

1969. No. 190

[NC]

QUARRIES**Electricity**

RULES, DATED 8TH JULY 1969, MADE BY THE MINISTRY OF COMMERCE UNDER SECTION 10 OF THE QUARRIES ACT (NORTHERN IRELAND) 1927.

The Ministry of Commerce in exercise of the powers conferred on it by section 10 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***Citation and Commencement*

1. These Rules may be cited as the Quarries (Electricity) Rules (Northern Ireland) 1969 and shall come into operation on 1st November 1969.

Interpretation

2.—(1) 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);

“the Ministry” means the Ministry of Commerce;

“circuit breaker” includes a fuse;

“electrical apparatus” includes electric cables and any part of any machinery, apparatus or appliance being a part designed for the generation, conversion, storage, transmission or utilisation of electricity;

“flexible cable” means a cable which is designed to be movable while in use;

“metallic covering” in relation to any cable means an iron or steel wire covering or a rigid iron, steel or other hard metal pipe;

“portable apparatus” includes any electrical apparatus that is designed to be moved while working;

“telephone or signalling apparatus” means any system used exclusively for either or both of such purposes and supplied with electricity from a battery of primary or secondary cells at a voltage not exceeding fifty or, in the case of telephones, from magneto generators operated by hand.

(2) Without prejudice to the provisions of the Interpretation Act (Northern Ireland) 1954(b) expressions to which meanings are assigned by the Act or by these Rules shall (unless the contrary intention appears) have the same meanings in any document issued under the provisions of these Rules.

Exemptions

3.—(1) Subject to paragraph (2) the requirements of these Rules relating to the construction of cables or other apparatus shall not apply until the 1st day of November 1972 to any cables or apparatus in use in any quarry at the date of the making of these Rules.

(2) Notwithstanding paragraph (1) the Ministry may by notice served on the owner, occupier or agent of any quarry in which any cables or apparatus were in use as aforesaid direct that the requirements of these Rules specified in such notice shall apply to such cables or apparatus, and the said notice shall take effect accordingly 14 days after the service thereof unless the person on whom it was served serves a statement of objections in accordance with paragraph (3). Any such notice shall state the address to which a statement of objections under paragraph (3) is to be sent.

(3) If any person on whom a notice is served under paragraph (2) (hereinafter called "the objector") objects to the requirements of such notice he may, within 14 days of the service of such notice upon him, serve upon the Ministry at the address specified in such notice a statement in writing of his objections thereto. The Ministry shall consider such objections and withdraw or modify such notice. If the Ministry refuses to withdraw or modify such notice or the objector is not satisfied with any modification thereof he may refer the matter to an arbitration in the manner provided by Rule 23. On the hearing of such arbitration the arbitrator may quash, modify or confirm such notice, and if any such notice is modified it shall take effect accordingly.

(4) The Ministry, if it is satisfied that the application of any provision of these Rules is inappropriate in relation to any quarry or part of a quarry or is not requisite for safety in relation to any electrical apparatus therein, may by notice served on the owner, occupier or agent grant exemption from that provision in respect of that quarry or part thereof or in respect of that apparatus, as the case may be.

Savings

4. Nothing in these Rules shall apply to—

- (a) any electrical apparatus which is not used and is not intended to be used as, and does not form and is not intended to form, part of the equipment of a quarry; or
- (b) any electrical apparatus operated at a quarry by an Electricity Undertaker within the meaning of subsection (1) of section 31 of the Electricity (Supply) Act (Northern Ireland) 1967(c), being such apparatus thereat other than any such apparatus on the consumer's side of the consumer's terminals within the meaning of section 1 of the Schedule to the Electric Lighting (Clauses) Act 1899(d), as incorporated with the Electricity (Supply) Act (Northern Ireland) 1931(e).

PART II

EQUIPMENT: INSTALLATION, OPERATION AND MAINTENANCE THEREOF

Means of cutting off electricity

5.—(1) There shall be provided in relation to every electrical circuit at any quarry, other than a circuit comprising solely telephone or signalling apparatus, effective means for cutting off the supply of electricity automatically from that circuit if the current therein should be dangerously excessive.

(2) There shall be provided in relation to every such electrical circuit—

- (a) in which alternating current at a voltage exceeding six hundred and fifty is used; or
- (b) which comprises portable apparatus and in which alternating current at a voltage exceeding one hundred and twenty-five is used;

effective means for cutting off the supply of electricity automatically from that circuit if the leakage current to earth should exceed fifteen per cent. of the maximum current for which that circuit is designed or five amperes whichever is the greater.

