such side a continuous skirting board not less than six inches deep, except in the case of gantries and platforms in the form of bridges, which shall have on each side a continuous skirting board not less than nine inches deep.

31. All buildings and structures at a quarry shall be kept in safe condition

32.—(1) There shall be provided and maintained safe means of access to every place in or on a building or structure at a quarry, being a place at which any person has at any time to work.

(2) Where a person is to work at any such place as aforesaid from which he will be liable to fall a distance of more than six feet six inches, then, unless the place is one which affords secure foothold and, where necessary, secure handhold, means shall be provided by fencing or otherwise for ensuring his safety.

Machinery in Motion

33. Machinery shall not be oiled or greased while in motion unless provision be made for the operation to be performed in safety.

34. Belts shall not be put on or put off while machinery is in motion by mechanical power except by means of a safety contrivance.

Lifting Machines

35. Every crane, crab or winch whether or not used as a lifting machine at a quarry shall be provided with an efficient catch or efficient brake.

36. There shall be plainly marked on every crane, crab or winch used as or forming part of the equipment of a quarry the safe working load or loads thereof, except that, in the case of a jib crane so constructed that the safe working load may be varied by raising or lowering of the jib, there shall be attached thereto either an automatic indicator of safe working loads or a table indicating the safe working loads at corresponding inclinations of the jib or corresponding radii of the load. Provided that this Rule shall not apply to any crab or winch used in connection with rope haulage.

37. No person shall, except for the purpose of a test, load any crane, crab or winch used as or forming part of the equipment of a quarry beyond the safe working load marked or indicated thereon in pursuance of the foregoing Rule.

38. Where any crane, crab or winch is used as a lifting machine at a quarry, a competent person appointed for the purpose by the owner, occupier or agent shall thoroughly examine, at intervals not exceeding fourteen months, all parts and working gear whether fixed or moveable, including the anchoring and fixing appliances.

39. No crane, crab or winch (other than a new machine) which has been dismantled or out of regular use for a period exceeding two months shall be taken into use as a lifting machine at any quarry for the first time at that quarry unless immediately prior thereto all parts and working gear thereof, whether fixed or moveable, including the anchoring and fixing appliances, have been thoroughly examined by a competent person appointed for that purpose by the owner, occupier or agent.

40.—(1) Subject to paragraphs (2) and (3), any person who has made an examination of a crane, crab or winch in pursuance of the two foregoing Rules shall forthwith make and sign on a form provided for the purpose, a full and accurate report of the result of the examination.

(2) In respect of any quarry at which fewer than six persons are employed at the same time and at which mechanical power is not used, this Rule shall apply only if, and in so far as, an inspector is satisfied that it is reasonably practical for the provisions thereof to be complied with and has served notice in writing on the owner, occupier or agent requiring compliance with the said provisions or any of them.

(3) An inspector may exempt any other quarry from all or any of the provisions of this Rule if he is satisfied that it is not reasonably practical for the owner, occupier or agent to comply with them.

Air Receivers

41. In the next following six Rules "air receiver" means—

- (a) any vessel (other than a pipe or coil, or an accessory, fitting or part of a compressor) for containing compressed air and connected with air compressing plant; and
- (b) any fixed vessel for containing compressed air or compressed exhaust gas and used for the purpose of starting an internal combustion engine.

42. Every air receiver at a quarry shall—

- (a) have marked upon it so as to be plainly visible the maximum safe working pressure and be fitted with an accurate pressure gauge;
- (b) be fitted with a suitable safety valve so adjusted as to permit the air to escape as soon as the maximum safe working pressure is exceeded; and
- (c) be fitted with a blow-off cock through which any fluid which may accumulate in the receiver may be blown off.

43. For the purposes of the provisions of the foregoing Rule relating to pressure gauges and safety valves any set of air compressors supplied with air through a single pipe to which the pressure gauge and safety valve are fitted may be treated as one receiver.

44. The owner, occupier or agent shall make and ensure the carrying out of arrangements whereby any blow-off cock is opened at least once in every working day whilst an air receiver is under pressure.

