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Statutory Instrument 109 of 1990.

[CAP. 165

Mining (Management and Safety) Regulations, 1990

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IT is hereby notified that the Minister of Mines has, in terms of section 427 of the Mines and Minerals Act [Chapter 165], made the following regulations:—

PRELIMINARY

Title and application

1. (1) These regulations may be cited as the Mining (Management and Safety) Regulations, 1990.

(2) Except where the contrary intention appears from the context or specific provision is made to the contrary, the provisions of these regulations shall apply to all mines.

Interpretation

2. In these regulations—

“appointed” means appointed in writing by the person responsible for making such appointment and countersigned in ink by the person accepting such appointment;

“approved” means approved in writing by the Chief Government Mining Engineer;

“authorized person”, in relation to a particular function or power, means a competent person authorized in writing by the manager of the mine concerned to discharge that function or exercise that power;

“automatic winding plant” means any hoist or other appliance for the conveyance of persons, material or mineral by means of a cage, skip or other means of conveyance in any shaft or winze where the driving machinery is normally operated automatically, without a driver in attendance, but shall not include any lifting machine, elevator, endless rope haulage or scraper winch installation;

"blasting licence" means a valid licence to conduct blasting operations and re-entry procedures issued in terms of of the law relating to explosives;

"boiler" means—

- (a) any apparatus adapted to convert continuously any liquid into steam, vapour or gas at a pressure higher than that due to the atmosphere, where the heat is derived from a source other than steam or the ambient temperature of the atmosphere, which apparatus shall be deemed to include any super-heater or economizer which is an integral part thereof;
- (b) any economizer or separately-fired super-heater neither of which is an integral part of such apparatus;

and includes any fittings and appurtenances thereof:

Provided that—

- (i) where any apparatus consists of a combination of two or more parts, each of which is capable of adaption for use as a separate boiler by the closing of one or more stop valves or stop cocks, each part shall be deemed to be a separate boiler;
- (ii) any steam generator fitted with a standpipe or riser vented direct to atmosphere the vent of which is of such dimensions as to prevent the development of any pressure exceeding thirty-five kilopascals within the vessel shall, if no valve or other obstruction is inserted in the standpipe or riser to prevent the vessel from freely venting to atmosphere, be deemed not to be a boiler;
- (iii) any apparatus in which the product of the maker's intended maximum working pressure in kilopascals and the volume in cubic metres does not exceed ten shall be deemed not to be a boiler;

"competent person", in relation to any duty or function means a person who has had adequate training and experience to enable him to perform that duty or discharge that function without avoidable danger to himself or any other person. Competent persons shall be appointed in terms of section 7.

"conveyance", in relation to a winding plant means any cage, skip, bucket, bale, kibble, cocopan body, material trailer, counter-poise or any other receptacle or structure attached to or suspended from a winding rope and intended to serve as a means of transport or counter-balance;

"engine" means any appliance or combination of appliances by which power, other than man or animal power, can be applied to do mechanical work;

"fiery mine" means any mine or part of a mine determined to be a fiery mine in terms of section 88.

"form" means the appropriate form prescribed by the First Schedule;

"in ink" means typewritten or written in ink or with a ball point pen or in some other manner so as to be indelible;

"inspector" means an inspector or sub-inspector of mines appointed in terms of the Act;

"in writing" means in all cases in ink;

"machinery" means any engine, boiler or appliance or combination of appliances which is used or intended to be used for generating, developing, receiving, storing, converting, transforming or transmitting any form of power or energy or for conveying persons, material or mineral and which is situated at a mine and used or intended to be used in connexion with operations at and pertaining to such mine;

"manager", in relation to a mine, means the person appointed as or deemed to be the manager of that mine in terms of Part I and includes any person appointed in terms of section 16 to act as the manager of that mine;

"material" means anything whatsoever conveyed by means of a winding plant other than persons, mineral or rock;

- "miner in charge", in relation to any section or part of a mine, means the person appointed to be miner in charge thereof in terms of section 8;
- "mining" means the process of extracting or obtaining any mineral by any mode or method, or any purpose directly or indirectly connected therewith or incidental thereto;
- "official", in relation to any section or part of a mine, means the manager or a competent person appointed in terms section 7 to assist in the control, management and direction thereof;
- "owner", in relation to a mine, means the person who is actually entitled to undertake the work on the mine, whether he is the holder or lessee or assign of the rights of such holder;
- "pressure vessel" means any vessel in the interior or jacket of which a pressure of more than thirty-five kilopascals gauge pressure may obtain but does not include—
- a boiler;
 - a vessel in which the pressure is exerted by a liquid harmless to the vessel the temperature of which does not exceed the boiling point of the liquid at atmospheric pressure, if the vessel is such that a cushion of gas or vapour cannot form above the liquid;
 - the working cylinder or chamber of a steam, heat or air engine or any transmitting column or pipeline;
 - a portable gas container;
 - a vessel in which the maximum working gauge pressure exceeds thirty-five kilopascals but in which the product of the working gauge pressure in kilopascals and the capacity in cubic metres does not exceed ten.
- "raise" means any tunnel having an inclination above the horizontal in the direction of working of more than five degrees, but does not include a shaft;
- "ramp" means any tunnel at an inclination of more than

- five degrees above the horizontal in which self-propelled trackless vehicles move;
- "shaft" means any tunnel having—
- a cross-sectional dimension of three metres or more; and
 - an inclination to the horizontal of—
 - fifteen degrees or more; or
 - less than fifteen but more than ten degrees, if the speed of traction therein may exceed one hundred and fifty metres per minute;
- "small hoist" means any machine or apparatus which is—
- used for the raising or lowering of men, material or mineral in any shaft or winze; and
 - driven by an engine or motor developing not more than fifty kilowatts and having a speed of traction of not more than one hundred and fifty metres per minute;
- "steeply inclined", in relation to shafts or other underground excavations, means having an inclination of thirty-five degrees or more to the horizontal;
- "stope" means an underground excavation made in the removal of any ground or mineral, other than coal, but not include an excavation made for an engine room or pump chamber or for development purposes such as shafts, drives, winzes, raises and ramps;
- "the Act" means the Mines and Mineral Act [Chapter 165];
- "underground" means any working beneath the surface of the ground, access to which is by means of a ramp, adit, shaft, raise or winze;
- "ventilating district" means such part of a mine as has an independent intake commencing from the main intake aircourse and an independent return airway terminating at the main return aircourse;
- "waterblast" means an appliance by means of which water is continuously projected in the form of a spray by means of compressed air;

"winding plant" means any hoist, machinery or apparatus used for raising or lowering of men, material or mineral in any shaft or winze but does not include any elevator, endless rope haulage, scraper winch installation or any lifting machine as defined in section 185;

"winze" means any tunnel having an inclination below the horizontal in the direction of working of more than five degrees, but does not include a shaft;

"workings" includes all portions of a mine whether on surface or underground which have been excavated, whether abandoned or not, and all portions of a mine whether on surface or underground in the process of excavation.

PART I

MANAGEMENT AND RESPONSIBILITY IN MINES

Manager to be appointed for every mine

3. (1) Every mine shall be under the management, control and direction of a manager appointed in terms of this Part.

(2) No mining or allied operations shall be carried out at any mine for a period exceeding seven days unless a manager has been appointed for that mine in terms of this Part.

(3) Subject to subsection (4), not more than one manager shall be appointed in respect of any mine.

(4) Where, in his opinion, the extent of any mine warrants it or special circumstances exist, the Chief Government Mining Engineer may authorize or require the appointment of more than one manager.

(5) A manager authorized or required to be appointed in terms of subsection (4) shall be appointed for a particular portion of the mine and shall be responsible for the management, control and direction of such portion.

(6) Joint control of any mine or any portion of a mine shall not in any case be exercised by two or more managers.

(7) No person shall be appointed manager of more than one mine without the written approval of an inspector.

Appointment of manager

4. (1) The manager of a mine shall be appointed—

(a) in the case of a mine which is worked by the registered holder thereof either personally or through a servant or agent, by such registered holder or his agent;

(b) in the case of a mine which is worked on tribute, by the tributor;

(c) in the case of a mine which is worked by or on behalf of a partnership or company, by the accredited agent appointed in terms of subsection (3) of section 62 of the Act;

(d) in any case not falling within paragraph (a), (b) or (c), by the person for whose benefit the mining operations are conducted.

(2) No person who is responsible for the appointment of a manager in terms of subsection (1) shall carry on mining or allied operations for a period exceeding seven days without appointing a manager.

Certificate of appointment of manager and register of managers

5. (1) A certificate of the appointment of a manager shall, within seven days of the appointment, be forwarded by the person making such appointment to an inspector of the mining district in which the mine concerned is situated.

(2) The certificate forwarded in terms of subsection (1) shall be endorsed by the appointee signifying his acceptance of the appointment.

(3) If the Chief Government Mining Engineer, after consultation with an inspector is not satisfied, having regard to the nature of the mining operations being or to be conducted on a mine, that the person who has been appointed as the manager of that mine in terms of this Part—

(a) is sufficiently able to read and write English or sufficiently conversant with the provisions of the Act, these regulations and any law relating to explosives; or

(b) has sufficient knowledge, experience and ability; to be the manager of the mine, he may in writing notify the person who made the appointment accordingly and require him, within

such period as the Chief Government Mining Engineer may specify, to appoint some other person as manager of the mine, and thereupon such first-mentioned appointment shall become void and of no force or effect.

(4) Any person aggrieved by a decision of the Chief Government Mining Engineer in terms of subsection (3) may appeal against that decision to the Minister, who may confirm, vary or set aside the decision.

(5) Whenever a person appointed to be the manager of a mine in terms of this Part ceases for any reason to be the manager of that mine, the person responsible in terms of section 4 for the appointment of his successor shall immediately give written notification, to an inspector of the mining district in which the mine is situated, of the fact that such first-mentioned person has ceased to be the manager of the mine.

(6) There shall be maintained in respect of each mining district in the manner directed by the Chief Government Mining Engineer a register showing the person for the time being appointed in terms of this Part as manager of every mine situated in that mining district.

Person deemed to be manager where no manager appointed

6. During any period where no manager has been appointed for a mine, the person responsible for such appointment in terms of section 4 shall be deemed to be the manager of the mine.

Appointment of competent persons

7. (1) Subject to subsection (2)—

- (a) the manager of a mine may appoint in writing one or more competent persons to assist him in the operation, control, management and direction of the mine, and every such person shall, to the extent clearly defined in his letter of appointment, have the same responsibility under these regulations as the manager;
- (b) the Chief Government Mining Engineer may require the appointment of one or more competent persons and subordinate managers at any time when in his opinion, this is necessary:

Provided that the appointment of persons in terms of paragraphs (a) and (b) shall not be taken to relieve the manager of any personal responsibility under these regulations.

(2) In every case where the activities at a mine involve blasting operations, either on surface or underground, the manager of the mine—

- (a) may, if he is the holder of a blasting licence; and
- (b) shall, if he is not the holder of a blasting licence; appoint one or more competent persons to supervise such blasting operations:

Provided that all persons so appointed shall be holders of the appropriate class of blasting licence.

(3) Any appointment made in terms of subsections (1) and (2) shall be entered in ink in a register kept expressly for the purpose, which shall include—

- (a) the name of the person appointed; and
- (b) particulars of his appointment; and
- (c) the extent of his responsibilities under these regulations.

(4) Entries in the register referred to in subsection (3) shall be signed by the manager and the person appointed, and unsigned entries shall be of no force or effect.

Appointment of miner in charge

8. (1) The manager of a mine or an official may appoint a competent person to be the miner in charge of a specified section or part of a mine.

(2) Any appointment made in terms of subsection (1) shall be entered in ink in a register kept expressly for the purpose which shall include—

- (a) the name of the person appointed; and
- (b) the section or part of the mine under his charge.

(3) Entries in the register referred to in subsection (2) shall be signed by the person making the appointment concerned and the person appointed, and unsigned entries shall be of no force or effect.

Responsibilities of manager

9. (1) The manager of a mine shall—

- (a) comply with and enforce the requirements of these regulations and any lawful order given by an inspector in the interests of safety, health and discipline and ensure that they are observed by every person employed on the mine;
- (b) appoint such persons in terms of sections 7 and 8 as may be necessary to assist him to comply with and enforce observance of these regulations and any lawful order given by an inspector;
- (c) take all reasonable measures to provide for the safety and proper discipline of persons employed at the mine;
- (d) as soon as is practicable after the occurrence of a breach of any provision of these regulations—
 - (i) report such breach to an inspector; or
 - (ii) take such other disciplinary steps as that inspector may have directed or approved;
 and in any event cause particulars of such breach and of any disciplinary steps taken to be entered in ink in a register kept for the purpose, which shall be open for inspection at all reasonable times by the inspector;
- (e) cause the times of the working shifts and of blasting operations in every section of the mine to be so arranged that workmen shall not be exposed to fumes and dust from blasting;
- (f) provide, or cause to be provided, underground, such waiting places as may be necessary for the use of workmen prior to entering their working places, ensure that such waiting places are at all times clearly marked and, subject to subsection (2), ensure that the miner in charge or blasting licence holder who is responsible for the safety of those working places is the first person to enter such working places and all approaches thereto;
- (g) ensure that—
 - (i) there is in force a system to enable a determination to be made of the number of persons in the

underground workings at any time;

- (ii) any person who knowingly fails to conform to any systems in force in accordance with subparagraph (i) shall be guilty of an offence;
- (h) not allow any—
 - (i) miner or competent person to be placed in charge of a complement of workmen if, taking into account the nature or position of the working places, such miner or competent person is unable efficiently to supervise the workmen during his working shift in accordance with the requirements of these regulations;
 - (ii) miner to have charge of more working places or machine drills or persons than may be determined or approved by the Chief Government Mining Engineer at any mine or section of a mine where, in the opinion of the Chief Government Mining Engineer, such determination or approval is necessary in the interests of safety and health;
- (i) wherever necessary, provide and maintain in working order, both underground and on the surface, adequate and suitable fire-fighting equipment as directed in writing by an inspector, which equipment shall be conveniently located and conspicuously marked;
- (j) not permit any incompetent or inexperienced workmen to be employed on dangerous work or work upon the proper performance of which the safety of persons depend;
- (k) on taking over a mine, acquaint himself with such notices as may have been issued to his predecessor or predecessors by an inspector who shall on request supply copies of such notices;
- (l) provide, that when any person employed in or about the mine receives an injury by accident or otherwise, the same shall be reported to him without delay;
- (m) cause all plant, material and other things necessary for compliance with these regulations to be provided and maintained in good order and repair;

(2) Nothing in paragraph (f) of subsection (1) shall be construed as providing—

- (a) that the miner in charge or blasting licence holder may not be accompanied into a working place by such assistants as are necessary to assist in making such working place safe; or
- (b) that an official who is the holder of a blasting licence may not in the execution of his duties enter a working place before the miner in charge or blasting licence holder.