Suitability of apparatus

6. No electrical apparatus shall be used at any quarry unless it is of sufficient power or capacity to avoid dangerous overloading and, without prejudice to the generality hereof, every circuit breaker shall be of adequate making and breaking capacity to operate safely on the occurrence of a short circuit.

Earthing

7.—(1) There shall be connected to earth in such manner as will ensure immediate electrical discharge without danger—

- (a) every metallic part of any electrical apparatus at any quarry, except a part used as a conductor;
- (b) every metallic part of any covering or container of, or mounting for, any such electrical apparatus; and
- (c) every metallic part of any equipment of the quarry so situate as to be likely to become charged by contact with any conductor.

(2) Every earthing conductor installed for the purposes of the last preceding paragraph shall have a cross-sectional area not less than 0.022 square inches:

Provided that the provisions of this paragraph shall not apply to an earthing conductor being—

- (a) the metallic covering of a cable; or
- (b) in the case of a multi-core flexible cable used to supply portable apparatus, one of the conductors in that cable; or
- (c) a part of an overhead line.

(3) Every connection to or in any earthing conductor shall be mechanically secure and electrically efficient.

(4) No automatic circuit opening device shall be placed in any earthing conductor provided in pursuance of this Rule.

(5) Nothing in this Rule shall apply to—

- (a) any metallic part which cannot be touched by any person while any relevant circuit is live; or
- (b) any metallic part, other than a part of portable apparatus, where the voltage in any relevant circuit does not exceed two hundred and fifty direct current or one hundred and twenty-five alternating current; or
- (c) any telephone or signalling apparatus.

8.—(1) In every two-wire system which is used wholly or mainly for the purposes of traction at any quarry and in which the running rails form part of the circuit, the pole to which they are connected shall be connected to earth in such manner as will ensure immediate electrical discharge without danger.

(2) In every two-wire circuit at any quarry in which the supply of electricity is derived from the secondary winding of a single phase transformer, being a circuit used solely for indicating instruments or other accessories of switch-gear including any fixed lights associated therewith, one pole shall be connected at one place but no more to earth.

(3) In every circuit in which alternating current at a voltage exceeding twenty-five is used the neutral point shall be connected at one place but no more to earth;

Provided that in the case of a three phase three-wire circuit in which the supply of electricity is derived from the secondary winding of a three phase transformer, being a circuit used solely for indicating instruments or other accessories of switchgear including any fixed lights associated therewith, one pole thereof may be so earthed instead of the neutral point.

(4) Any system or circuit other than the aforesaid which is connected to earth shall be so connected at one place but no more.

(5) No automatic circuit opening device shall be placed in any such connection to earth.

9. Where at any quarry two or more earth electrodes are used for the purposes of the two last preceding Rules and the electrical resistance between them or any two of them exceeds two ohms, they shall be connected by a conductor having a cross-sectional area not less than 0.022 square inches:

Provided that if any such earth electrode used for the purposes of Rule 8 is inaccessible to the owner or occupier of the quarry, the provisions of this Rule shall not apply in relation to that earth electrode but the resistance between any other earth electrodes and the general mass of earth shall not exceed two ohms.

Insulation and armouring

10.—(1) Every conductor forming part of an electrical system at a quarry other than—

- (a) a conductor so placed or otherwise safeguarded as to prevent danger; or
- (b) telephone or signalling apparatus; or
- (c) a conductor in a circuit in which the voltage does not exceed twenty-five;

shall be covered with insulating material.

(2) The insulation resistance of any circuit at a quarry, other than the insulation resistance of any conductor which is an earthing conductor, shall be so maintained that in normal working the leakage current does not exceed one ten thousandth part of the maximum current for which that circuit is designed:

Provided that this paragraph shall not apply to overhead lines or to telephone or signalling apparatus.

11.—(1) Every cable at a quarry comprising a conductor which is required by these Rules to be covered with insulating material, other than a flexible cable used to supply portable apparatus, shall be a cable protected throughout by a suitable metallic covering containing all the conductors forming part of the same electrical system at that place.

(2) Every such metallic covering shall have a conductivity throughout not less than half that of the conductor having the greatest current carrying capacity enclosed thereby:

Provided that in the case of a cable of which the metallic covering is wire and which is covered with a lead sheath, the conductivity of that sheath may be taken into account for the purposes of this paragraph if plumbed joints are used where the cable is jointed or terminated.