45. Every air receiver at a quarry shall be thoroughly cleaned and examined at intervals not exceeding twenty-six months by a competent person appointed for the purpose by the owner, occupier or agent. If any air receiver of solid drawn construction is so made that the internal surface cannot be thoroughly examined a suitable hydraulic test of the air receiver shall be carried out instead of internal examination.

46. A person who has made an examination of an air receiver in pursuance of the foregoing Rule shall forthwith make and sign on a form provided for the purpose, a full and accurate report of the result of the examination.

47. If a person who has made an examination of an air receiver of solid drawn construction specifies in his report that in his opinion further examination is unnecessary for a period so specified being a period exceeding twenty-six months but not exceeding four years, Rule 45 shall have effect as if it required examination before the expiration of the period so specified instead of twenty-six months.

PART V

HEALTH

48. There shall be provided and maintained at every quarry for the use of all persons employed thereat, suitable accommodation for changing and drying clothes and for the taking of meals.

49. At every quarry at which more than thirty persons are employed the accommodation provided for the taking of meals shall be separate from that provided for changing and drying clothes and shall include facilities for heating food and boiling water.

50. If an inspector is of opinion with respect to any quarry that it would not be necessary to require compliance with either of the two foregoing Rules, he may, by notice served on the owner, occupier or agent exempt that quarry from compliance with that provision.

51. If an inspector is of opinion that sanitary conveniences or further sanitary conveniences ought to be provided at any quarry, he may serve on the owner, occupier or agent thereof a notice stating that he is of that opinion and requiring the provision of suitable and sufficient sanitary conveniences thereat before the expiration of such period as may be specified in the notice.

52. There shall be provided and maintained at every quarry at suitable points conveniently accessible to all persons employed at the quarry an adequate supply of wholesome drinking water.

53. It shall be the duty of the owner, occupier or agent of every quarry—

- (a) to secure the provision, in each part of the quarry in which persons work at a time when natural light is insufficient to enable them to work in safety and in each part of the quarry through which persons pass at a time when natural light is insufficient to enable them to pass in safety, of suitable and sufficient artificial lighting; and
- (b) to secure that all apparatus installed at the quarry for producing artificial lighting thereat is properly maintained.

54. The owner, occupier or agent of a quarry shall make effective and suitable provision for suppressing as far as practicable any dust which is produced in any building or shed which may be injurious to health.

PART VI

EXPLOSIVES

Exemption

55. An inspector may by notice served on the owner, occupier or agent exempt any quarry or any part thereof, or any thing or class of things thereat, from the application of any provision of the Rules contained in this Part if he is satisfied that the safety of persons employed at the quarry will not be prejudiced in consequence of the granting of the exemption.

Interpretation

56.—(1) In this Part the following expressions have the meanings hereby respectively assigned to them, that is to say—

“detonating fuse” means fuse consisting of high explosive enclosed in a waterproof covering made of textile impregnated or coated with a plastic composition;

“detonator” includes safety fuse capped with a detonator;

“explosive” does not include a detonator;

“explosives store” has the meaning assigned thereto in Rule 58;

“heading” means a tunnel or other excavation (not being merely a shot hole) made in a face or side of a quarry for the purpose of a heading blast;

"heading blast" means a shot fired in a heading otherwise than for the purpose of or in connection with the making of that heading;

"miss-fire" includes partial miss-fire;

"safety fuse" means fuse consisting of gun powder or any other substance which burns at a regular rate, enclosed in a suitable covering and 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;

"shot" means an explosion of explosives;

"shot firer" has the meaning assigned thereto in Rule 57;

"shot firing directions" has the meaning assigned thereto in Rule 81; and

"shot hole" does not include a heading.

(2) In these Rules any reference to the use of explosive includes the charging of a shot hole or heading (as the case may be) therewith.

APPOINTMENT AND QUALIFICATION OF SHOT FIRERS

57.—(1) No person shall fire a shot at any quarry other than a competent person appointed to be a shot firer at that quarry by the owner, occupier or agent (any person so appointed being, in these Rules, referred to as a "shot firer").