Making of special rules by managers

10. (1) If the manager of a mine wishes special rules not inconsistent with these regulations, made by him for the maintenance of order and discipline and the prevention of accidents at such mine, to have the same force and effect as these regulations, the manager shall send such rules through an inspector to the Chief Government Mining Engineer who shall submit them to the Minister for his approval.

(2) If the Minister approves rules submitted to him in terms of subsection (1), the manager concerned shall be notified accordingly and the rules may then be posted up in a conspicuous place and shall take effect after they have been so posted up for fourteen clear days.

(3) If the Minister considers any rule made in terms of this section unreasonable, unnecessary or otherwise undesirable, he may in writing revoke it or at any time require it to be altered.

(4) An objection to any rules made in terms of this section may be lodged in writing at the office of an inspector and shall be forwarded by him to the Chief Government Mining Engineer who shall submit it, with his remarks thereon to the Minister who may either confirm, revoke or alter the rule concerned.

(5) When, and as long as, rules made in terms of this section are posted up as required by subsection (2) they shall, until they are revoked and save in so far as they are so altered, have the same force and effect as these regulations and any person who contravenes or fails to comply with such rules shall be guilty of an offence and liable to the penalties specified in section 301.

Owner to provide manager with facilities

11. The owner of a mine or his agent shall provide the manager of the mine with the necessary means and shall afford him every facility for complying with the requirements of these regulations.

Responsibility for contravention of regulations

12. (1) Whenever a contravention of any provision of these regulations occurs at a mine, the manager thereof or the person appointed in terms of section 16 to act in the absence of the manager and any person duly appointed in terms of sections 7 and 8, in so far as responsibility in regard to the enforcement of the observance of such provision has been assigned to him shall be deemed to be responsible for such contravention unless he proves to the satisfaction of the court that all reasonable means of enforcing such provision and preventing such contravention were taken.

(2) Any person through whose neglect or wrongful act a contravention of any provision of these regulations occurs shall be deemed to be guilty of such contravention.

(3) The provisions of this section shall be without prejudice to any responsibility or liability on the part of any other person in regard to the provision or contravention concerned.

Deputing of work and supervision

13. No person shall, without the sanction of his official superior—

- (a) depute any other person to do his work; or
- (b) cease to supervise persons under his charge.

Posting up and supply of copies of regulations

14. For the purpose of making known the provisions of these regulations to all persons employed in and about the mine—

- (a) abstracts of the portions of these regulations directly concerning such persons, and any amendments thereof shall be posted up in suitable places at the mine where they can be conveniently read;
- (b) a correct copy of these regulations and any amendments thereof of the abstracts referred to in paragraph

- (a) shall be supplied at cost price to every employee who in the opinion of the manager is required by virtue of his appointment to have specific knowledge of them unless he is already in possession of the same or is unable to read them; and
- (c) the abstracts referred to in paragraph (a) shall have the approval of an inspector and he may order the manager to vary them should he consider this necessary.

Regulations to be explained to illiterate employees

15. Where any employee is unable to read these regulations or the abstract referred to in section 14, the manager shall ensure that such employee is made acquainted with the regulations concerning him or appertaining to his particular occupation and duties.

Appointment of acting manager during manager's absence

16. Whenever a manager is absent from a mine for a period exceeding twenty-four hours, he shall appoint in writing in the manner prescribed in section 7 a suitable person to act as manager during his absence, and during his absence the person so appointed shall be liable for the due observance of these regulations in the same manner as if he were the manager.

Obedience to orders

17. No person shall fail to obey any order or notice given to him in accordance with or for the proper observance of the requirements of these regulations or any order whatsoever given in the interests of safety, health or discipline by any person authorized to give such order.

PART II

SURFACE PROTECTION

Protection of cracks or subsidences

18. (1) When large cracks or subsidences have taken place or are likely to take place by virtue of mining operations, the holder for the time being of the mining location on which mining operations have caused or are likely to cause such cracks or subsidences shall—

- (a) securely fence in or enclose the places where such cracks or subsidences are or are likely to occur;

- (b) keep the same securely fenced in or enclosed;
- (c) prominently display warning notices at all times in suitable positions along such fences or enclosures.

(2) The holder of any mining location shall securely fence in or enclose and shall keep so fenced in or enclosed the mouths of all shafts or winzes on his location and of all other open surface workings and of all other excavations which may be dangerous to the safety of persons or animals.

(3) Fencing or enclosures for the purposes of this section shall be to a standard determined by an inspector.

Protection of workings

19. (1) Where mining operations have already taken place and where, in the opinion of an inspector, it is necessary to protect the surface of a mine or of any ground adjoining such mine or any structure of object on or near such surface, safety pillars or other adequate means of support or protection shall be provided of such extent and in such positions as the inspector, with the approval of the Chief Government Mining Engineer, may, by notice in writing to the owner of the mine, direct.

(2) No such safety pillars or other supports or any portion thereof shall be removed except with the permission in writing of the Chief Government Mining Engineer and then only to such extent and under such conditions as he may fix.

Coal debris, waste products, sand and slimes

20. (1) No person shall deposit coal debris, sand or slimes at any place where cracks or subsidences exist on the surface or at any places where cracks or subsidences are likely to occur as a result of mining operations.

(2) No person shall destroy heaps of coal debris or other waste products by setting them on fire or fail to take reasonable precautions to prevent coal debris or other waste products which have caught fire from being blown about so as to endanger persons or property.

Cyanide and other chemicals

21. (1) At every mine where cyanide is used there shall be kept in a conspicuous and convenient place a sufficient supply of antidote approved by an inspector for cyanide poisoning.

(2) Antidote for cyanide poisoning shall be kept in a box labelled "Cyanide Antidote" and explicit directions for the use of such antidote shall be affixed inside the lid of the box.

(3) Every vessel used in a confined space for the treatment with acid of zinc slimes from the cyanide process shall be fitted with mechanical agitators and hoods or other appliances of such a nature that the fumes generated in such vessel will be carried safely to external air.

(4) At every mine where cyanide solutions are in circuit, all cocks, taps and pipe-outlets from which cyanide solutions are delivered shall be painted red.

(5) No pipe which carries water shall be connected with a pipe which carries cyanide solutions in such a way that the cyanide solutions may enter the water circuit.

(6) At every mine where cyanide or any other dangerous or poisonous chemicals are used they shall be stored in a safe and proper manner so as to be inaccessible to unauthorized persons.

Fencing in of water containing cyanide or other chemicals

22. (1) Every manager shall securely fence in or enclose and keep so fenced in or enclosed any water containing cyanide of calcium, potassium or sodium or other poisonous or injurious solutions of chemicals used in the treatment of minerals, tailings or concentrates in connexion with his location, and shall put up in suitable places notice boards warning persons against using such water.

(2) In no case shall a manager permit water referred to in subsection (1) to escape beyond the limits fenced in or enclosed in accordance with the provisions of that subsection without having previously rendered it innocuous.

(3) Any accident involving persons or live stock as a result of inadequate fencing or failure of tailings dams or dumps shall be immediately reported to an inspector.

(4) Fencing or enclosures for the purpose of this section shall be to the same standard as is prescribed for the purpose of section 399 of the Act.

Mining and treating of arsenical ores

23. Every manager who is mining or treating arsenical ores shall—

(a) ensure that—

(i) all arsenical ores roasted by him are roasted in a properly designed and constructed roasting plant; and

(ii) the arsenious oxide emanating from roasting referred to in subparagraph (i) is collected in adequate flues or by another suitable means; and

(b) take adequate measures to prevent any arsenical compound exposed in or derived from his mining operations from becoming a danger to persons or animals.

Poisonous substances to be confined to location

24. In addition to complying with the provisions of sections 21 and 22, every manager shall take all reasonable precautions and shall comply with such directions as may be given by an inspector for such purposes to ensure that no poisonous or injurious substance is allowed to escape beyond the boundaries of his mining location.

Construction of dams and dumps

25. (1) Every dam and dump which has been approved in terms of section 225 of the Act and is to be built for the purpose of impounding tailings, slimes, sand or water shall be constructed under the supervision of a competent person in such a manner as not to endanger life or limb or to cause damage to property and shall be provided with an adequate penstock, spillway or some other suitable installation.

(2) Every dam or dump constructed in terms of subsection (1) shall be maintained under the supervision of a competent person, who shall at intervals not exceeding three days, carry out inspections of such dam or dump, and shall satisfy himself that there are no signs of breaching or collapse thereof.

(3) If, during the course of an inspection carried out by a competent person in terms of subsection (2), there are observed any possible breaching or collapse of any dam or dump, the competent person shall immediately—

- (a) report his observation to the manager; and
- (b) take appropriate action to prevent, or to minimize the effect of, such breaching or collapse.

(4) Details of all inspections carried out in terms of subsection (2), and all reports made and action taken in terms of paragraphs (a) and (b) of subsection (3) respectively, shall be recorded in ink in a book to be provided for the purpose, and entries in such book shall be countersigned in ink by an official of the mine at intervals not exceeding seven days, and shall at all times be available for inspection by an inspector.

Design, construction and maintenance of dams, dumps and water channels

26. (1) All water channels, pipelines, spillways, penstocks, dams, tailing dams, dumps, sluices and hydraulic appliances at or ancillary to any mine shall be properly designed and constructed and adequately maintained.

(2) If, in the opinion of an inspector, any works referred to in subsection (1) are unsatisfactory, such maintenance, additions or modifications as are necessary to rectify the situation shall be made.

Precautions against flooding

27. At every mine and at every works ancillary to the mine storm-water trenches and embankments shall, where necessary, be established and kept in good order for the protection from flooding of all machinery and all artificial constructions on the mine such as dams or tailing dams and all underground workings where persons are employed.

PART III

PROTECTION IN WORKING PLACES

Abandoned workings to be examined before entry

28. Where it is necessary to enter abandoned, disused or discontinued workings, no person shall enter or be caused or permitted to enter such workings or any part thereof until an examination has been carried out by a competent person and it has been found that the safety of persons will not be endangered

by the presence therein of noxious or inflammable gases or an atmosphere deficient in oxygen, a dangerous accumulation of water or any other dangerous conditions.

All current workings to be made and kept safe

29. All shafts, drives, raises, winzes, ramps, stopes and other workings of any kind which are in use for travel or work in connexion with the workings of a mine shall be made and kept safe for persons in the mine and, except for the purpose of examining or repairing or making safe, no person shall travel or work or be caused or permitted to travel or work in any part of such workings until it is made safe.

Protection of entrances to workings

30. (1) Every entrance to abandoned, disused or discontinued workings which contain or are likely to contain noxious or inflammable gases or an atmosphere deficient in oxygen or a dangerous accumulation of water shall—

- (a) be kept securely fenced across its whole width to prevent unintentional access of persons to such workings and marked with "No Entry" signs; or
- (b) if an inspector so directs, be sealed by a wall or door of a design and construction approved by the inspector.

(2) Every entrance to every vertical or steeply-inclined shaft, winze, sump, rockpass or other dangerous excavations shall be kept adequately closed by a fence, barrier, door or gate or shall be kept adequately covered so as to prevent persons having unintentional access to or accidentally slipping or falling into such excavation.

(3) No person, other than the manager or a person authorized by him, shall cross or open any fence, barrier, gate, wall, door or cover provided for protection in workings—

- (a) unless he is a miner in charge or other competent person in charge; or
- (b) until he has received definite instructions or permission to do so from the miner in charge or other competent person in charge.

(4) The miner or other competent person in charge shall not cross or open or cause or permit any person to cross or open any fence, barrier, gate, wall, door or cover provided for protection in workings except for the purpose of conducting repairs or other necessary operations and then only if effective precautions for the safety of persons are taken.

Safety in working places

31. At any mine—

- (a) no person, other than an official or person of higher rank, who shall be the holder of a blasting licence shall, either at the beginning of a shift or after blasting, enter a working place until he has received definite instructions or permission to do so from the miner or blasting licence holder in charge who for the time being is responsible for the safety of such place;
- (b) the miner or blasting licence holder in charge, whose responsibility it is to examine or repair or make safe any working place at the commencement of his shift, shall take all reasonable precautions to ensure that any person assisting him is safeguarded against falls of ground and other dangers while carrying out such work;
- (c) if at any time, working place or part thereof becomes or is found to be unsafe during a shift, the miner or blasting licence holder in charge shall take all reasonable measures for making it safe and for safeguarding every person in the working place against such danger as may have arisen;
- (d) in making safe a working place the miner or blasting licence holder in charge shall remove or cause to be removed all dangerous, loose or loosened rock or ground, in which work he may be assisted by persons working under his personal supervision and control and, where deemed by him necessary for the safety of such person, in his actual presence.

Precautions during sinking operations: sketch of positions of holes drilled

32. (1) When, at a mine, a shaft or steeply inclined winze is being sunk—

- (a) the miner or blasting licence holder in charge shall, at blasting time submit to an official for counter-signature in ink, a signed and dated sketch of the round to be blasted;
- (b) an official to whom a sketch has been submitted in terms of paragraph (a) shall, at the commencement of the cleaning shift, pass the sketch to the person in charge of cleaning operations, who shall—
 - (i) endorse and date the sketch in ink as evidence of its receipt;
 - (ii) mark thereon in ink the positions of any misfired holes located during cleaning operations; and
 - (iii) before the commencement of the following shift, return the sketch to the miner or blasting licence holder in charge of drilling operations who shall endorse and date it in ink as evidence of its receipt.

(2) The sketch referred to in paragraphs (a) and (b) of subsection (1) shall be retained at the mine for a period of not less than seven days:

Provided that where sinking operations have been suspended temporarily, the sketch shall be retained for such longer period as will satisfy the requirements of paragraphs (a) and (b) of subsection (1).

Protection against falling objects

33. (1) No loose timber, rock, tools or other articles shall be placed or allowed to remain where they can accidentally fall or be caused to fall or roll down thereby endangering the safety of persons.

(2) Every opening from a vertical or steeply-inclined excavation into a travellingway or working place situated on the lower or dip side of such excavation shall be kept barricaded so that persons travelling or working below or near such opening are effectively protected against danger from falling objects.

Support of roof, hanging or side walls

34. (1) In the working of any mine or part of a mine where, in the opinion of an inspector, the roof, hanging or side walls are

of a nature requiring systematic support, he may give notice to that effect to the manager who, in consultation with the inspector, shall specify the support to be provided and the system according to which it shall be placed.

(2) The manager shall ensure that all persons concerned are made aware of such system and that notices setting out its specifications are posted up at suitable places where they can conveniently be read by such persons.

(3) Any person who fails to comply with specifications of such system shall be guilty of an offence.

(4) If, in the opinion of an inspector, the method of supporting the roof, hanging and side walls in the workings of any mine or part of a mine is unsafe, either by reason of the distances between supports being excessive or for any other reason, he may, by notice, in writing, require the manager to modify the method.

(5) Where the roof or hanging wall necessitates it props shall be provided with the headboards or other suitable means shall be provided to present an adequate bearing surface.