(3) Where it is necessary to move an electric motor from time to time to adjust the tension of a driving belt, rope or chain, such length of cable as is requisite may be protected by flexible metallic tubing instead of metallic covering but a separate earthing conductor having a cross-sectional area not less than 0.022 square inches shall be provided therewith.

(4) Nothing in this Rule shall apply to a cable in any circuit in which the voltage does not exceed two hundred and fifty direct current or one hundred and twenty-five alternating current.

12.—(1) Wherever any cable (including a flexible cable) protected by a metallic covering is connected to other apparatus at a quarry, that metallic covering shall be securely attached to that apparatus.

(2) Any material insulating any conductor in any cable shall be efficiently sealed at any point at which that conductor is connected to other apparatus where its insulating property might be diminished by moisture.

Flexible cables

13.—(1) No single-core flexible cable shall be used for supplying portable apparatus at any quarry:

Provided that where the conductivity required for the live conductor is such as to render the use of one two-core or multi-core cable impracticable there may be used single-core cables of such construction and bonded and earthed in such manner as may be approved by the Ministry.

(2) Every flexible cable so used shall comprise an earthing conductor having throughout a cross-sectional area and conductivity not less than that of the other conductor in that cable having the greatest current carrying capacity.

(3) Every flexible cable so used in a circuit in which the voltage exceeds two hundred and fifty direct current or one hundred and twenty-five alternating current shall be protected throughout by—

- (a) a metallic covering containing all the conductors forming part of that circuit at that place and having a conductivity not less than half that of the conductor enclosed thereby, other than the earthing conductor, having the greatest current carrying capacity or, where that is impracticable, having a conductivity not less than that of a copper conductor with a cross-sectional area of 0.022 square inches; or
- (b) a screen of wires containing more or less completely all the conductors forming part of the circuit at that place and having a conductivity not less than that of a copper conductor with a cross-sectional area of 0.022 square inches; or
- (c) screens of wires enclosing separately but more or less completely all the conductors forming part of the circuit at that place, other than the earthing conductor, and each of construction and having such conductivity as is approved in the Schedule, or as may be approved by the Ministry:

Provided that in a circuit in which the voltage exceeds six hundred and fifty the protection shall be by metallic covering in accordance with sub-paragraph (a).

(4) Without prejudice to the application of paragraph (1) of Rule 12 wherever any flexible cable is connected to other apparatus it shall be so attached as to hold the cable securely and, where necessary having regard to its position, to exclude water, and any screen of wires shall be securely attached to that apparatus.

(5) Nothing in this Rule shall apply to telephone or signalling apparatus.

Restriction on use of high voltage

14.—(1) Electricity at a voltage exceeding two hundred and fifty direct current or at a voltage to earth exceeding sixty-four alternating current shall not be applied to any portable hand lamp at any quarry.

(2) Electricity at a voltage exceeding two hundred and fifty direct current or one hundred and ten alternating current shall not be applied to any portable apparatus at any quarry unless—

- (a) in the case of apparatus comprising one or more motors, that motor or one of them is rated at more than four horse power; or
- (b) in the case of other apparatus, the rated input exceeds four kilovolt amperes.

Transformers

15. In any transformer at a quarry suitable provision shall be made by earthing or otherwise to guard against danger arising from the charging of lower voltage components by leakage or induction from higher voltage components.

Testing and operation of electrical apparatus

16.—(1) It shall be the duty of the owner, occupier or agent at every quarry at which electrical apparatus is installed to make and ensure the efficient carrying out of arrangements for the testing by a competent person appointed by him of all parts of every circuit at the quarry at intervals not exceeding six months, or such longer interval as an inspector may by notice served on the owner, occupier or agent permit, as regards the insulation resistance thereof and the conductivity of the earthing conductor and earth electrodes.

(2) Every person who has made a test in pursuance of this Rule shall forthwith record and sign a report thereon in a book which shall be provided by the owner, occupier or agent and shall be in the form approved for the purpose by the Ministry and the book or a correct copy thereof shall be kept at the quarry. 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 book; 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 this Rule.

17. No person other than a competent person authorised by the owner, occupier or agent so to do shall undertake any work relating to the installation, repair, examination, testing or operation of any electrical apparatus, and, without prejudice thereto, the owner, occupier or agent shall not authorise any person to undertake any work for which technical knowledge is required to avoid danger except a person appointed by him as an electrician of the quarry.