(2) No person shall be qualified to be appointed or to be a shot firer unless he has attained the age of twenty-one years.

STORAGE, ISSUE AND CONVEYANCE OF EXPLOSIVES AND DETONATORS

58. The owner, occupier or agent shall not permit any explosive, detonator or fuse to be stored at a quarry except in a place appointed by him for the purpose (in these Rules referred to as an "explosives store"), and shall take such steps as may be necessary to secure that any explosives store is at all times kept clean and free from grit.

59. In the case of every quarry in which explosives are used, the owner, occupier or agent 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 whenever explosives or detonators are taken into the store or are to be issued thereat.

60. The owner, occupier or agent shall ensure that any detonator in an explosives store at a quarry is at all times kept separate from any explosive therein.

61. No person shall cap safety fuse with a detonator at any place at a quarry except at a suitable place under shelter appointed for the purpose by the owner, occupier or agent.

62.—(1) No person shall attach any detonator to any fuse at a quarry other than a shot firer or a competent person who has attained the age of twenty-one years and has been appointed for the purpose by the owner, occupier or agent.

(2) No detonator shall be crimped to any fuse at a quarry otherwise than by means of crimpers made for the purpose and provided by the owner, occupier or agent of the quarry.

63. No person shall take into or use at a quarry any explosive or detonator not provided by the owner, occupier or agent of the quarry.

Control of issue of detonators

64. All detonators at an explosives store at a quarry shall, except during a shift for which the owner, occupier or agent has appointed a competent person to have charge of that store, be in the sole charge of the owner, occupier or agent.

65. No person shall be in possession of any detonator at any place at a quarry other than an explosives store except a shot firer to whom the detonator has been issued for use or a person authorised by the owner, occupier or agent and save as aforesaid no person shall issue or take any detonator from such a store.

Conveyance and care of detonators

66. No person shall carry any detonator at a quarry (otherwise than within an explosives store) except in a securely locked detonator case used solely for that purpose and provided by the owner, occupier or agent of the quarry:

Provided that nothing in this Rule shall prevent a primer cartridge fitted with a detonator being taken in a case, bag or canister for carrying explosives to a place where it is intended to fire a shot being a case, bag or canister complying with the requirements of paragraph (1) of Rule 68.

67.—(1) Any shot firer to whom a detonator case has been issued at any quarry shall—

- (a) ensure that, apart from any check sheet for recording shots fired by him, nothing except detonators is in it;
- (b) 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;
- (c) if at the end of his period of duty it contains any detonator, return it to an explosives store; and
- (d) retain the key of the case in his own possession throughout the period during which he is on duty.

(2) No shot firer shall at any quarry remove a detonator from a detonator case (except within an explosives store or a place appointed under Rule 61) unless it is required immediately for use.

Conveyance and care of explosives

68.—(1) Except when within an explosives store or a place appointed under Rule 61, no person at a quarry shall carry any explosive (other than detonating fuse) otherwise than in a closed case, bag or canister so constructed and maintained as to prevent any escape or leakage of the explosive and danger from sparks. The owner, occupier or agent shall make and secure the efficient carrying out of arrangements to ensure that all such cases, bags and canisters in use at the quarry are kept clean and free from grit.

(2) Except in pursuance of the proviso to Rule 66 no person shall put anything other than explosives into a case, bag or canister provided for the purpose of carrying explosives at a quarry.

(3) Every person having any case, bag or canister of explosives in his possession or control at a quarry 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 case, bag or canister contains any explosive shall return it to an explosives store.

(4) No person shall (except within an explosives store or a place appointed under Rule 61) take any explosive from any case, bag or canister provided for the purpose of carrying explosives at a quarry unless the shot firer concerned requires the explosive immediately for charging a shot hole or a heading or for firing a shot.

69. No person shall at any quarry take any explosive or detonator into any room or compartment containing machinery, into any messroom, workroom, recreation room or other place where persons congregate or into any place in which there is a fire, an electric heating apparatus or a heating apparatus comprising a flame.