Protection of main ore and waste passes

35. Every main ore pass or waste pass, past which any person may walk, shall be provided with either—

- (a) an adequate cover which shall be closed at all times, other than during tipping, blasting or repair operations; or
- (b) a walk-way on the opposite side to the pass and adequate gates or barriers which, with such walk-way, shall enclose the area around the pass:

Provided that such gates may be opened during tipping operations and; when so opened, such gates shall not permit room for any person to accidentally enter the tipping area.

Provisions for platforms

36. Every bearer, decking and anchorage in any shaft, raise, winze or other opening in or over which a platform is installed shall be—

- (a) of material sufficiently strong and free from patent defect to carry the load for which the platform is intended;

- (b) adequately secured and, where by virtue of the nature of the mining operations the decking is required to be frequently removed, the decking shall be so securely installed as to ensure the safety of any person working on or passing over such platform:

Provided that where the removal of any part thereof is necessary for the purpose of use or repair, adequate precautions shall be taken to ensure the safety of persons working thereat.

Lifelines and lifejackets

37. (1) Subject to subsections (3) and (4), every person, while working on a mine in a place where there is a danger of injury through falling, shall wear a safety chain or like device attached by a lifeline to a secure anchorage so as to provide adequate protection from such danger.

(2) Any safety chain or like device and lifeline referred to in subsection (1) shall be maintained in good order and condition.

(3) An inspector may prohibit the use of any safety chain or like device or lifeline or any type of safety chain or like device or lifeline if, in his opinion, it does not afford adequate protection.

(4) The use of lifeline as required by subsection (1) shall not be compulsory in the case of persons who are engaged in installing or repairing equipment in a vertical shaft or winze or any other work if the manager or an official has given permission to dispense with such use after having satisfied himself that—

- (a) the use of lifelines by the persons concerned would be impracticable and would impede such persons in the safe performance of such work; and
- (b) such persons have had the training and experience necessary to carry out such work safely; and
- (c) any such person when engaged in such work and not secured by a lifeline is under the immediate supervision of a competent person.

(5) No person shall enter or be caused or permitted to enter an accumulation of water in the workings of a mine, other than an accumulation known to be insignificant, unless he is secured by a lifeline or wears a life-jacket.

Sliping of shafts, raises and winzes

38. At any mine where any shaft, raise or winze is directly connected to any other mine working and where such shaft, raise or winze is being enlarged by sliping, the following conditions shall apply—

- (a) where no box is installed, there shall be provided at the lowest lashing point of such shaft raise or winze an excavation of suitable size capable of accommodating the greatest amount of rock broken in any one blast during sliping operations so as to prevent any possibility of closure of the bottom of such shaft, raise or winze;
- (b) no sliping holes shall be blasted until it has been established beyond doubt that the requirement of paragraph (a) has been complied with;
- (c) no sliping hole shall be blasted until it has been established beyond doubt that the unsliped portion of such shaft, raise or winze is free from any obstruction likely to cause a hang-up or build-up of broken rock;
- (d) in the event of any known or suspected hang-up or build-up of rock, work at the lowest lashing point of such shaft, raise or winze shall cease forthwith and every person at such point shall be withdrawn to a place of safety and no person shall re-enter the danger area for any purpose whatsoever until it has been established beyond doubt that there is no progressive build up of water above the blockage;
- (e) in the event of any build-up of water above the blockage, immediate steps shall be taken to remove such water from above;
- (f) after removal of such water from above the blockage, a competent person or persons may enter the lowest lashing point for the sole purpose of releasing such hang-up or build-up, and all reasonable precautions shall be taken to ensure his or their safety;
- (g) in the event of any such known or suspected hang-up or build-up of rock, work at the sliping face within such shaft, raise or winze shall cease forthwith until such time as the hang-up or build-up has been released;

- (h) there shall be provided a suitable means of communication whereby the person in charge at the top of such shaft, raise or winze can communicate directly with the person in charge at the lowest lashing point of such shaft, raise or winze;
- (i) no operation shall take place at the lowest lashing point of such shaft, raise or winze until all lashing has been completed at the sliping face of such shaft, raise or winze;
- (j) precautions shall be taken to prevent the inflow of water other than drilling water, into such shaft, raise or winze from any source around the mouth of such shaft, raise or winze;
- (k) precautions shall be taken to ensure that the inflow of any water, from any fissure within the sliped or unsliped portion of such shaft, raise or winze, causes no danger to any person.

Complaints and reports re-safety in mines

39. (1) If any person complains that his working place is dangerous, the miner or competent person in charge shall not cause him or any other person to remain or work in the place complained of until he has made such place safe or has had it examined by an official and has obtained the concurrence of that official as to the safety of such place.

(2) If any person has reason to believe that any part of the mine in which he is working or through which he has to travel to get to his work is in a dangerous condition, he shall at once inform the miner or competent person in charge who shall immediately take any necessary steps to remove the danger if such danger exists.

Safety Complaints Book

40. (1) A book or books shall be kept at or near each shaft, or in some other appropriate place, in which any person shall record in ink any complaint with regard to the safe working of the mine.

(2) Every Safety Complaints Book shall be inspected and initialled in ink daily by the official in charge and at least once a month by the manager and shall be available at anytime for inspection by an inspector.

Precautions to be observed when workings adjacent to other workings

41. (1) In every working in a mine approaching a place likely to contain a dangerous accumulation of mud, water or gas, boreholes shall be kept in advance of the face and at such an angle from the working as is necessary to ensure safety.

(2) Where underground workings are approaching each other and—

- (a) the distance apart has decreased to ten metres, work on one face shall cease during the blasting operations on the other and where the distance apart has decreased to five metres, all work on one face shall cease:

Provided that the provisions of this paragraph shall not apply to bord and pillar workings where regular rectangular pillars are formed of a size not greater than twenty-five metres in any direction.

- (b) where one working is within five metres of the other working, the holing point and, where applicable, workings adjacent to the holing point sufficient to ensure safety shall be examined and made safe by the holder of a valid blasting licence, who shall record the result of the examination in ink in a book kept at a place determined by the manager concerned.

(3) Entries in the book referred to in paragraph (b) of subsection (2) shall be—

- (a) countersigned in ink by every official who is directly responsible for the working section in which the examination concerned was carried out; and
- (b) available at all times for inspection by an inspector.

(4) Where a manager suspects the dangerous approach of workings in an adjoining mine, he shall, in writing, notify an inspector, who shall have the power to order cessation of such work until a survey has been carried out.

Protection from inundation

42. (1) Notwithstanding section 38, the manager shall take all reasonable precautions to ensure that every person employed

in the workings of a mine is safeguarded against inundation by water or mud or a flow of rock, sand, silt or other similar material.

(2) Every drain shall be so constructed, positioned and maintained as to prevent water inadvertently entering a rockpass.

(3) Every drain and every borehole provided for the purpose of drainage shall, as far as practicable, be kept free from blockages.

(4) No person shall enter or cause or permit any person to enter a rockpass at the discharge end while it contains water, mud or rock.

(5) Any rockpass which has become blocked shall be cleared only in accordance with a procedure laid down by the manager or an official.

Use of belt conveyors

43. In every mine, both on surface and underground, in which a belt conveyor is used—

- (a) the manager shall draw up and enforce a code of safety practice for the operation, maintenance and patrolling of the conveyor system; and
- (b) suitable and adequate means for extinguishing fires shall be available for immediate use along every belt conveyor; and
- (c) every belt conveyor shall be equipped with effective means for immediately stopping the conveyor or for signalling to the attendant at the driving head from readily accessible points along the conveyor; and
- (d) where two or more belt conveyors are used in series, sequence interlocking shall be provided which will automatically—
 - (i) stop all other conveyors feeding a conveyor that has stopped; and
 - (ii) prevent a conveyor starting until the conveyor on to which it feeds is moving; and
- (e) if the mine is a coal mine, the following additional requirements shall apply—

- (i) every conveyor belt which is installed or used in the underground workings shall be of incombustible or fire-resistant material; and
- (ii) all reasonable measures shall be taken to prevent coal or coal dust accumulating on or around the moving parts of any belt where friction is likely to cause heating; and
- (iii) every belt conveyor shall be equipped with a device which will stop the drive automatically should the belt break, jam or slip excessively.

Disposal of Combustible waste

44. In any underground workings, waste timber or other combustible matter shall not be piled up and permitted to decay but shall be removed to the surface as soon as practicable.

Penthouses in shafts

45. When any shaft is being sunk below any level which is being worked and is connected to such shaft, it shall be protected below such level by a securely constructed penthouse and, where an inspector considers it necessary, he may direct that further penthouses be constructed in any such shaft and such penthouses shall forthwith be constructed in accordance with his directions.

Prohibition of undercutting and other precautions

46. (1) In any opencast working or quarry, no person shall—
- (a) undercut or permit the undercutting of any face or sidewall; or
 - (b) permit any face or sidewall to have a vertical height of more than one comma five metres unless such face or sidewall is terraced or sloped at an angle sufficient to ensure the safety of persons or is adequately supported:

Provided that this subsection shall not apply where—

- (i) the working or digging is done by mechanical equipment which does not expose the operator of such equipment or any other person to danger from such face or sidewall; or

- (ii) having regard to the natural and physical properties and other circumstances of such face or sidewall, no fall or dislodgement of any earth or other materials is likely to occur so as to endanger persons employed there.

(2) In every opencast working or quarry, any waste or other loose material and any stone on the surface shall be kept cleared to a distance of at least two metres from the edges of such opencast working or quarry.

(3) In digging any trench, pit or other similar working in gravel, clay, soils, tailings, slimes, ash, debris or other such ground or deposit, no person shall—

- (a) undercut or permit the undercutting of any face or sidewall; or
- (b) permit any face or sidewall to have a vertical height of more than one comma five metres unless such face or sidewall is terraced or sloped at an angle sufficient to ensure the safety of persons:

Provided that this subsection shall not apply—

- (i) where such digging is done by mechanical equipment which does not expose the operator of such equipment or any other persons to danger from the face or sidewall; or
- (ii) where permission has been granted in writing by an inspector and under such terms and conditions as may be imposed by the inspector.

(4) At every trench, pit or other similar workings, all waste and other loose material and stones on the surface shall be kept cleared to a distance of at least one metre from the edge thereof to avoid danger to any person occurring from such waste or loose material falling into such trench, pit or working.

(5) Notwithstanding subsection (3) in every trench, pit or other similar working where any vertical face or sidewall is of a weak nature, such face or sidewall shall be adequately shored up and additionally, or alternatively, effectively supported.

Wearing of hard hats

47. (1) No person shall enter or remain in or be caused or permitted to enter or remain in the workings of a mine or at any place at a mine where there is danger from falling objects unless he wears a hard hat in good condition and of an approved type.

(2) Hard hats as required in terms of subsection (1) shall be supplied by the manager.

Foot protection

48. (1) Every person shall wear footwear designed to provide adequate protection for the type of work or activity being performed.

(2) The footwear referred to in subsection (1) shall be supplied by the manager.

Lamps to be carried underground

49. (1) No person shall enter any underground workings unless he has in his immediate possession an operable lamp of an approved type, and such lamp shall be kept alight and within safe and easy reach of that person at all times.

(2) Every person in any unilluminated underground part of a mine shall at all times carry the lamp required by subsection (1) on his person and lighted.

When permanent lighting required

50. (1) Suitable and sufficient permanent lighting shall be provided and maintained at the following places underground in regular use—

- (a) every established station, landing or loading place and other similar place in vertical and inclined shafts, winzes and places where the lowering or raising of persons is being carried on;
- (b) every main tipping place at which any vehicle operates and every place where any vehicle is maintained;
- (c) every main substation and every substation in which there is inherent danger due to bare conductors or otherwise;

(d) every room or place made to house winding and main pumping machinery in the proximity of which any person is working or moving about;

(e) every main crusher station and every main conveyor drive unit.

(2) Suitable and sufficient permanent lighting shall be provided and maintained at all places on the surface where work is regularly carried out during the hours of darkness or where normal daylight is inadequate for safe working.

Lighting of moving parts of machinery

51. All places where persons are working or moving about in the proximity of winding, driving, pumping or other machinery shall be so lighted that the external moving parts of such machinery whilst in operation are clearly visible.

Lamp-room

52. (1) There shall be provided at the surface of every mine in which portable electric lamps are used underground a separate room to be used as a lamp-room.

(2) The manager shall ensure that—

- (a) a competent person is appointed to be in charge of the lamp-room; and
- (b) there is available in the lamp-room a lamp for every person proceeding underground.

(3) The competent person in charge of the lamp-room shall ensure that no lamp is issued to a person proceeding underground unless it is in proper working order.

Damage to lamps

53. (1) A person to whom a lamp has been issued shall take reasonable steps for its care and maintenance so that it is not damaged, tampered with, destroyed or lost.

(2) If a lamp is lost, destroyed, tampered with or damaged to the knowledge of the person to whom it was issued, he shall report the occurrence to an official of the mine as soon as practicable but not later than the end of the shift.

(3) Any person found to have tampered with or wilfully damaged a lamp shall be guilty of an offence.

Boundary-pillars

54. (1) On the inside of the boundary-lines of every mine, continuous pillars shall be left standing, the width of which in coal mines shall be not less than fifteen metres and in metalliferous and other mines not less than six metres.

(2) No person shall mine or be caused or permitted to mine such boundary-pillars unless permission has been obtained in terms of subsection (3) or (4).

(3) On the joint application of the owners of the adjoining mines, an inspector may give permission to either party to weaken, cut through or work from the respective pillars between such mines.

(4) In the absence of joint application referred to in subsection (3), the Chief Government Mining Engineer may give permission for the partial working, weakening or cutting through of boundary-pillars under such conditions as he may specify in writing.

(5) Any work undertaken in terms of subsections (3) and (4) shall be clearly shown on the underground plan required in terms of paragraph (b) of section 78.

PART IV

OUTLETS, LADDERWAYS AND TRAVELLINGWAYS

Every shaft to have ladderway

55. Every shaft or winze in the course of sinking shall, unless written exemption from the provisions of this section has been granted by an inspector, have a safe ladderway, steel rope ladder or chain ladder leading to the collar.

Two outlets to surface

56. (1) Subject to subsection (3), in every mine where there are twenty or more persons employed underground at any one time, there shall be at least two shafts or outlets to surface so that every person employed in the mine shall have at least two separate means of ingress and egress available to him.

(2) A shaft or outlet provided for the purpose of this section shall not lead to surface at a closer distance than ten metres from any other such shaft or outlet.

(3) This section shall not apply to—

- (a) any shaft or winze in the course of sinking or in any adit being developed or in places where work directly ancillary to such sinking or development is being carried out;
- (b) the lowest development workings of a mine before connexion is made between such workings and any upper workings that are already connected to the surface, to such an extent and for such distances as an inspector may specify in writing;
- (c) an underground workings if one of the two prescribed shafts or outlets to surface has become temporarily unavailable for use by persons employed in such workings, if every effort is made by the manager to restore availability and the manager has notified an inspector without delay of the attendant circumstances;
- (d) any mine where exemption in writing has been granted by the Chief Government Mining Engineer under such terms and conditions as he may specify.