18. No person shall commence work upon any conductor in a circuit in which the voltage is such that that conductor might be a source of danger to him until that conductor has been made dead and any necessary steps have been taken, whether by earthing or otherwise, to ensure that it will remain dead until the work is finished.

Protection of apparatus and persons

19.—(1) Every person doing any work which may result in such damage to any electrical apparatus at a quarry that that apparatus might be a source of

danger to persons employed thereat shall take such steps to protect it from such damage as may be appropriate.

(2) Before any operations or works are commenced at a quarry, and also during the progress thereof, all practicable steps shall be taken to prevent danger to persons employed from any live electric cable or apparatus which is liable to be a source of such danger, either by rendering such cable or apparatus electrically dead or otherwise.

Fencing of outdoor apparatus

20. Wherever any transformer or switchgear is installed at a quarry otherwise than in a building the apparatus shall be efficiently protected by fencing not less than seven feet six inches high or other efficient means for preventing any unauthorised person from gaining access to the apparatus or any thing connected therewith used as a conductor:

Provided that this Rule shall not apply where the apparatus is completely enclosed with a metal casing which is connected with earth and any cables connected with the apparatus are protected by a metallic covering.

Overhead lines

21.—(1) Every overhead line at a quarry shall comply with any regulations or bye-laws for the time being in force under the Electricity (Supply) Acts (Northern Ireland) 1882 to 1967(f) as if it was the line of the undertakers authorised to supply electricity within the area in which the quarry is situated:

Provided that nothing in this Rule shall require compliance in respect of any temporary line installed and removed within a period of three months with any provision of such regulations relating to the factor of safety of supports.

(2) Where any electrically charged overhead cable or apparatus is liable to be a source of danger to persons employed during the course of any operations or works to be undertaken at a quarry, whether from the operation of a lifting apparatus, excavator or any other machine or otherwise, all practicable precautions shall be taken to prevent such danger either by the provision of adequate and suitably placed barriers or otherwise.

PART III

MISCELLANEOUS

Notices

22. It shall be the duty of the owner, occupier or agent at every quarry at which electrical apparatus is installed to secure that notices containing directions on the treatment of persons suffering from electric shock are kept posted in such positions and such characters as to be easily seen and read wherever electrical apparatus is installed from which a dangerous shock might be received.

Arbitration

23. Any matter which is referred to arbitration under Rule 3(3) shall be referred in accordance with the provisions of the Arbitration Act (Northern Ireland) 1937(g) as though these Rules were an arbitration agreement within

(f) 45 & 46 Vict. c. 56; 51 & 52 Vict. c. 12; 62 & 63 Vict. c. 19; 9 Edw. 7. c. 34; 9 & 10 Geo. 5. c. 100; 21 & 22 Geo. 5. c. 9 (N.I.); 23 & 24 Geo. 5. c. 33 (N.I.); 25 & 26 Geo. 5. c. 9 (N.I.); 1948. c. 18; 1951. c. 8; 1953. c. 15; 1967. c. 11 (N.I.).
 (g) 1 Edw. 8 and 1 Geo. 6. c. 8 (N.I.).

the meaning of that Act and the parties to the reference shall be the owner, occupier or agent of the quarry and an inspector who shall represent the Ministry. The arbitrator shall be appointed by agreement between the two parties aforesaid.

Sealed with the Official Seal of the Ministry of Commerce for Northern Ireland this 8th day of July 1969 in the presence of

(L.S.)

K. R. Shimeld,
Assistant Secretary.

SCHEDULE

Approved type of protective screens of a flexible cable

The type of screen described below is approved for purposes of Rule 13(3)(c):

Screens of the construction and having the conductivity of the screen of wires enclosing separately but more or less completely the conductors of any flexible cable complying with the requirements of type number 14 of the British Standard Specification for "Trailing Cables for Mining Purposes" numbered 708 as revised in May 1957 and any flexible cable complying with the requirements of Type Number 7 of the British Standard Specification numbered 708 in respect whereof the nominal cross-sectional area of power or earth conductor does not exceed 0.0225 square inches.

EXPLANATORY NOTE

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

These Rules made by the Ministry of Commerce under the Quarries Act (Northern Ireland) 1927 deal with the use of electricity at quarries. The Rules are for general application but provision is made for exemptions to be granted in certain cases.

The Rules impose new duties on owners, occupiers and agents in relation to the installation, repair, examination, testing and operation of electrical apparatus and appointment of competent persons.