Use of naked light near explosives or detonators

70. No person at any quarry shall smoke, or take or ignite any naked light, within twenty feet of any explosive, detonator or explosives store, and no person shall take any explosive or detonator within twenty feet of a naked light:

Provided that nothing in this Rule shall prevent the use of a naked light by a shot firer for firing a shot.

EQUIPMENT, APPARATUS, AND MATERIAL FOR FIRING SHOTS

71.—(1) No shot firer shall fire a shot at a quarry by means of electric shot firing apparatus, cable or fuse (as the case may be) not provided for that purpose by the owner, occupier or agent of the quarry.

(2) No person shall take into or use at a quarry any fuse other than (a) safety fuse; (b) detonating fuse; (c) fuse complying with the requirements set out in the Schedule; or (d) fuse approved in writing by an inspector under Rule 98.

72. A shot firer who is in charge of any electric shot firing apparatus at any quarry—

- (a) shall retain any removable handle or key in his own possession throughout the period while he is on duty;
- (b) shall not place any removable handle or key in position in the apparatus until he is about to fire a shot; and
- (c) shall remove any removable handle or key from the apparatus immediately after firing each shot.

73. If an electric shot firing apparatus at a quarry appears to be defective or fails to fire any shot or fails to fire all or any of the shots in a properly connected round at one operation, the shot firer in charge of it shall not use it further but shall report the circumstances to the person under whose immediate control he works or to the owner, occupier or agent.

Misuse of equipment

74. No person other than a competent person authorised by the owner, occupier or agent to do so shall open any electric shot firing apparatus at any quarry, and no person shall tamper with any such apparatus thereat.

SHOT FIRING—GENERAL

75. No shot firer shall fire any shot at a quarry unless he has satisfied himself that the charge is so placed as to be safe for the firing of a shot.

76. No shot firer shall at any quarry use a delay detonator unless a number indicating the period of delay is clearly marked on the detonator or on a lead of that detonator.

77. No person shall at any quarry pull out any detonator lead or fuse from any charged shot hole or heading.

Firing shots electrically

78.—(1) No shot firer shall fire a shot electrically at a quarry unless the shot firing cable is of sufficient length to enable him to do so from a place of safety.

(2) No person other than a shot firer who is about to fire a shot shall at a quarry couple any shot firing cable to any detonator or to shot firing apparatus.

(3) No shot firer shall at a quarry 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.

(4) No shot firer shall fire any round of shots connected in series at a quarry by means of electric shot firing apparatus unless he has tested the circuit for continuity by means of a suitable testing device and has found it to be satisfactory. A shot firer shall not 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 under water

79. Where for the purpose of getting mineral from under water in any quarry a shot is to be fired under the water, the owner, occupier or agent shall make and secure the efficient carrying out of arrangements to ensure that no such shot is fired unless—

(a) the charge is of a water resistant type and protected as far as possible from becoming wet; and

(b) in the event of a miss-fire the charge can be readily recovered.

Prohibited and permitted periods for shot firing

80.—(1) No shot firer shall fire any shot at a quarry during any period between one hour after sunset and one hour before sunrise.

(2) Without prejudice to the generality of paragraph (1) of this Rule no shot firer shall fire any shot at a quarry otherwise than during any period or periods determined by the owner, occupier or agent and specified in a notice kept posted thereat. The owner, occupier or agent shall ensure that a copy of any such notice is provided at the quarry.

Shot firing directions

81.—(1) For the purpose of securing the safety of all persons at any quarry when shot firing is being carried on therein the owner, occupier or agent shall give directions (in these Rules referred to as "shot firing directions") allotting to competent persons, and specifying, the duties to be performed by them on any occasion on which shot firing is about to be or is being carried on in the quarry, and in particular, but without prejudice to the generality of the foregoing words, the shot firing directions shall—

(a) specify a suitable system to secure by means of the posting of notices or sentries or otherwise the giving of adequate warning that shot firing is about to commence to all persons within, near or approaching the danger zone determined by the shot firer in pursuance of Rule 82;

(b) specify a suitable system to secure the giving of adequate signals for the purpose of notifying persons employed at the quarry that shot firing has for the time being ended.