Requirements for ladderways and ladders

57. (1) Every mine shall be provided with a sufficient number of ladderways permanently maintained to enable all persons to leave every part of the mine with dispatch.

(2) All ladderways provided in terms of subsection (1) shall—

- (a) be free from obstructions; and
 - (b) where necessary for the proper protection of persons, be adequately fenced.
- (3) Every ladder used in a mine shall—
- (a) be of strong construction; and
 - (b) be securely fastened in position and free from obstruction; and
 - (c) be maintained in good repair; and

- (d) not be fixed in an overhanging position; and
- (e) project at least one metre above the mouth of every shaft, winze or raise and every platform therein except when strong handrails are fixed at such mouth or platform:

Provided that a ladderway which was installed before 1st January, 1975, and which projects not more than one metre above such mouth shall be deemed to comply with the provisions of this paragraph.

- (4) Permanent ladders regularly used or intended to be regularly used as foot travelling ways shall not be at an inclination of over eighty degrees to the horizontal and when—

- (a) at an inclination to the horizontal of seventy degrees or over platforms shall be provided at distances of not more than ten metres apart and each ladder shall be so arranged as to cover the manhole of the platform on which it rests and shall be securely bratticed off from haulage compartments;
- (b) at an inclination to the horizontal of more than thirty-five degrees and less than seventy degrees, shall be broken every twenty metres by adequate platforms and securely bratticed off from haulage compartments;
- (c) at an inclination to the horizontal of thirty-five degrees or less, shall be so constructed as to minimize the danger from falling or slipping and shall be securely bratticed off from haulage compartments by means of handrails.

- (5) All ladders in shafts, winzes or tunnels having an inclination to the horizontal of thirty-five degrees or less shall be constructed with steps of wood or concrete or other suitable material, unless an inspector has granted written exemption from the provisions of this subsection.

- (6) No person shall carry or permit any other person to carry heavy tools or heavy objects when travelling on the ladderways in steeply inclined shafts, winzes or raises except in so far as it may be necessary to execute repairs with the tools or objects in such shaft, winze or raise.

- (7) Any person carrying a tool or object or using a tool or object in a ladderway shall ensure that such tool or object is carried or used in such a manner that it cannot be reasonably expected to drop down the ladderway.

Wire ropes

- 58. Wire ropes or strands of wire ropes shall not be used or caused or permitted to be used for climbing purposes in a mine if the rope or strands are kinked, knotted or contain broken or projecting wires.

Entering and leaving underground workings

- 59. No person shall enter or leave the underground workings of a mine except by the means of ingress or egress specially provided or set apart for the purpose unless such person is authorized to do so by the manager or an official.

PART V

VENTILATION, GASES AND DUST

Machine drilling not to be done dry

- 60. (1) Subject to subsection (2), no percussion-machine drilling shall be done dry in any underground part of any mine.

(2) Where the structure of working conditions of a mine are such that due observance of the provisions of subsection (1) is impracticable, an inspector may grant written exemption from the operation of subsection (1) for such period as he may deem necessary, and, if the inspector refuses to grant such exemption an appeal against such refusal may be made to the Chief Government Mining Engineer whose decision shall be final.

Blow-pipes

- 61. (1) All blow pipes using compressed air shall be fitted with a water connexion.

(2) An inspector may prohibit the use of any blow pipe or any type of blow pipe if, in his opinion, it does not afford adequate protection during use.

(3) No person shall use or cause to be used a blow pipe for cleaning out holes or for cleaning out any truck or skip without a sufficiency of water effectively to allay any dust created during the operation.

Wetting-down

62. (1) All broken rock and coal in the underground workings of a mine shall be wetted-down before removal and kept wet during removal from the working place:

Provided that, if the structure or working conditions of the mine are such that due observance of this provision is impracticable, an inspector may grant written exemption from the operation of this subsection for such period as he may deem necessary.

(2) At the start of each shift before work commences the roof, walls and floor for a distance of at least eight metres from the place where work is to be carried out shall be thoroughly wetted-down:

Provided that an inspector may grant written exemption from the operation of this subsection for such period as he may deem necessary.

(3) If an inspector refuses to grant exemption in terms of subsections (1) and (2), an appeal against such refusal may be made to the Chief Government Mining Engineer whose decision shall be final.

Percussion-machine drills: water supply

63. No person shall use or cause or permit to be used any percussion-machine drill in the underground workings of any mine unless—

- (a) an adequate supply of water flows through the drill steel; and
- (b) the working pressure of the water supply at the machine drill is maintained at one hundred kilopascals or more.

Percussion-machine drills: internal water feeds

64. (1) No person shall use or cause or permit to be used any percussion-machine drill fitted with an internal water feed unless such machine is—

- (a) provided with front-head release ports; and
- (b) of an approved design; and
- (c) fitted with a water tube of such length that, when the machine is not operating and the drill steel is inserted into the chuck to its fullest extent, the water tube—

- (i) enters the axial hole in the drill steel shank for a distance of at least twenty-five millimetres; or
- (ii) falls short of the shank of the drill steel by not less than six millimetres and not more than twenty-five millimetres and is perfectly in line with the axial hole of the drill steel.

(2) Every water-tube referred to in subsection (1) shall be maintained in good order so as to comply with the requirements of that subsection.

(3) The Chief Government Mining Engineer may permit, in writing, the use of any particular drill or any type of drill which does not comply with the provisions of subsection (1) if he is satisfied that no danger to health would result.

(4) The Chief Government Mining Engineer may prohibit, in writing, the use of any particular percussion-machine drill or any type of percussion-machine drill if, in his opinion, the use of such drill or type of drill might endanger health.

(5) No person shall block or otherwise obstruct any of the front-head release ports of a percussion-machine drill provided in terms of this section and no person shall operate or cause or permit the operation of any such drill if the front-head release ports so provided are partially or totally blocked or otherwise obstructed.

(6) Water to be used for machine drilling or wetting-down shall be clear and odourless.

Waterblasts

65. (1) Where compressed air is available, every working development end which has advanced a distance of eight metres or more shall be provided with a waterblast approved by an inspector which shall—

- (a) discharge within a distance of not more than fifteen metres of the face being advanced; and
- (b) be applied so as effectively to wet the face and broken rock for at least fifteen minutes after blasting and again for a period of fifteen minutes immediately prior to entry of any person;

Provided that an inspector may, by notice in writing, permit the manager of a mine to vary the provisions of paragraph (a) or (b).

(2) The waterblast referred to in subsection (1) shall be tested daily prior to charging up and, if it is found not to be in order, no further blasting shall take place until it has been repaired.

Ventilation

66. (1) As far as practicable, the ventilating air entering a mine shall be free from dust, smoke or other impurity.

(2) The workings of every part of a mine where persons are required to travel or work shall be properly ventilated to maintain safe and healthy environmental conditions for the workmen and the ventilating air shall be such that it will dilute and render harmless any inflammable or noxious gases and dust in the ambient air.

(3) No auxiliary fan shall be installed or operated underground at any place unless the quantity of air reaching it at all times is sufficient to ensure that any recirculation of air shall not prejudice the supply of adequate ventilation.

No work in harmful air

67. No person shall enter or remain in or be caused or permitted to enter or remain in any part of the workings of a mine if the air in that part contains smoke, gas, fumes or dust which is—

- (a) perceptible by sight, smell or any other sense; and
- (b) harmful to persons;

unless he is wearing effective apparatus to prevent the inhalation of such smoke, gas fumes or dust.

Withdrawal of workmen where danger from gas

68. (1) If at any time it is found by the person for the time being in charge of the workings of a mine or any part thereof that, by reason of inflammable or noxious gases present in the workings or such part thereof, the workings or such part thereof, the workings or such part is dangerous, every workman shall be withdrawn by him from the workings or part so found dangerous and the matter immediately reported to the manager or official

in charge who shall not allow any person to resume work therein until he has satisfied himself by personal inspection that the working place is made safe.

(2) Nothing in subsection (1) shall be construed as applying to persons employed in the presence and under the direct supervision of a competent person for the erection of brattice or for other work with a view to the clearing away of inflammable or noxious gases.

(3) Every withdrawal of persons in terms of subsection (1) shall be recorded in ink, in a book provided by the manager, by the person for the time being in charge of the working place or such part thereof.

Action required when person exposed to smoke, gas, fumes, dust or harmful temperatures

69. (1) If at any time a miner in charge or a blasting licence holder becomes aware of the fact that a person has been exposed to conditions arising from excessive amounts of harmful smoke, gas, fumes or dust or from harmful temperatures, he shall—

- (a) take such steps as may be necessary immediately to remove such person from such exposure; and
- (b) ensure that the appropriate official or the manager is informed without delay of the circumstances of such exposure.

(2) Any official or manager receiving information of any person's exposure to conditions referred to in subsection (1) shall immediately take all further steps necessary to—

- (a) ensure the safety and health of that person and of any other person who may subsequently be so exposed; and
- (b) terminate and prevent the recurrence of such conditions.

(3) Any action or steps taken in terms of subsections (1) and (2) shall be recorded in ink in the book as provided for in terms of subsection (3) of section 68, which book shall at all times be available for inspection by an inspector.

Permissible quantities of gas, noxious dust and asbestos dust

70. (1) In the general body of the air where persons are required to work or travel under normal working conditions—

- (a) the amount of carbon dioxide shall not exceed five thousand parts per million of air by volume, nought comma five *per centum*;
- (b) the amount of carbon monoxide shall not exceed one hundred parts per million of air by volume, nought comma nought one *per centum*;
- (c) the amount of oxides of nitrogen shall not exceed five parts per million of air by volume, nought comma nought five *per centum*;
- (d) the amount of hydrogen sulphide shall not exceed twenty parts per million of air by volume, nought comma nought nought two *per centum*;
- (e) the amount of ammonia shall not exceed fifty parts per million of air by volume, nought comma nought nought five *per centum*;
- (f) the amount of inflammable gas shall be insufficient to show a distinct gas cap on the reduced flame of an approved flame safety lamp or to give a reading of one comma two five *per centum* on an approved methanometer;
- (g) the concentration of noxious dust shall not exceed such standard as may from time to time be specified by the Chief Government Mining Engineer.

(2) —

- (a) in the general body of the air where persons are required to work or travel under normal working conditions, the maximum permissible quantity of chrysotile asbestos dust shall be two fibres per millilitre per four-hour period;

(b) in this subsection—

“fibre” means the fibre of chrysotile asbestos dust measuring more than five micrometres in length and less than three micrometres in diameter and having a length diameter ratio of at least 3 : 1.

Precautions against harmful dust

71. (1) Where rock, ore, coal or other mineral or mineral compound is reduced in size, screened, moved, handled or otherwise subjected to any process which may produce dust harmful to persons—

- (a) the liberation of such dust into the atmosphere shall be effectively controlled by the use of water or other dust allaying agent or by a dust extraction system; and
- (b) every building in which any of these processes takes place shall be adequately ventilated and the floor and other surfaces at any place, as well as machinery, shall be regularly cleaned so as to prevent the accumulation of such dust.

(2) Every drill sharpening shop or other workshop necessary and incidental to the sharpening of drills and any other building or shed where harmful dust may be produced shall be kept clean and adequately ventilated and the liberation of such dust into the atmosphere effectively controlled by use of water or other dust allaying agent or by a dust extraction system.

(3) Where sand blasting is done, approved protective breathing equipment shall be worn by every person exposed or likely to be exposed to the dust.

(4) Where an inspector is satisfied that any mining operation upon any mine has caused or is likely to cause the presence of dust in such quantity as may be injurious to health, he may, in writing, direct the manager, within such period as shall be specified by the inspector, to install apparatus for the prevention or abatement of such dust to the satisfaction of the inspector.

(5) Without derogation from the responsibility of the manager, such direction shall be deemed to be a direction to the person actually carrying on the business of mining upon the mining location concerned, whether he is the holder or the lessee or assignee of the rights of such holder.

Internal combustion engines underground

72. (1) Except as provided for in subsection (8), no internal combustion engine, other than a mobile diesel engine unit, shall be used underground in any mine.

(2) No diesel engine shall be used underground—

- (a) in any mine unless there is sufficient ventilation to render harmless the exhaust gases produced;
- (b) in any fiery mine or in any other mine in the workings of which there may be a risk of such diesel engine igniting gas or coal dust unless—
 - (i) it is of an approved design and construction; and
 - (ii) its use has been permitted in writing by the Chief Government Mining Engineer; and
 - (iii) it is used in accordance with such conditions and subject to such restrictions as the Chief Government Mining Engineer may specify in writing.

(3) Except where otherwise authorized by the Chief Government Mining Engineer, every diesel engine used underground shall be provided with means whereby the air entering the engine is cleaned, the exhaust gases before being expelled are cooled, the concentration of toxic gases in the exhaust gases reduced and the emission of flames or sparks prevented, and those means shall be maintained in an effective condition.

(4) Where a diesel engine is used underground, samples shall be taken—

- (a) at intervals not exceeding one month, of the general body of the air, while the engine is running, at representative places and times laid down by the manager; and
- (b) at intervals not exceeding three months, of gas emitted from the exhaust of the engine, both when the engine is developing maximum power and when it is idling.

(5) The percentage by volume of carbon monoxide or oxide of nitrogen present in each sample taken for the purposes of subsection (4) shall be determined and recorded in ink in a book provided by the manager. This book shall be available at all times for inspection by an inspector.

(6) The operation of a diesel engine underground shall be discontinued until conditions have been remedied—

- (a) if the air at any place where it is being used is found to contain more than one hundred parts of carbon monoxide or five parts of oxides of nitrogen per million by volume; or
- (b) if the exhaust gases of the engine are found to contain more than two thousand parts of carbon monoxide or one thousand parts of oxide of nitrogen per million by volume; or
- (c) if the engine is found to have any defect which may cause danger to persons.

(7) The engine of a diesel-powered unit underground shall not be kept running idle except while being tested or during brief halts while in use.

(8) Where a diesel engine other than a mobile diesel engine is required to be used underground in a mine it shall only be used with the written permission of the Chief Government Mining Engineer and under such terms and conditions as the Chief Government Mining Engineer may stipulate.

Diesel fuel: delivery and storage underground

73. (1) Diesel engine fuel shall be delivered underground in such manner that no spillage can take place during delivery.

(2) When diesel engine fuel is piped underground, the pipes shall be drained each time after use.

(3) Diesel engine fuel shall be stored underground only in robust closed containers which do not leak.

(4) Except with the written permission of an inspector, the quantity of diesel engine fuel stored underground shall not exceed the estimated consumption for three days.

Refuelling of diesel-powered units

74. (1) Every underground filling station where diesel-powered units are refuelled shall—

- (a) be adequately ventilated; and
- (b) be constructed of non-inflammable materials and have an impervious concrete floor which at all times shall be kept clean.

