**1970. No. 105** **[C]**

# MISCELLANEOUS MINES

## Electricity

ORDER, DATED 15TH MAY 1970, MADE BY THE MINISTRY OF COMMERCE UNDER SECTION 164 OF THE MINES ACT (NORTHERN IRELAND) 1969.

WHEREAS by subsection (1) of section 164 of the Mines Act (Northern Ireland) 1969(a) (hereinafter referred to as "the Act"), the Ministry of Commerce (hereinafter referred to as "the Ministry") is empowered to re-enact amongst other things (to the extent to which they could by virtue of the Act be enacted in regulations made under section 120 thereof) provisions of any regulation having effect by virtue of section 86 of the Coal Mines Act 1911(b), subject to such modifications (if any) as appear to the Ministry to be consequential on the passing of the Act or requisite for the purpose either of bringing those provisions into conformity with the Act or of expressly limiting their operation to mines of the class to which their operation is limited immediately before the commencement of the Act:

AND WHEREAS by subsection (2) of that section it is provided amongst other things that an order under subsection (1) shall set out in a schedule to the order the provisions thereby re-enacted and may direct that those provisions shall have effect as if they were regulations made under section 120 of the Act:

NOW, THEREFORE, the Ministry in pursuance of the powers conferred upon it by section 164 of the Act hereby makes the following order:—

**1.**—(1) The provisions set out in the schedule hereto, being the provisions of the Metalliferous Mines (Safety, Health, Welfare and Electricity) Regulations (Northern Ireland) 1969(c) relating to electricity subject to such modifications as aforesaid, are hereby re-enacted and shall have effect as if they were regulations made under section 120 of the Act coming into operation at the commencement of the Act.

(2) The provisions set out in the schedule hereto may be cited as the Miscellaneous Mines (Electricity) Regulations (Northern Ireland) 1970.

**2.** Any exemption, approval or notice given for the purpose of a provision of the Metalliferous Mines (Safety, Health, Welfare and Electricity) Regulations (Northern Ireland) 1969, shall, if in force at the commencement of the Act and so far as it could have been given for the purposes of the Miscellaneous Mines (Electricity) Regulations (Northern Ireland) 1970 (whether by that instrument or an instrument to the like effect), have effect as if it had been so given.

**3.** This order shall come into operation at the commencement of the Act and may be cited as the Miscellaneous Mines (Electricity Regulations) Order (Northern Ireland) 1970.

Sealed with the Official Seal of the Ministry of Commerce for Northern Ireland this 15th day of May 1970 in the presence of

(L.S.) *W. McC. Taylor,*
Assistant Secretary.

(a) 1969. c. 6 (N.I.).
(b) 1 & 2 Geo. 5. c. 50.
(c) S.R. & O. (N.I.) 1969, No. 104.

## SCHEDULE

**The Miscellaneous Mines (Electricity) Regulations (Northern Ireland) 1970 having effect as if made under section 120 of the Mines Act (Northern Ireland) 1969**

### PART I

### GENERAL

*Application*

1. These regulations shall apply to every mine other than a mine of coal, stratified ironstone, shale or fireclay, and in these regulations "mine" means such a mine.

*Interpretation*

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

"the Act" means the Mines Act (Northern Ireland) 1969;

"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 moveable 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;

"mine" has the meaning assigned thereto in regulation 1;

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

*Exemptions*

3. If an inspector is satisfied that the application of any provision of these regulations is inappropriate in relation to any mine or part of a mine or is not requisite for safety in relation to any electrical apparatus therein, the Ministry may by notice served on the manager of that mine grant exemption from that provision in respect of that mine or part thereof or in respect of that apparatus, as the case may be.

### PART II

### MISCELLANEOUS PROVISIONS

*Plans*

4. It shall be the duty of the manager of every mine in which electrical apparatus is installed below ground to keep at the office at the mine, or at such other place as may be approved by the Ministry, a plan showing the position of all such apparatus other than portable apparatus and flexible cables.

*Main switchgear for cutting off electricity*

5.—(1) There shall be provided at the surface at every mine in which electrical apparatus is installed below ground suitable switchgear for cutting off the supply of electricity from all that apparatus.

(2) The manager of every such mine shall make and secure the efficient carrying out of arrangements whereby a competent person appointed by him for the purpose of operating such switchgear is in attendance at the surface at the mine whenever any cable below ground in the mine is live.

(3) For the purpose of securing the prompt operation of such switchgear when necessary there shall be provided telephonic communication between the surface and one or more convenient places below ground.

*Other means for cutting off electricity*

6.—(1) There shall be provided in relation to every electrical circuit at any mine, 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.

*Apparatus for use where inflammable gas may occur*

7. In any part of a mine below ground in which inflammable gas may occur in a quantity sufficient to indicate danger, no electrical apparatus shall be used other than apparatus of a type approved by the Ministry for use in such conditions.