(2) It shall be the duty of the owner, occupier or agent at a quarry who has given shot firing directions to secure that the provisions of those directions are executed and enforced.

(3) A shot firing direction which is inconsistent with the provisions of any Rule shall, to the extent of the inconsistency, be of no effect.

(4) If an inspector is of opinion with respect to any shot firing directions that provision ought to be made for any matter for which provision is not for the time being made by such directions or that different provision ought to be made by such directions for any matter for which provision is for the time being made by such directions, he may serve on the owner, occupier or agent a notice stating that he is of that opinion, specifying the matter for which, in his opinion, provision or, as the case may be, different provision ought to be made as aforesaid and the nature of the provision that, in his opinion, ought to be made, and requiring the owner, occupier or agent to amend the directions accordingly and any such notice shall, if it so specified therein, become operative forthwith.

Warning and shelter

82. Any shot firer who is about to carry out any shot firing at a quarry shall, before shot firing is for the time being commenced, determine the danger zone likely to be created thereby and ensure that—

(a) the warning required by the relevant shot firing directions in pursuance of sub-paragraph (a) of Rule 81(1) has been given; and

(b) no person is in the said danger zone unless he has taken proper shelter:

Provided that nothing in this Rule shall prevent the shot firer and any person assisting him from remaining in the said danger zone for the purpose of lighting a fuse.

83. Any shot firer who has for the time being finished shot firing at a quarry shall take such steps as may be necessary to secure that the signals required to be given by the relevant shot firing directions in pursuance of sub-paragraph (b) of Rule 81(1) are given.

84. No person who has been posted as a sentry at a quarry in pursuance of a provision of shot firing directions shall leave the place where he was posted until the signals mentioned in the last preceding Rule have been given or he has been directed so to do by the person who posted him.

85. No person employed at a quarry shall pass a sentry who has forbidden him to do so.

86. At every quarry the owner, occupier or agent shall take such steps as may be necessary to secure that sufficient and suitable shelters are provided for the use of the persons employed thereat who are within the danger zone likely to be created when shots are fired thereat.

Precautions after shot firing

87. After the firing of every shot at a quarry, the shot firer who fired it or a competent person authorised for the purpose by the owner, occupier or agent shall—

(a) ascertain by personal examination whether it is safe for ordinary working to be resumed in each working place affected by that shot and ensure that any necessary action is taken to make each such place safe for such working;

- (b) in the course of his examination examine for any miss-fires, for any 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 part of the charge in the material brought down; and
- (c) if any unexploded part of the charge is found, (if he is a shot firer) either explode it by means of a primer cartridge or carefully remove it with a suitable tool made wholly of wood, or, (if he is not a shot firer) forthwith report the circumstances to the shot firer concerned who shall thereupon take steps in accordance with the provisions of this paragraph as if he himself had found the said unexploded part.

88. No person shall at a quarry introduce any drill or other tool made wholly or partly of metal into, or into the socket of, any shot hole in which a shot has been fired except in accordance with a scheme in force in pursuance of Rule 115.

SHOT FIRING—ADDITIONAL PROVISIONS OTHERWISE THAN FOR
HEADING BLASTING

Application of Rules 89-99

89. Rules 89-99 shall not apply with respect to any heading blast at a quarry.

Drilling, cleaning and charging shot holes

90.—(1) No person shall at any quarry charge a shot hole with any cartridge the diameter of which is not at least one eighth of an inch less than the diameter of that shot hole.

(2) No person shall at any quarry—

(a) for the purpose of charging or stemming any shot hole; or

(b) for the purpose of testing any shot hole in which there is explosive;

use any tool in the shot hole other than a tool made wholly of wood or any other tool of a type approved for the purpose by an inspector in writing:

Provided that if the depth of the shot hole exceeds nine feet the tool may be made of wood with joints made of any suitable non-ferrous material, being a tool so constructed that any such non-ferrous material does not project beyond the level of the sides of the tool and cannot come into contact with any explosive in the shot hole.