(2) Refuelling of diesel-powered mobile units underground shall be carried out at a properly established filling station complying with the provisions of subsection (1).

(3) Equipment for extinguishing fire shall be kept at every place where diesel engines are refuelled and every diesel mobile unit used underground shall be equipped with suitable and adequate means for extinguishing fires.

(4) No unauthorized person shall enter any filling station and no person shall smoke or use an open light in the vicinity of any filling station.

Servicing or repair of diesel-powered units underground

75. Every station used for servicing or repairing a diesel-powered unit underground shall be—

- (a) adequately ventilated and be of sufficient design to permit free movement of vehicles and persons; and
- (b) constructed of non-inflammable materials and have an impervious concrete floor; and
- (c) provided with safe and suitable facilities for inspecting the unit from below; and
- (d) provided with equipment for extinguishing fire; and
- (e) kept free from spillage and waste materials.

Ventilation of mines: plans to be kept

76. (1) At every mine in which more than twenty persons are at any one time employed underground, a tracing or print taken from an underground plan to a scale of 1:250, 1:500, 1:1 000 or, with the written permission of an inspector, from a plan drawn to a scale of 1:5 000 shall be kept and on it shall be shown the ventilating districts, the direction of air currents, the quantity of air circulating in each ventilating district and the position of each permanent fan, door, regulations, crossing, stopping, telephone and any explosives distribution stores.

(2) The tracing or print required by subsection (1) shall at all times be correct to within, at most three months from date, and, in the case of a coal mine or a fiery mine, a print shall be submitted to an inspector at intervals not exceeding three months.

(3) An inspector may grant written exemption from the provisions of this section in respect of any mine, to such extent and subject to such conditions as he may specify therein.

(4) Any applicant for exemption from the provisions of this section who is aggrieved by the decision of an inspector on his application may appeal to the Chief Government Mining Engineer, whose decision shall be final.

PART VI

MINE SURVEYING AND PLAN PREPARATION

Application of, and interpretation in, this Part

77. (1) The provisions of this Part shall apply to, and in respect of, all mines except—

- (a) any mine where the nature of the mineral deposit being mined is alluvial, eluvial, placer or rubble deposit, or dump; or
- (b) any mine where the depth of the workings, either vertical or on dip, does not exceed fifteen metres below the natural surface of the ground; or
- (c) any mine on which five or less persons are employed.

(2) In this Part—

“bench-mark” means a mark the height of which has been determined in the course of a level survey;

“datum-plane” means sea-level;

“plan” means any horizontal or vertical projection, including a tracing or transparency thereof;

“sheet”, in relation to a plan, means one of a number of plans which together form the whole plan;

“surveyor” means a mine surveyor or a competent person who has had adequate training and experience which would, in the opinion of the Chief Government Mining Engineer, enable him to perform the duties, and functions of this Part;

“survey point” means any point other than a survey station which can be plotted from survey observations of any kind, and which is easily recognizable;

"survey station" means any point which has been surveyed within the limits of error prescribed in section 81.

Surface, underground and assay plans to be kept

78. Every manager and owner of a mine shall cause the following plans of all workings of the mine to be prepared and kept at the mine—

- (a) a surface plan, which shall at all times be correct within at most one year from the date of its preparation or last revision, and which shall show—
 - (i) the position of any principal surface erection, including explosive magazines, reservoirs, dams, dumps, and other works of a similar nature and the position of any open-cast workings and boreholes, and any other surface object which an inspector may require to be shown; and
 - (ii) the position of any road, railway, river, power line and public telegraph lines; and
 - (iii) the boundaries of the claim area and the mining area in which work is being carried out;

Provided that, in the case of a claim the area of which is too expensive to show the boundaries on the same plan, the full area shall be shown on a smaller convenient scale plan, and such smaller scale plan shall show the boundaries of the sheets comprising the whole claim area; and

- (iv) the boundaries of any caved or subsided area or any cavity and the position of any fence erected to protect and prevent inadvertent access to such areas. The provisions of this subparagraph shall be carried out at six-monthly intervals; and
- (b) an underground plan, which shall at all times be correct within at most six months from the date of its preparation or last revision, and which shall show—
 - (i) any shaft, shaft station, stope, permanent explosives distribution store, cross-cut drive, winze, raise, major fault and dyke; and

- (ii) any abandoned workings which are adjacent to the mine workings, together with the degree of accuracy on which such plan is based; and
- (iii) the collar of every shaft or winze, which shall be indicated with the name, number and collar elevation of the shaft or winze with the inclination shown by an arrow and the dip in degrees; and
- (iv) every stoped area, which shall be indicated by hatching; and
- (v) the date, month and year of workings marked against the current position of the workings so that any change or advance can be easily ascertained with reasonable accuracy; and
- (c) an assay plan, which shall at all times be correct within at most six months from the date of its preparation or last revision and which shall—
 - (i) show the mine workings together with the value and width of the ore body at each sample section of development; and
 - (ii) be so drawn that any stope, drive, cross-cut and other detail shown thereon does not obscure the sample results in any way.

Plans details

79. The plans kept in terms of section 78 shall comply with the following provisions—

- (a) they shall be prepared by a surveyor; and
- (b) they shall be drawn to a scale of 1:250; 1:500; 1:1 000; 1:2 500; 1:5 000 or 1:10 000;

Provided that the Chief Government Mining Engineer may approve, in writing, any other scale, at his discretion; and

- (c) in all mine surveys, measurements shall be in metres; and
- (d) contour lines, covering the extent of all underground workings, shall be shown on the surface plan at regular intervals so that, with the aid of elevations in the

- workings, the depth below surface at any point in the workings can be determined; and
- (e) where the average dip of the mine workings is more than sixty degrees, a vertical projection of such underground workings shall be kept; and
 - (f) on every sheet or plan, the following details shall be shown—
 - (i) a subject heading, which shall consist of the name of the mine and the name of the sheet or plan; and
 - (ii) the survey system and the co-ordinates of the origin used; and
 - (iii) a north point; and
 - (iv) an accurately drawn scale; and
 - (v) an inset index to adjoining sheets of plans; and
 - (vi) co-ordinate lines in suitable colours in ink not more than two hundred millimetres apart with their values written in ink at both ends of the lines; and
 - (vii) a survey station shall be indicated by means of a small circle, together with its identification number, and the elevation of the survey station shall be shown prefixed by a plus or a minus sign, indicating the elevation above or below the datum plane; and
 - (g) tracings or transparencies of all plans shall—
 - (i) be made of durable material; and
 - (ii) be so prepared that the surface and underground tracings or transparencies are of the same scale and can be superimposed one upon the other;
 - (h) all plans, tracings and transparencies shall be brought up to date upon cessation of work or on the closing down or abandonment of the mine or part of the mine.

Survey procedure

80. In any survey carried out to provide information upon which the plans required by section 78 are to be based, the following procedures shall be adopted—

- (a) sufficient survey stations shall be established on the surface and underground so that all surface objects and all the workings can be surveyed; and
- (b) every survey station shall be marked with a number in such a manner that it can be easily distinguished, and this number shall be clearly recorded in the survey note book and calculation books and marked on the plan; and
- (c) a fixed permanent bench mark shall be established and shall be clearly marked; and
- (d) all survey notes and the dates on which each portion of the survey was made, together with the name of the surveyor, shall be recorded in the survey note book bearing the name of the mine, and the original observations with the accompanying remarks and sketches shall be entered clearly in the survey note book; and
- (e) all calculations and results deduced from original observations in respect of survey stations and points shall be entered legibly in a calculation book bearing the name of the mine; and
- (f) the numbers, in order, of all survey stations established together with the locality, co-ordinates, elevations and reference to the relevant calculation book of each station, shall be entered in tabular form in a peg-index register, bearing the name of the mine; and
- (g) the survey note books shall be cross-referenced in such a manner that reference from the survey notes to the calculation depending thereon and *vice versa* can be easily and readily made.

Limits of error

81. (1) The limits of allowable error in any mine survey shall be as follows—

- (a) the length of the line joining the positions of any survey station as determined by the beginning and closing

- of a traverse shall not exceed nought comma one *per centum* of length of such traverse;
 - (b) the error in length between any two survey stations of a traverse measured along the traverse shall not exceed nought comma one *per centum* of the true length;
 - (c) the error in level between any two survey stations shall not exceed nought comma nought five *per centum* of the true length between them;
 - (d) the error in direction of a line between any two consecutive survey stations of a traverse shall not exceed four minutes of arc with reference to the axes of co-ordinates;
 - (e) the error in special measurements which have for their object the fixing of the position of shafts to be sunk and the establishment of connexions shall not exceed fifty *per centum* of the limits given in paragraphs (a) to (d).
- (2) The error in representation on a plan of any point shall not exceed nought comma two *per centum* of the denominator of the scale of the plan in addition to the allowable error at the nearest survey station.
- (3) Where the difficulties incidental to the accurate representation of any workings on a plan are such that the surveyor cannot accept responsibility for their accuracy within the limits Specified in this section, such workings shall be indicated on the plan by broken lines.

Signing of plans and responsibility for accuracy

82. (1) Every manager or owner of a mine shall ensure that all plans and tracings or transparencies thereof which he is required to prepare and keep in terms of this Part are signed and dated by himself and the surveyor when they are first prepared and on every occasion when they are brought up to date.

(2) A surveyor who prepares a plan or a tracing thereof shall be responsible for its accuracy.

Exemptions

83. (1) Notwithstanding any other provisions of this Part; if the Chief Government Mining Engineer—

- (a) is satisfied that manager or owner of a mine is unable to prepare or cause to be prepared the plans required by this Part; and
 - (b) if the manager or owner so requests, in writing; he may cause such plans as he considers necessary to be prepared by a surveyor employed by the State, who shall thereafter be kept informed at not more than quarterly intervals by such manager or owner of all development work carried out at the mine.
- (2) With the approval of the Chief Government Mining Engineer, an inspector may grant exemption, in writing, to the manager, or owner of a mine from complying with any of the provisions of sections 78 to 81 in respect of the preparation and keeping of any plan.
- (3) Any exemption granted in terms of subsection (2)—
- (a) shall be subject to such conditions as to the preparation and keeping of plans as may be determined by the Chief Government Mining Engineer; and
 - (b) notwithstanding the provisions of section 298, may be granted, indefinitely or for such period as the Chief Government Mining Engineer thinks fit; and
 - (c) may be varied or revoked by the Chief Government Mining Engineer at any time.
- (4) Every person to whom an exemption has been granted in terms of subsection (2) shall comply with any conditions determined by the Chief Government Mining Engineer in terms of subsection (3)

Unsatisfactory plans and failure to keep plans

84. (1) If the manager or owner of a mine, otherwise than in accordance with provisions of section 83—

- (a) fails to prepare or keep any plan in accordance with the provisions of this Part; or
- (b) prepares or keeps any plan which, in the opinion of the Chief Government Mining Engineer, is unsatisfactory;

the Chief Government Mining Engineer may, notwithstanding the institution of a prosecution in respect of such failure—

- (i) direct that the manager or owner prepares plans in accordance with the provisions of this Part within such period as the Chief Government Mining Engineer may specify; and
- (ii) if the manager or owner fails to comply with a direction made in terms of subparagraph (i), cause such plans to be prepared at the expense of the manager or owner.

(2) No person shall fail to comply with a directive made by the Chief Government Mining Engineer in terms of subparagraph (i) of subsection (1).

Plans to be confidential

85. All surface, underground and assay plans of any mine which have been prepared by any Government surveyor, and any such plans submitted to an inspector by any manager or owner of a mine for safe keeping, otherwise than in terms of section 86, shall be confidential, and no information relating to such plans shall be divulged to any member of the public, save with the written authority of such manager or owner:

Provided that, at the discretion of an inspector, information relating to such plans may be made available without such written authority if the mine has been abandoned and the claims have been forfeited in terms of Part XIII of the Act.

Notice of intention to close down or abandon a mine

86. (1) In addition to the requirements of subsection (1) of section 256 of the Act, if any owner or manager of a mine on which mining operations are being carried out intends to close down such mine, he shall, not less than thirty-one days before such closing down, give written notice to the inspector of the mining district in which such mine is situated of such intention.

(2) In addition to the requirements of subsection (2) of section 256 of the Act, the manager or owner of a mine shall, within thirty-one days of the closing down of the mine, lodge with the inspector of the mining district in which the mine is situated all plans, tracings, transparencies, survey co-ordinate ledgers, calculation books and, on the written instructions of such inspector, survey note book, extant at the date of closure, and all such information shall thereupon become the property of Government.

PART VII

COAL MINES AND FIERY MINES

Interpretation in this Part

87. In this Part—

“accessible workings” includes all workings other than abandoned workings that have had all entrances effectively sealed by stoppings;

“incombustible matter” does not include moisture;

“road” includes any road of any description in the underground workings of a coal mine extending from the shafts, outlets or inlets to within ten metres of the coal face.

Declaration of a fiery mine

88. (1) The Chief Government Mining Engineer may declare any mine or part of a mine to be a fiery mine if inflammable gas is present or is, in his opinion, likely to be present in that mine.

(2) Where the Chief Government Mining Engineer has made a declaration in terms of subsection (1), he shall notify the manager of the mine concerned in writing of the declaration.

Coal mines: precautions against coal dust explosions

89. (1) Except in so far as exemption may have been granted by an inspector to such degree and subject to such conditions as he may specify in writing, the following provisions shall apply at every coal mine—

- (a) no plant for sorting, screening or crushing coal shall be erected in the workings and no such plant shall be erected on surface within a distance of seventy-five metres from any downcast shaft or other opening where ventilating air enters the underground workings;
- (b) arrangement shall be provided and used at every plant for sorting, screening or crushing coal to ensure that as little coal dust as practicable enters the workings;
- (c) arrangements shall be provided and used in the underground workings to prevent, suppress, collect and remove, as far as practicable, the fine coal and coal dust created by mining operations;

- (d) in all accessible workings underground every road shall be treated with incombustible dust to ensure at all times that the dust that can be raised into the air from the floor, roof or sides of the road shall not contain less incombustible matter than is determined in accordance with the following table—

<i>Percentage by mass of volatile matter content, calculated on an ash-free dry basis, of the coal being mined</i>	<i>Minimum percentage by mass of incombustible matter content</i>
Over 14 but not exceeding 20	50
Over 20 but not exceeding 22	55
Over 22 but not exceeding 25	60
Over 25 but not exceeding 27	65
Over 27 but not exceeding 30	68
Over 30 but not exceeding 32	70
Over 32 but not exceeding 35	72
Exceeding 35	75

(2) For the purposes of paragraph (d) of subsection (1), the volatile matter content of any coal shall be that determined by analysis of a representative section of the seam of a representative sample of run of mine coal from the seam taken within the preceding twelve months and, where no such determination has been made, the content shall be deemed to exceed thirty-five per centum.