*Suitability of apparatus*

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

*Earthing*

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

(*a*) every metallic part of any electrical apparatus at any mine, 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 mine 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 on the surface.

(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 regulation.

(5) Nothing in this regulation 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.

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

(2) In every two-wire circuit 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 switchgear including any fixed lights associated therewith, one pole shall be connected at one place but no more to earth at the surface.

(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 at the surface:

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.

11. Where at any mine two or more earth electrodes are used at the surface for the purposes of the two last preceding regulations 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 regulation 10 is inaccessible to the owner of the mine, the provisions of this regulation 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*

12.—(1) Every conductor forming part of an electrical system at a mine 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, 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 on the surface or to telephone or signalling apparatus.

13.—(1) Every cable at a mine comprising a conductor which is required by these regulations 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.

(3) Nothing in this regulation 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.

14.—(1) Wherever any cable (including a flexible cable) protected by a metallic covering is connected to other apparatus, 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*

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

(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 having a conductivity not less than that of a copper conductor with a cross-sectional area of 0·011 square inches.

(4) Without prejudice to the application of paragraph (1) of regulation 14 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.

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

*Restriction on use of high voltages*

16.—(1) Electricity at a voltage exceeding two hundred and fifty direct current or twenty-five alternating current shall not be applied to any portable hand lamp at any mine.

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

(*a*) in the case of apparatus comprising one or more motors, that motor or one of them is rated at more than five horse power; or

(*b*) in the case of other apparatus, the rated input exceeds five kilovolt amperes.

*Transformers*

17. In any transformer at a mine 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.

*Examination and operation of electrical apparatus*

18.—(1) It shall be the duty of the manager of every mine to make and ensure the efficient carrying out of arrangements for—

(*a*) the external examination of all electrical apparatus at the mine at intervals not exceeding seven days by a competent person appointed by him;

(*b*) the examination and testing of all electrical apparatus by such a person before it is put into use after installation, re-installation or repair in particular as regards the insulation resistance and the conductivity of any earthing conductor comprised therein or associated therewith; and

(*c*) the testing of all parts of every circuit at the mine by such a person at intervals not exceeding six months, or such longer interval as the Ministry may by notice served on the manager 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 regulation shall forthwith record and sign a report thereon in a book provided by the owner of the mine for the purpose.

19. No person other than a competent person authorised by the manager 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 manager 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 mine.

20. 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*

21. Every person doing any work which may result in such damage to any electrical apparatus at a mine 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.

*Fencing of outdoor apparatus*

22. Wherever any transformer or switchgear is installed at the surface of a mine otherwise than in a building the apparatus shall be efficiently protected by fencing not less than eight feet 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 regulation 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*

23. All overhead lines in a mine shall comply with the Regulations for Overhead Lines prescribed by the Ministry and made under the Electricity (Supply) Acts (Northern Ireland) 1882 to 1967(**d**) as if they were lines of the undertakers authorised to supply electricity within the area in which the mine is situated, provided that overhead lines which are installed and removed within a period of three months need not comply with the said Regulations as to factors of safety for supports.

*Protection from lightning*

24. Wherever necessary to prevent danger in any mine, suitable means shall be provided at the surface to protect any apparatus below ground from abnormal voltage due to atmospheric electricity.

*Notices*

25. It shall be the duty of the manager of every mine 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.

*Savings*

26. Nothing in these regulations 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 mine; or

(*b*) any electrical apparatus operated at a mine by an Electricity Undertaker within the meaning of subsection (1) of section 31 of the Electricity (Supply) Act (Northern Ireland) 1967(**e**), being 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(**f**), as incorporated with the Electricity (Supply) Act (Northern Ireland) 1931(**g**).

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(**d**) 45 & 46 Vict. c. 56.
51 & 52 Vict. c. 12
62 & 63 Vict. c. 19
9 Ed. 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.).

(**e**) 1967. c. 11 (N.I.). (**f**) 62 & 63 Vict. c. 19. (**g**) 21 & 22 Geo. 5. c. 9 (N.I.).

## EXPLANATORY NOTE

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

This order is made under the Mines Act (Northern Ireland) 1969, section 164, which empowers the Ministry of Commerce to re-enact (to the extent to which they could be enacted in regulations made under the Act and subject to modifications of the kind specified in that section) the provisions of regulations which will cease to have effect at the commencement of the Act.

The provisions set out as regulations in the schedule to this order relate to the use of electricity at mines other than mines of coal, stratified ironstone, shale or fireclay. These regulations comprise, and will at the commencement of the Act replace, the electricity provisions of the Metalliferous Mines (Safety, Health, Welfare and Electricity) Regulations (Northern Ireland) 1969.