91. No person shall at any quarry begin to charge any shot hole unless it is cleaned out.

92. No person shall at any quarry charge a shot hole of a depth exceeding nine feet with any explosive other than explosive in the form of a cartridge or in a container, except if the back of that shot hole is lower than the mouth.

93. No shot firer shall at any quarry permit more than one case or cannister of any one type of explosive or of any one size of cartridge to be open at each shot hole at any one time for the charging of that shot hole.

94. No explosive shall be violently or forcibly pressed into a shot hole.

95. No person shall charge with gunpowder any shot hole in which a shot has previously been fired by means of safety fuse.

96. No person shall at any quarry charge a shot hole in which a shot has previously been fired unless the hole has been so treated as to ensure that it

is cool and that any burning material therein is extinguished and there has elapsed since the firing of that shot—

- (a) where the hole is to be charged with gunpowder, two hours;
- (b) in any other case, thirty minutes.

97. No shot firer shall at any quarry fire any shot (whether or not in conjunction with detonating fuse) otherwise than by means of electric shot firing apparatus designed for the purpose or by means of safety fuse.

98. No shot firer shall at any quarry attempt to fire more than six shots at one time by means of safety fuse, except by the use of safety fuse ignited by plastic igniter cord complying with the requirements set out in the Schedule to these Rules or by such means as an inspector may from time to time approve in writing.

99. Where any shot is to be fired at any quarry the shot firer shall ensure that all surplus explosives and detonators are removed from the vicinity of the shot hole before an attempt is made to fire a shot.

SHOT FIRING—ADDITIONAL PROVISIONS FOR HEADING BLASTING

Charging of headings and heading blasts

100. The owner, occupier or agent shall make and secure the efficient carrying out of arrangements to ensure that no explosive or detonator is placed in a heading at a quarry for the purpose of a heading blast unless every shot fired for the purpose of or in connection with the making of that heading has previously been fired.

101. No shot firer shall fire a shot other than a heading blast in any heading at a quarry in which any explosive or detonator has been placed for the purpose of a heading blast.

102. No lamp or light, other than a portable electric battery lamp or torch, shall be taken into or used in any heading at a quarry in which any explosive or detonator has been placed for the purpose of a heading blast.

103. In every case in which a heading at a quarry is charged with any gunpowder or any loose grain explosive for the purpose of a heading blast, no person shall be in that heading while it is being or after it has been so charged unless he is, throughout the period during which he is therein, wearing footwear having soles made wholly of rubber.

104.—(1) No person shall in the course of charging or stemming a heading at a quarry for the purpose of a heading blast use any tool, apparatus or appliance made wholly or partly of iron or steel, except where the charge has been stemmed by stemming which—

- (a) consists of sand in sand bags, clay or turf; and

- (b) is not less than one foot thick between any point at which the tool, apparatus or appliance can be applied and any part of the charge.

(2) Nothing in the last preceding paragraph shall be construed as preventing the use in any heading at a quarry of any vehicle made wholly or partly of iron or steel, being a vehicle suitable, and used, for transporting materials, explosives or detonators in the heading.

105. Any person laying any detonating fuse in a heading at a quarry for the purpose of the firing of a heading blast shall ensure that the fuse is

adequately protected from any damage which might be caused thereto in the course of the charging or stemming of that heading.

106. No shot firer shall fire any heading blast otherwise than by means of double core detonating fuse, that is to say detonating fuse having two cores of high explosive throughout its length, each core being separately enclosed.

107. The owner, occupier or agent shall make and secure the efficient carrying out of arrangements to ensure that in any case in which the operation of charging a heading at a quarry with any explosive has been commenced, a watchman is continuously in attendance in that heading or at or within sight of the entrance thereof until that operation has been completed, the heading has been stemmed and any surplus explosives and detonators removed from the heading and from the vicinity of the entrance thereto.