Coal mines: supply of incombustible dust

90. (1) The purpose of complying with the provisions of section 89, the manager shall ensure that supply of incombustible dust equivalent to at least one week's requirement shall always be available in the underground workings for distribution and use and that such incombustible dust—

- contains not less than ninety-five per centum by mass of incombustible matter; and
- is of such fineness that, when dry, all of it will pass through a sieve of six hundred micrometres aperture and at least fifty per centum of it by mass will pass through a sieve of seventy-five micrometres aperture; and

- is a limestone/dolomite dust that does not contain more than five per centum by mass of free silica or is some other approved dust; and
- is light in colour and of such character that, unless directly wetted by water, it does not cake and will readily disperse into the air when blown upon; and
- is tested, at intervals not exceeding three months, for its incombustible matter content and fineness.

(2) A record shall be kept of the tests carried out for the purpose of paragraph (e) of subsection (1) and shall be available for inspection by an inspector.

Coal mines: testing effectiveness of precautions against coal dust explosion

91. (1) For the purpose of determining the adequacy of the measures taken to comply with the provisions of paragraph (d) of subsection (1) of section 89, samples sufficient in number and from appropriate locations so as to be representative of dust conditions shall be systematically collected, in accordance with the provisions of this section, at intervals not exceeding thirty days, from the roads in active working areas of each ventilating district or in each such section of the workings as an inspector, after consultation with the manager, may require.

(2) The following provisions shall apply to the collection of samples in terms of subsection (1)—

- each sample shall be collected over a length of road not less than fifty metres in length;
- the sample of dust on the roof and sides shall be taken separately from the sample of dust on the floor;
- in the case of the dust on the roof and sides, the sample shall be taken to a depth not exceeding six millimetres and, in the case of the dust on the floor, to a depth not exceeding twenty-five millimetres;
- every sample taken shall be representative of the whole surface of the roof and sides of the floor, as the case may be, of the length of road being sampled and shall be collected either—

- (i) by a method of strip sampling by which the dust is collected from a succession of transverse strips one hundred millimetres wide and equally spaced not more than five metres apart; or
 - (ii) by a method of spot sampling by which the dust for each particular sample is collected from one point for each metre of that length of road.
- (3) Each sample collected in terms of this section shall be well mixed and a representative portion, after drying in the air if necessary, shall be passed through a sieve of two hundred and fifty micrometres aperture and retained for analysis.
- (4) Analysis of each sample collected in terms of this section shall be carried out by the following method or by any other approved method—
- (a) a weighed quantity of dust shall be heated in an open vessel to a temperature of not less than four hundred and eighty degrees and not more than five hundred and twenty degrees Celsius until the coal is completely burnt away, and the incinerated residue shall be weighed;
 - (b) the incinerated residue shall be reckoned as incombustible matter and be expressed as a percentage of the total mass of the dust.
- (5) A record shall be kept of the date and place of each sampling and the result of the tests carried out under subsection (4).
- (6) A return shall be sent each month to an inspector clearly describing the places sampled and the results of the analysis obtained.
- (7) In every case where analysis reveals unsatisfactory conditions in the places sampled, the return in terms of subsection (6) shall reflect what remedial action has been taken.

Coal mines: roads and coal tubs

92. (1) Underground roads along which coal is moved or transported shall be systematically cleared of any coal spillage and, before any area of the mine is isolated by stopping, the floor, roof and sides of all roads therein shall be systematically cleared of dust and freshly stone-dusted.

- (2) Coal tubs shall be constructed and maintained so as to prevent coal dust escaping through the sides, ends or bottom.

Stone dust or water barriers

93. (1) Stone dust or water barriers erected for the purpose of suppressing coal dust explosions shall be of a design and construction approved by an inspector and located at such points as the manager, after consultation with the inspector, may determine.

- (2) Stone dust or water barriers erected in terms of subsection (1) shall be inspected by an official every three months and the results of this inspection shall be recorded in ink in a book supplied by the manager.

Daily report on precautions taken

94. Once in every twenty-four hours an official shall report in writing in a book provided for the purpose by the manager on the measures taken to ensure compliance with the provisions of paragraph (c) of subsection (1) of section 89 and section 92.

Coal mines: responsibilities of miner in charge

95. (1) In every underground coal mine—
- (a) every working place which has remained idle for more than six hours or which has remained idle for such lesser interval than six hours as an inspector may direct and every working place in which blasting has taken place shall be examined and made safe by the miner in charge of the section in which such working place is located before any work is resumed in such working place;
 - (b) no person, other than the holder of an appropriate blasting licence, shall enter and no miner in charge shall cause or permit any other person to enter any travelling way or working place in a section until such travelling way or working place to which any person is required to have access has been examined by the miner in charge of the section and found to be satisfactorily ventilated and in a safe condition;
 - (c) at the commencement of a shift the miner in charge shall—

- (i) examine every working place in his section for inflammable gas with an approved flame safety lamp or approved methanometre; and
 - (ii) place his initials and the date of examination in chalk or crayon in a conspicuous place, other than the working place itself, in every working place immediately after he has examined it; and
 - (iii) immediately fence off or set up a barrier at the entrance to any place which he finds to be in an unsafe condition and cannot there and then make safe and, until he has personally made such place safe, shall not allow any person to enter therein except such persons as may be necessary to assist him in making such place safe; and
 - (iv) inform an official by the quickest means available if noxious or inflammable gas is found during his examinations;
 - (v) immediately after the inspection of the section—
 - A. record in ink in duplicate in a book provided by the manager a full and accurate report specifying whether or not and where noxious or inflammable gas, defects in roof and sidewall and other sources of danger were found or observed; and
 - B. sign in ink the report and send the original thereof immediately it has been made to the surface for transmission to the manager's office.
- (2) The original of the report referred to in subparagraph (v) of paragraph (c) of subsection (1) shall be countersigned by an official on receipt and shall be retained by him for at least three months.
- (3) A miner in charge carrying out the examination required by paragraph (c) of subsection (1) shall—
- (a) take all reasonable measures to prevent persons not required to assist him from entering any such working place until he has examined and made safe and until he has given them definite instructions to enter; and

- (b) take all reasonable precautions for the safety of persons present to his knowledge in his section and for the safety of his workmen, and such precautions shall continue as long as he allows any such person to remain in his section or until he is relieved of responsibility by another miner or competent person in accordance with subsection (4); and
 - (c) not be a contractor for the getting of minerals in the mine.
- (4) A relieving miner or competent person shall, by means of a token to be handed to the miner relieved or by such other means as the Chief Government Mining Engineer may approve, signify that he has assumed responsibility for the safety of the section.
- (5) Subject to subsection (7), in every coal mine a miner in charge shall, in the course of his shift, make at least three inspections, at intervals not exceeding three hours, of every working place in his section.
- (6) Where coal pillars are being extracted, a miner shall not have charge of more than twelve working places or such lesser number of working places as an inspector may determine for the particular section of the mine and inspections shall include all accessible positions of the goaf edge of each working place.
- (7) Where a section giving inflammable gas freely is opened out, a miner shall not be in charge of more than six working places and he shall make inspections at intervals not exceeding one hour.
- (8) In the course of every inspection made in terms of subsection (5) the miner in charge shall test for inflammable gas with an approved flame safety lamp or an approved methanometer and, if inflammable gas is detected in a quantity sufficient to show a distinct cap on the reduced flame of the safety lamp or to give a reading of one comma two five *per centum* on the methanometer so as to necessitate the withdrawal of persons in terms of section 68, he shall immediately report its presence to the manager of an official by message sent in writing.

Coal mines: entry in absence of miner in charge

96. (1) Notwithstanding the provisions of sections 31 and 95 and subject to this section, a competent person may with his workmen enter and work in working places in by of the waiting place required by paragraph (f) of subsection (1) of section 9 when the miner in charge or a blasting licence holder is not present.

(2) Subsection (1) shall only apply if—

- (a) the competent person has been appointed for the purpose by the manager and has satisfied an inspector as to his knowledge of gases and the testing thereof; and
 - (b) the work, which shall not include coal getting, has been specified and authorized by the manager or an official; and
 - (c) the miner in charge has, at the end of the preceding shift, examined and, if necessary, made safe every working place to which the competent person and his workmen are required to have access; and
 - (d) the work does not continue for more than four hours in the absence from the section of the miner in charge or a blasting licence holder; and
 - (e) at all times an approved flame safety lamp or approved methanometer is provided and used where the work is being undertaken.
- (3) The competent person in charge of work being carried out in terms of this section shall immediately cease work and withdraw all persons if the ventilating air current diminishes noticeably or if the place where the work is being carried out becomes unsafe or if any inflammable gas is detected and, in the event of inflammable gas being detected, shall make an immediate report to an official.

Official to test for inflammable gas

97. (1) In every underground coal mine in the course of each shift a test for inflammable gas similar to the test required by subsection (8) of section 95 shall be made by an official or competent person, other than the miner in charge, appointed by the manager of every miner's section in which workmen work or travel or may be required to work or travel during that shift.

(2) A report on every test made in terms of subsection (1) shall be recorded in ink at the end of that shift by the person making the test on a form approved by an inspector in a book provided for the purpose by the manager, and such report shall be signed by the person making it and shall be examined and countersigned by the manager or an official within twenty-four hours.

Coal not to contain explosives

98. In every coal mine the manager shall take all reasonable precautions to ensure that no explosives are contained in the coal that is produced.

Coal mines and fiery mines: when firing of charges prohibited

99. In every coal mine and every fiery mine no person shall fire any explosives charge or cause or permit any person to fire any explosive charge in any place where there is sufficient inflammable gas present to show a distinct cap on the reduced flame of an approved safety lamp or give a reading of one comma two five per centum on an approved methanometer.

Coal mines: permitted explosives

100. (1) In every underground coal mine no explosives, other than permitted explosives, shall be used:

Provided that the Chief Government Mining Engineer may—

- (a) prohibit the use of any such permitted explosives; or
- (b) if he is satisfied that they comply with safety requirements, may permit in writing the use of any explosives, other than permitted explosives.

(2) For the purpose of subsection (1) the following shall be deemed to be permitted explosives—

- (a) blasting cartridges—
 - (i) Ajax;
 - (ii) Monobel;
 - (iii) Coalex No. 1;
 - (iv) Saxonite;

Provided that the charge per shot hole shall not exceed 800 g; and

- (b) detonators—

- (i) instantaneous electric detonators with a copper capsule and of a strength not less than No. 6D;
- (ii) "Carrick" short period delay detonators, maximum delay 150 milliseconds.

Firing of charges in coal

101. (1) This section shall apply to underground coal mine only.

(2) No person shall fire charges or cause or permit any other person to fire charges in coal unless the coal to be blasted has two free faces and the end of the shot-hole is at least one hundred and fifty millimetres short of the back of the cut providing the second of the two free faces:

Provided that, at places where topcoaling is taking place and two free faces cannot be established, the drilling and blasting of the roof of the coal seam may be undertaken in a different manner if an inspector has granted written permission therefore, in which event, any person firing charges, or causing or permitting charges to be fired, shall comply with the terms and conditions fixed by the inspector in such written permission.

(3) No shot-hole shall be fired unless the portion of the hole between the explosives and the collar is adequately tamped with non-inflammable tamping supplied by the manager.

(4) No person shall fire any charge unless he has examined as shortly before firing as practicable, the place where the charge is to be fired, all accessible workings into which the charge may blast and the ventilating air entering the place where the charge is to be fired and has found no danger of the firing causing an explosion of inflammable gas or coal dust.

(5) The examination required by subsection (4) shall be made with an approved flame safety lamp or an approved methanometer.

Development drives, et cetera: special provisions

102. In every fiery mine and every coal mine, no person shall, in any development drive, heading or bord more than fifty metres in advance of the general line of working, fire charges or cause or permit any other person to fire charges except between shifts.

Coal mines: parking of diesel units when not in use

103. In any coal mine every mobile diesel-powered unit underground shall, when not in use, be kept in a place approved by an inspector.

Coal mines: return airways

104. (1) In every coal mine there shall be in each ventilation district a return airway leading to the main return aircourse of the mine.

(2) Every return airway, including the main return aircourse, shall be kept fenced off from disused workings and maintained in proper state of repair so that it can be traversed without danger.

(3) An official shall inspect all return airways, at intervals not exceeding seven days, and shall record the results of his inspections in ink in a book supplied by the manager.

(4) The record required by subsection (3) shall be kept in an office on surface and shall be countersigned by the manager at intervals not exceeding fourteen days.

Coal mines and fiery mines: fans

105. (1) In every fiery mine and every coal mine—

(a) every fan shall be so installed and positioned as to ensure, as far as possible, that it is not damaged by an explosion; and

(b) except with the written permission of an inspector, every main fan shall be—

(i) situated on surface; and

(ii) fitted with an automatic alarm to alert persons should it stop; and

(c) in the event of a main fan stopping for any reason and thereby endangering the safety of persons in the workings, the manager shall ensure that—

(i) immediate steps are taken to withdraw all persons from such workings to a place of safety; and

(ii) as soon as such persons have reached a place of safety, all electrical power supplied to the workings ventilated by such fan is switched off; and

- (iii) after the main fan has been re-started, no electrical power to the workings shall be switched on and no person other than those engaged in making the necessary examination shall enter such workings until safe conditions have been restored; and
 - (d) every main fan shall be examined internally and externally, together with its appurtenant gear, at intervals not exceeding three months, by a competent person.
- (2) The manager shall keep or cause to be kept at the mine a book in which the person carrying out the examination required by paragraph (d) of subsection (1) shall record in ink a true report on the condition of the fan and its appurtenant gear found at every examination.
- (3) If, on any examination, any weakness or defect is found by which the efficient and continuous operation of a fan may be affected and such weakness or defect cannot be immediately remedied, it shall be reported without delay to the manager.

Coal mines and fiery mines: installation and operation of fans

106. (1) No fan shall be installed or operated in the workings of any fiery mine or any coal mine except in accordance with the provisions of this section.

(2) Where it is intended to install an auxiliary fan in a return airway from a ventilating district, an inspector shall first be notified in writing, the site of such fan shall be selected by the manager and the installation shall be such that the motor is situated in intake air and there is no possibility of return air passing over the motor and ancillary electrical gear. In special circumstances exemption may be given in writing from the above provision by an inspector of mines.

(3) In the case of any fan installed elsewhere than in a return airway from a ventilating district—

- (a) each such fan shall be installed at a site personally selected and authorized by the manager or an official; and
- (b) no such fan shall be installed or operated at any place unless the quantity of fresh air reaching it at all times is sufficient to ensure that any recirculation of air shall not prejudice the supply of adequate ventilation;

- (c) no such fan shall be removed without the authority of the manager or an official who shall make a suitable endorsement in the book referred to in subsection (4); and
 - (d) the power supply to each such fan shall be controlled from a switch on the section distribution panel independent of the switches controlling any other machinery in the section.
- (4) Every fan shall be operated in accordance with the instructions given by the manager or an official who shall record in ink in a book provided for the purpose the particulars of the authorization and shall ensure that the miner in charge is made aware of such instructions.
- (5) In the workings of any coal mine or fiery mine an electrically-driven fan shall not be started or re-started after it has stopped unless, immediately before the fan is started or re-started, tests have been carried out with an approved flame safety lamp or an approved methanometer by a competent person and the site of its motor and ancillary electrical gear have been found to be clear of inflammable gas.

Coal mines: aircourses

107. In every coal mine—

- (a) all doors connecting a main intake aircourse with a main return aircourse shall be strongly constructed, afford an effective seal and shall be in duplicate;
- (b) all stoppings and air-crossings shall be robust and built in such a manner as to prevent leakage and at least one side of every stopping shall be kept accessible for inspection.

Coal mines: supply of air

108. In every coal mine not exempted in writing by an inspector—

- (a) the quantity of fresh air in cubic metres per second supplied throughout the twenty-four hours for each ventilating district shall be not less than nought comma nought two five multiplied by the maximum number of tonnes of coal and rock mined per shift in such district; and

- (b) no ventilating district shall at any time contain more than two hundred persons; and
- (c) in bord and pillar workings, roadways that carry a uni-directional flow of air over the whole of the cross-sectional area from the main intake aircourse to the main return aircourse of any section of the workings for the purpose of ventilating such workings shall be provided and maintained to carry such flow as close as practicable to every working place in such section; and
- (d) the quantity of air supplied at the face of any heading which is being advanced in coal and which had advanced more than eight metres from its point of communication with the nearest roadway that is carrying a uni-directional flow of air over the whole of its cross-sectional area from the main intake aircourse of the section of workings in which such heading is being advanced shall be not less than nought comma one five cubic metres per second for each square metre of the average cross-sectional area of the heading; and
- (e) the quantity of air supplied at the face of any tunnel being advanced in stone or in dyke and at the face of any shaft in the course of being sunk shall be not less than nought comma one five cubic metres per second for each square metre of the average cross-sectional area of the excavation.

Coal mines: measurement of air circulating and measurement of dust

109. (1) In every coal mine measurements shall be made not less than once a month, during the main working shift, of—
- (a) the quantity of air circulating through the mine and each ventilating district; and
 - (b) the quantity of air circulating through each working section and the average velocity of the air current along the roads.
- (2) In every underground coal mine measurements shall be made not less than once in every six months or at such greater intervals as the Chief Government Mining Engineer may permit

in writing during the main working shift, of the amount of dust in the air in representative working places in each section while drilling, cutting, breaking, loading or transfer of coal or rock is taking place.

Record to be kept of measurements of air circulating and of dust

110. A record of the measurements made in terms of section 109 shall be kept and shall be available for inspection by an inspector.

Coal mines: flame safety lamps or methanometers to be provided

111. Subject to section 112, at every coal mine there shall be provided at least one flame safety lamp or methanometer for every 20 underground employees unless an inspector has in writing granted exemption from the provisions of this section.

Coal mines and fiery mines: methanometers and lamps to be approved

112. (1) No methanometer shall be allowed or used in the workings of any coal mine or fiery mine unless it is of an approved design and construction.

(2) No flame safety lamp or other portable lamp shall be allowed or used in the workings of any coal mine or fiery mine unless it is an enclosed and locked or sealed lamp of an approved design and construction.

Approval of lamps and methanometers by Chief Government Mining Engineer

113. Every application for approval by the Chief Government Mining Engineer of the design and construction of a methanometer or lamp for the purposes of section 112 shall be accompanied by a sample of the methanometer or lamp and drawings giving full details and specifications of the design and construction thereof.

Competent person to have charge of lamps

114. (1) At every coal mine and every fiery mine the manager shall in writing appoint a competent person who shall ensure that—

- (a) all methanometers are accurately calibrated and in good working order whenever issued for use; and

- (b) all portable lamps are in good working order and in safe condition whenever issued for use and, more particularly, that—
 - (i) every flame safety lamp has been properly cleaned, filled with fuel, assembled and locked or sealed;
 - (ii) every portable electric lamp has been properly cleaned, assembled and locked or sealed;
- (c) the record required by section 115 is properly kept.
- (2) All portable lamps shall be returned to the lamproom at the end of each shift by the persons to whom they were issued.
- (3) All repairs to portable lamps at a coal mine or fiery mine shall be conducted in a separate room or in a separate compartment of the lamproom.

Record of lamps to be kept

115. At every coal mine and every fiery mine all portable lamps in use in the underground workings of the mine shall be numbered and a record kept in the lamproom of the persons to whom each lamp is issued in order that the user of any particular lamp can at any time be identified from the records.

Lamps not to be unlocked or unsealed

116. No person shall unlock or break the seal of a portable lamp in the underground workings of any coal mine or fiery mine.

Self-rescuing devices in coal mines and fiery mines

117. (1) At every coal mine or fiery mine no person may go underground or be permitted or forced to go underground, unless he is issued, free of charge, with self-rescuing device. Such device shall be—

- (a) kept on this person at all times while he is underground;
- (b) in good condition and ready for instant use;
- (c) of the self-contained type with a duration of thirty minutes at a ventilation rate of thirty litres per minute; and
- (d) of a design and construction approved by the Chief Government Mining Engineer.

(2) At every coal mine or fiery mine in the underground workings, the manager shall make adequate arrangements to ensure that adequate and sufficient refuge bays or other safe places are provided so that any person in any part of the mine where he may have to travel or work will be able, in the event of an explosion, fire or other emergency which may necessitate the use of self-rescuing devices, to reach such refuge bay or other safe place, without due exertion, within the limit of protection afforded by the self-rescuing device. Such refuge bays or other safe places shall be—

- (a) equipped with means for reliable supply of breathable air;
- (b) equipped with means for a reliable supply of portable water;
- (c) supplied with adequate and suitable first aid equipment;
- (d) of sufficient size to accommodate the greatest number of persons likely to be in the area at any one time;
- (e) capable of being sealed off or equipped with alternative effective means to prevent the entry of noxious gases;
- (f) equipped with a telephone or other means of communication with the surface; and
- (g) constructed of fire resistant material.

(3) Every manager of every underground coal mine and fiery mine shall draw up a code of practice for rescue operations and he shall ensure that every person who goes underground on his mine is adequately trained in the use of self-rescuing devices and the procedure necessary to ensure his survival as far as possible in the event of an explosion, fire or other emergency.

(4) Training in the correct use of self-rescuing devices shall be repeated at intervals not exceeding one year, and shall be given to all persons who may have to go underground.

(5) Subsections (1), (2), (3) and (4) shall apply to a specific underground coal mine or fiery mine determined by the Chief Government Mining Engineer, as from a date specified in writing by the Chief Government Mining Engineer in respect of that mine and of which the Chief Government Mining Engineer has in writing given prior notice to the Manager or the owner of the mine concerned.

Contraband

118. (1) Except as otherwise provided by section 120, no person shall at any underground coal mine or fiery mine—

- (a) take into the workings or have in his possession in the workings any device for the intentional creation of an arc, spark or flame or any match or appliance of any kind for striking a light; or
- (b) smoke in the workings or take into the workings or have in his possession in the workings any pipe, cigar, cigarette, tobacco, other than chewing tobacco or snuff, or any contrivance or material for smoking.

(2) Subsection (1) shall not apply to the relighting device within an approved flame safety lamp.

Search of persons entering coal mine or fiery mine

119. (1) At every coal mine and every fiery mine the manager shall in writing appoint a person or persons to be present at each entrance to the workings of the mine at all times.

(2) Any person appointed in terms of subsection (1) shall when on duty ask every person about to enter the underground workings of the mine whether or not he is in possession of any of the prohibited articles referred to in section 118 or subsection (1) of section 120 and any person when asked that question shall immediately produce and hand over to such first-mentioned person any prohibited article which may be in his possession.

(3) Any person appointed in terms of subsection (1) shall also have the right to search any person about to enter the underground workings of the mine for any of the prohibited articles referred to in section 118 or subsection (1) of section 120 and to take possession of any prohibited article found in such search.

(4) An official shall have the right to search any person in the underground workings of any coal mine or fiery mine for prohibited articles referred to in section 118 or subsection (1) of section 120 if he suspects that such person has any such articles in his possession and to take possession of any prohibited article found in such search.

(5) No person shall hinder or obstruct any person appointed in terms of subsection (1) or any official in the carrying out of any search authorized by this section.

(6) Subject to the provisions of any other law, any article taken possession of in terms of this section shall in due course be returned to the person from whom it was taken after he has left the underground workings of the mine.

Coal mines: restrictions on welding, flamecutting, et cetera

120. (1) No welding, flamecutting, grinding, vulcanizing, soldering or similar equipment shall be taken into or used in the underground workings of any coal mine or fiery mine except in a workshop established with the permission of an inspector in writing under conditions approved by the Chief Government Mining Engineer.

(2) An application for permission for the establishment of a workshop for the purposes of this section (hereinafter in this section called "a workshop") shall be made to an inspector and shall be accompanied by—

- (a) three copies of a plan drawn to scale showing the location of the proposed workshop, its access roads and the quantity and direction of ventilating air currents; and
- (b) three copies of a drawing showing the design and construction of the proposed workshop and its compartments.

(3) Every workshop shall be under the charge of a competent person, appointed in writing by the manager, who has satisfied an inspector as to his knowledge of gases and the testing thereof.

(4) The person appointed to be in charge of a workshop shall ensure that—

- (a) the workshop is kept clean at all times; and
- (b) any equipment to be welded, flamecut or flameheated is properly cleaned and free from oil.

(5) If for any reason the person appointed to be in charge of a workshop is required to leave the workshop, he shall satisfy himself that all gas and electrical welding, cutting, grinding,

vulcanizing, soldering or similar equipment is rendered inoperative and is securely locked in a box or compartment of robust construction in the workshop of which box or compartment he has the key.

(6) In each workshop an effective alarm system shall be installed and maintained in working order to give an alarm in the workshop whenever the main fan which serves the workings in which the workshop is situated ceases to operate and, when such alarm is given, the use of all equipment for any purpose referred to in subsection (1) shall cease forthwith.

(7) Each electric power-fed circuit into any workshop shall be controlled by a circuit breaker situated not more than one hundred metres outby of the workshop in an intake airway and every such circuit breaker shall incorporate effective "no volt", "overload" and "earth leakage" trips.

(8) A hose of sufficient length to reach from an adequate water supply to all points in the workshop shall be kept connected and ready for immediate use.

(9) For the intentional creation of an arc or spark for the lighting of welding or cutting torches in a workshop only lighters of the friction type may be taken into workings for use in the workshop.

(10) Each lighter referred to in subsection (9) shall bear a distinctive mark or number and shall be issued under signature of the manager to the person appointed to be in charge of the workshop and no lighter shall be taken to or from the workshop except personally by that person.

Coal mines and fiery mines machine operators and artisans to be able to test for gas

121. (1) At every coal mine and every fiery mine—

- (a) every operator of an electrical machine used underground for drilling, cutting, breaking or loading; and
 - (b) every artisan working underground;
- shall be instructed in testing for inflammable gas.

(2) An approved methanometer or approved flame safety lamp shall be provided for each machine referred to in paragraph (a) of subsection (1) and the operator thereof shall use the

methanometer or flame safety lamp at the machine to test for the presence of inflammable gas while the machine is in operation and, if he detects any inflammable gas, shall forthwith cut off the power supply to the machine and report the matter to the miner in charge of the working section or to an official.

(3) If an artisan while working underground detects any inflammable gas, he shall forthwith report the matter to the miner in charge of the working section or to an official.

Flexible electric trailing cables

122. (1) In every coal mine and fiery mine the operator of an electrically-driven coal cutter or other mobile or portable electrical machine used underground which is served by a flexible trailing cable shall—

- (a) take all reasonable measures to safeguard the flexible cable against damage; and
- (b) report immediately to the miner in charge any damage or defect he may observe in the cable; and
- (c) not leave such machine while it is working; and
- (d) before leaving the working place, ensure that the power supply to the flexible trailing cable is cut off.

(2) Every flexible electrical trailing cable in use in the working of a coal mine or fiery mine shall be examined at the beginning and again at least once in the course of each shift by the miner in charge or by a competent person appointed by the manager and if any such cable is damaged or defective, its use shall forthwith be discontinued and it shall not be further used until it has been sent to the surface and there properly repaired.

Work prohibited in vicinity of inflammable gas

123. (1) Subject to subsection (2), no person shall commence work or continue to work or cause or permit any other person to commence work or continue to work in any part of the workings of any coal mine or fiery mine if, in the same ventilating district or within a radius of thirty metres of such part, there is any place known to contain sufficient inflammable gas to show a distinct cap on the reduced flame of an approved flame safety lamp or to give a reading of one comma two five per centum on an approved methanometer.

(2) Subsection (1) shall not apply to the holder of an appropriate blasting licence who is engaged in the erection of brattice or in other work necessary for the clearing away of inflammable gas, or to any other person so engaged in the actual presence of, and under the direct supervision of, such holder.

(3) For the purpose of subsection (2) "holder of an appropriate blasting licence" means—

(a) in the case of a coal mine, the holder of—

- (i) a coal blasting licence; or
- (ii) a full blasting licence endorsed for use on a coal mine in terms of subsections (3) and (4) of section 12 of the Explosives Regulations, 1989;
- (iii) a mine blasting licence valid for that mine;

(b) in the case of a fiery mine, the holder of—

- (i) a full blasting licence endorsed for use on a fiery mine in terms of subparagraph (ii) of paragraph (a); or
- (ii) a mine blasting licence valid for that mine.

Use of electrical apparatus prohibited where inflammable gas present in working place

124. (1) No person shall use or cause or permit any other person to use any electrical apparatus, other than an approved portable electric lamp, in any working place in a coal mine or fiery mine where there is sufficient inflammable gas to show a distinct cap on the reduced flame of an approved flame safety lamp or to give a reading of one comma two five *per centum* on an approved methanometer.

(2) In addition to the provisions of subsection (1), all electrical equipment and apparatus installed—

- (a) at any place at or within two hundred and fifty metres of any working face in any intake airway; or
- (b) at any place whatsoever in a return airway; or
- (c) at any other place if in that place the representative methane content in the general body of the air exceeds nought comma five *per centum* by volume; or
- (d) in any situation where there is likely to be heavy concentrations of coal dust; or

(e) in any place under such conditions as an inspector may determine;

shall be of an approved flameproof or intrinsically safe construction.

Only approved electrical apparatus permitted

125. (1) In every underground coal mine and fiery mine all electrical equipment apparatus shall be of approved design and construction and installed and maintained in an approved manner.

(2) In addition to the provisions of subsection (1), all electrical equipment and apparatus installed—

- (a) at any place at or within two hundred and fifty metres of any working face in any intake airway; or
- (b) at any place whatsoever in a return airway; or
- (c) at any other place if in that place the representative methane content in the general body of the air exceeds nought comma five *per centum* by volume; or
- (d) in any situation where there is likely to be heavy concentrations of coal dust; or
- (e) in any place under such conditions as an inspector may determine;

shall be of an approved flameproof or intrinsically safe construction.