108. The owner, occupier or agent shall make and secure the efficient carrying out of arrangements to ensure that there shall be kept at the office at every quarry an accurate plan of every heading at that quarry showing the position, shape and dimensions thereof and indicating the amount and location of any explosives or detonators for the time being therein. Every such plan shall be preserved until the expiration of one year after the date upon which the heading to which it relates ceases to exist.

MISS-FIRES

109.—(1) A shot shall be treated as a miss-fire if it fails to explode, in the case of a shot being fired at a quarry (whether or not in conjunction with detonating fuse)—

- (a) by safety fuse, after the shot firer has withdrawn after once lighting or attempting to light the safety fuse or any other material or apparatus for firing shots by safety fuse approved either in the Schedule to these Rules or by an inspector in writing; or
 - (b) electrically, and either as a single shot or in a round, after the shot firer, having attempted unsuccessfully to fire the shot, has followed the procedure described in paragraph (2) of this Rule.
- (2) The said procedure is that the shot firer shall—
- (a) disconnect from the shot firing apparatus any 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; and
 - (c) make a further attempt to fire the shot.

110.—(1) Any person drilling a shot hole at a quarry near a miss-fire shall ensure that the hole is drilled in such manner as to avoid touching or otherwise affecting any unexploded detonator or charge of the miss-fire.

(2) If any 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.

111. Whenever any miss-fire at a quarry has been or may have been dislodged by the firing of another shot a search shall be made, by or under the supervision of the shot firer or a competent person authorised for the purpose by the owner, occupier or agent, for the detonator (if any) and the charge of the miss-fire before any person resumes work and before any further shot is fired at or near that place.

General precautions

112. In the event of a miss-fire at a quarry, no person shall approach the shot hole or place where the charge was placed (as the case may be) until, if the shot is being fired (whether or not in conjunction with detonating fuse)—

- (a) by safety fuse, there have elapsed, from the lighting of the safety fuse or the attempt to light it, not less than thirty minutes; or
- (b) electrically, the shot firer has disconnected any removable handle or key and the shot firing cable from the shot firing apparatus, and there have elapsed, from the last attempt to fire the shot, not less than five minutes.

113. In the event of a miss-fire at a quarry, the shot firer concerned shall forthwith give, or cause to be given, warning of the miss-fire to all persons approaching or likely to approach the shot hole or place where the charge was placed (as the case may be) and notice thereof to the person under whose immediate control he works.

114. In the event of a miss-fire at a quarry, the shot firer concerned shall—

- (a) if he leaves the place where the miss-fire occurred before the completion of the appropriate procedure specified in any scheme in force in pursuance of Rule 115, ensure that sufficient danger notices are erected to warn any person approaching the place; and
- (b) record the fact of the miss-fire in a book provided for the purpose.

Scheme for remedial action

115.—(1) At every quarry the owner, occupier or agent shall ensure that there is at all times in force thereat a scheme specifying the procedure to be followed in the event of a miss-fire and in the event of an unsatisfactory result of a test made in pursuance of paragraph (4) of Rule 78, and that scheme shall contain provisions for securing the safety of all persons in the vicinity.

(2) At every quarry the owner, occupier or agent shall ensure that a copy of the scheme is provided thereat, and that a copy thereof is supplied to each shot firer employed at the quarry.

(3) If an inspector is of opinion with respect to the scheme that the provisions contained therein are not adequate to ensure the taking of proper remedial action in the event of a miss-fire or an unsatisfactory result of a test made in pursuance of paragraph (4) of Rule 78, or to ensure the taking of proper safety precautions, he may serve on the owner, occupier or agent 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 owner, occupier or agent to amend the scheme accordingly and any such notice shall, if it is so specified therein, become operative forthwith.

Sealed with the Official Seal of the Ministry of Commerce for Northern Ireland this twelfth day of October, nineteen hundred and sixty-two, in the presence of

(L.S.)

W. J. Thompson,
Assistant Secretary.