Plans of electrical installations to be maintained

126. (1) At every coal mine there shall be kept in the mine office a tracing or print taken from an underground plan drawn to a scale of not less than 1 : 5 000, on which the following information shall be clearly shown—

- (a) the position of all main electrical apparatus in the mine; and
- (b) the routes and sizes of all fixed feeder cables, branch feeders and final distribution cables; and
- (c) the rating of all feeder control apparatus and equipment, whether or not it is a circuit breaker, switch, fuse or contactor starter unit and all motors and transformers; and
- (d) the construction of apparatus, namely whether flameproof or otherwise.

(2) The plan required by subsection (1) shall be corrected as often as may be necessary and shall at all times be correct to within at most three months from date and a print thereof shall be submitted to an inspector at intervals not exceeding three months.

Electrical shot-firing apparatus to be used for firing of charges

127. (1) No person shall fire or cause or permit any person to fire explosive charges in any coal mine or fiery mine except by means of an efficient and properly maintained electrical shot-firing apparatus, cable and accessories, approved for the purpose by an inspector, which is provided with a movable operating handle or key or with a locking arrangement to secure it against unauthorized use.

(2) A removable operating handle or key referred to in subsection (1) shall not be placed in position until the explosive charge is about to be fired.

(3) No person shall open or tamper with any electrical shot-firing apparatus below ground.

(4) No person shall use cable which has been provided for shot-firing for any purpose other than shot-firing.

(5) All electrical shot-firing apparatus shall be brought to the surface, at intervals not exceeding three months, for thorough cleaning and examination by a competent person appointed for that purpose.

(6) All multi-shot-firing apparatus shall be brought to the surface, at intervals not exceeding seven days, for testing in an approved manner.

(7) No internal examination of any electrical shot-firing apparatus shall be carried out below ground.

(8) Each shot-exploder shall be marked with a serial number and a record of all examinations and tests carried out on it shall be recorded in ink in a book to be provided for the purpose.

(9) If any shot-firing apparatus appears to be defective, the blasting licence holder shall not use it further but shall cause it to be returned to the surface forthwith and shall report the circumstances to the manager or an official.

(10) No electrical shot-firing apparatus shall be taken or used underground unless on the last preceding test thereof it was found to be in satisfactory order.

Requirements for machines: allaying of dust

128. (1) In the underground workings of every coal mine every machine for ripping, picking, cutting, drilling or loading rock or coal shall be fitted with means or means shall be provided—

- (a) by applying water, for effectively preventing dust from being created by the operation of the machines; or
- (b) by the use of some suitable apparatus approved by an inspector, for effectively trapping any dust created by the operation of the machine.

(2) The Chief Government Mining Engineer may prohibit in writing the use of any type or make of machine for ripping, picking, cutting, drilling or loading rock or coal in coal mines if he considers that the use of such type or make of machine may seriously and materially endanger the health of workmen.

(3) No machine, the use of which has been prohibited in terms of subsection (2), shall be used in the underground workings of any coal mine.

Monthly report of inflammable gas to inspector

129. (1) The manager of every coal mine or fiery mine shall submit a monthly report in writing to an inspector giving details of all places where inflammable gas has been detected in a quantity to show a distinct cap on the reduced flame of an approved flame safety lamp or to give a reading of one comma two five per centum on an approved methanometer.

(2) Should an inspector so require an immediate report of inflammable gas in quantities as stipulated in subsection (1) shall be made to him.

PART VIII
WINDING AND TRIMMING

A. GENERAL

Interpretation in this Part

130. Whenever any provision in this Part requires the doing of anything in relation to the Driver's Log Book that requirement shall be construed as not applicable in respect of the driving of a small hoist.

Restriction of use of windlasses

131. No windlass shall be used for the raising or lowering of persons in a shaft or winze the depth of which exceeds thirty metres.

Driver's Log Book

132. (1) Subject to this section, the manager of every mine shall keep or cause to be kept at each winding engine, other than the winding engine of a small hoist, a book to be termed the Driver's Log Book in which shall be recorded in ink—

- (a) signed reports of the condition of the winding engine, including brakes, clutches, reversing gears, depth indicators, signalling devices and all protective devices, such reports to be recorded by the winding engine driver for each period of charge;
 - (b) any special instruction involving the safety of persons given to the winding engine driver and the time at which such instruction was given, such entry to be signed by the person giving the instruction;
 - (c) any other matter required by these regulations to be recorded therein.
- (2) Where a winding engine driver is unable to read and write and a provision contained in this Part requires an entry in the Driver's Log Book to be made, or signed, by the winding engine driver, the following provisions shall apply and compliance therewith shall be regarded as compliance with the provision concerned—
- (a) in the case of an instruction or warning given to the winding engine driver, the instruction or warning shall be given verbally to him by the responsible official in

charge and the driver shall indicate his understanding thereof by making his mark against the entry of the instruction in the Driver's Log Book;

- (b) in the case of a report required to be given by the winding engine driver on the condition of any part of the winding engine, the driver shall—
 - (i) make his mark against the appropriate item on a suitable checklist to be provided in the Driver's Log Book; and
 - (ii) orally report any defect or weakness to the responsible official in charge, which report shall forthwith be recorded in ink in the Driver's Log Book by such official and endorsed by the driver by him making his mark against the entry.

Entry to winding compartment prohibited

133. (1) Subject to subsection (2) no person shall enter or in any way encroach into the winding compartment of any shaft, winze or headgear except for the purpose of entering or leaving a conveyance or for the purpose of conducting an examination, effecting repairs or doing other necessary work in such compartment.

(2) Subsection (1) shall not apply to persons working at the bottom of a shaft or winze in the course of sinking.

Winding prohibited during repair operations and vice versa

134. (1) No winding operation shall be carried on in the winding compartment of a shaft, winze or headgear while persons are engaged in effecting repairs, conducting an examination or doing any other work in such compartment unless—

- (a) winding operations in such compartment are necessary for the purpose of effecting the repairs, conducting the examination or doing the other work; and
- (b) the persons engaged in effecting the repairs, conducting the examination or doing the other work in the shaft, winze or headgear are adequately protected from any conveyance as well as from falling objects.

(2) No person shall effect repairs, conduct examination or do any other work in the winding compartment of a shaft, winze or headgear while winding operations are being carried on in such compartment unless—

- (a) winding operations in such compartment are necessary for such person to effect repairs, conduct the examination or do the other work; and
- (b) he is adequately protected from any conveyance as well as from falling objects.

(3) The person in immediate charge of any work in the winding compartment of a shaft, winze or headgear in which winding is being done by mechanical power shall, before any work is commenced specifically warn the driver of the winding engine operating the conveyance in such winding compartment that such work is about to be undertaken and, except in special circumstances where it is impracticable for him to do so, shall forthwith record in ink such warning and the time in the Driver's Log Book:

Provided that this subsection shall not apply to work at the bottom of a shaft in the course of sinking or to the loading or unloading of a conveyance.

(4) The person in immediate charge of any work in respect of which an entry has been made in the Driver's Log Book in terms of subsection (3) shall on completion of such work report the completion thereof to the winding engine driver, and except in special circumstances where it is impracticable for him to do so, shall forthwith record in ink such report and the time in the Driver's Log Book.

(5) Any entry made in the Driver's Log Book in terms of subsections (3) and (4) shall not be valid until countersigned by the driver.

(6) After alterations or repairs to the winding compartment of a shaft or winze or to its winding plant, no person shall travel or be permitted to travel in a conveyance therein until such time as the conveyance has been caused to make a complete trip up and down the working portion of the shaft or winze and found to be in order.

Special precautions during sinking operations

135. (1) No person shall work or be permitted to work at the bottom of a vertical or steeply inclined shaft or winze in the course of sinking unless protected by an adequate covering extending over the whole area of such shaft or winze, only sufficient opening being left therein for the passage of the conveyance.

(2) The covering required by subsection (1) shall be situated—

- (a) in the case of a vertical shaft or winze, not more than twenty-five metres from the bottom thereof.
- (b) in the case of a steeply inclined shaft or winze, not more than thirty metres from the bottom thereof.

(3) A set of doors to cover the sinking compartment shall be maintained at the collar or other points of service of every vertical or steeply inclined shaft or winze in the course of sinking.

(4) The doors required by subsection (3) shall be closed while persons, material or rock are being loaded into or unloaded from a conveyance above the point of service.

Hoisting during sinking operations

136. In a vertical shaft or winze in the course of sinking—

- (a) the winding engine driver shall pick up the crosshead without undue shock; and
- (b) the conveyance shall not be filled with loose rock or ground above the level of the brim; and
- (c) except at blasting time, every conveyance, when being hoisted from the bottom of the shaft or winze, shall be stopped approximately two metres from the said bottom, steadied and any stones or mud shall be removed from the sides and bottom of the conveyance, and the conveyance shall not be further hoisted by the winding engine driver until a signal to do so has been received;

(d) the crosshead mentioned in paragraph (a) shall be so designed and maintained as to prevent hold-up or jamming in the hoisting compartment so as to endanger persons during sinking operations;

- (e) all crossheads shall be of sound construction and so designed to prevent swinging of the bucket or kibble;
- (f) after completion of sinking and equipping operations the use of an unattached crosshead shall be dispensed with and the protective coverage as required in terms of section 145 shall be provided.

Lowering during sinking operations

137. In a shaft or winze in the course of sinking the conveyance shall not be lowered directly to the bottom of such shaft or winze but shall be stopped at least four metres from the bottom until a signal to lower it further has been given by one of the men thereat:

Provided that this section shall not apply to shafts and winzes less than fifteen metres in depth.

Securing of material being conveyed

138. Material being raised or lowered in a shaft or winze shall, if it projects beyond the top of the conveyance, be fastened to the winding rope or to some suitable device attached to the conveyance so as to ensure safe passage in the shaft or winze.

Disturbance of winding engine driver prohibited

139. No person, other than a person in authority and then only in an emergency shall in any way distract the attention of the person operating a winding engine whilst it is in motion.

Unauthorized entry to winding engine room prohibited

140. No unauthorized person shall enter a winding engine room and notices to this effect shall be posted at the entrance to every winding engine room.

Maximum hours of work for winding engine drivers

141. No person in charge of a winding engine shall be caused or permitted to work more than ten hours in any one period of twenty-four hours except in cases of emergency:

Provided that, during the normal changeover of his working shift, such person may work, within one twenty-four hour period, two shifts of not more than eight hours duration each, which shall be separated by a period of not less than eight hours between the end of the first shift and the start of the second shift,

Travelling with mineral, material or explosives

142. (1) No person shall travel or be permitted to travel in a conveyance together with mineral or material when such mineral or material is of such shape, size or mass or is stored in such a manner that the safety of persons is likely to be endangered.

(2) No person, other than an authorized person or the cage tender and his crew, shall travel in a conveyance together with explosives.

Guides for conveyance in vertical shafts or winzes

143. (1) All vertical shafts or winzes exceeding thirty metres in depth which are used for winding purposes shall be provided with guides for skips, cages or other conveyance unless exempted by an inspector.

(2) In the case of vertical shafts or winzes in the course of sinking, the guides required by subsection (1) shall extend down to twenty-five metres or less from the shaft bottom and, when winding is being done to the shaft bottom, the crosshead shall travel to as near the end of the guides as is practicable.

Signals to be exchanged before entry to or exit from conveyance

144. No person shall enter or leave or be permitted to enter or leave a conveyance or continue to travel in such conveyance unless and until the appropriate signals required by section 150 have been exchanged:

Protective and warning devices for persons travelling in conveyance

145. When mechanically-powered means are used for lowering or raising persons by a conveyance—

- (a) in a shaft or winze exceeding thirty metres in depth and having an inclination of more than twenty degrees from the horizontal, sufficient overhead cover shall be provided on every such conveyance for the prevention of injury to persons travelling therein;
- (b) in an inclined shaft or winze, warning devices shall be installed to give adequate warning to persons travelling in or on the conveyance when such conveyance is approaching any collar set, station, brow, chute or other projection.

- (c) no person shall travel or be permitted to travel in any shaft or winze on the roof, top, rim or in any position outside the conveyance:

Provided that persons engaged in examining or repairing the shaft or winze may travel on the roof or bridle of such conveyance, if it is necessary, to the efficient conduct of such examination, repairs or work and if such persons when engaged in a vertical shaft or winze are adequately protected from objects falling from above.

- (d) an inspector may grant exemption in writing from the provisions of paragraph (c) provided that in granting such exemption no person travelling outside any conveyance is subjected to any danger.

Winding plant operators

146. (1) No person, other than a duly authorized person, shall operate any winding plant.

(2) No person, whose sight or hearing is deficient or who is subject to any other infirmity, mental or bodily or is under medication or treatment which is likely to interfere with the effective discharge of his duties shall drive or be caused or permitted to drive any winding engine or mechanical hoist.

(3) To comply with subsection (2) all authorized persons shall undergo a medical examination by a registered medical practitioner at intervals not exceeding twelve months and the result of each such examination shall be available to an inspector at all times.

(4) All authorized persons shall be in possession of a "Hoist Drivers Certificate" issued by his mine manager and this certificate shall record the name of the mine, the type and power of the hoist or hoists which he is authorized to operate.

Duties of winding engine driver

147. (1) The driver of a winding engine—

(a) immediately on taking charge of a winding engine, shall examine the Driver's Log Book and acknowledge

by his signature or initials each uncanceled entry made in terms of paragraph (1) of this subsection or of subsection (3) of section 134; and

- (b) shall not start his engine before he has received a distinct and proper signal to do so unless instructed to do so by the manager or other official responsible for such shaft or unless he has received the "clear" signal; and
- (c) shall not act on any signal if he has been unable to do so within one minute after receiving it but shall call for or await a fresh signal:

Provided that, in the case of the "clear" signal, the driver may, at his discretion, move away the conveyance but, if a period of more than five minutes has elapsed since receiving the "clear" signal, he shall move away the conveyance very slowly; and

- (d) shall avoid undue shocks in starting, running and stopping the said engine; and
- (e) shall apply correctly every device and means at his disposal to prevent the conveyance overrunning, to an extent which may endanger the safety of persons or cause damage to the winding equipment—
- (i) the signalled destination; or
- (ii) where no destination has been signalled and—
- A. persons are being conveyed, the highest or or lowest landing place; or
- B. persons are not being conveyed, the highest or lowest stopping place; and
- (f) after receiving a signal to raise or lower persons, shall not start his engine until after the expiration of ten seconds after receiving the signal:

Provided that this paragraph shall not apply when blasting is about to take place in a shaft or winze in the course of being sunk and the engine driver has received the special "blasting" signal referred to in subsection (6) of section 150; and

- (g) shall not unclutch a drum of his engine until he has assured himself immediately before hand by testing

- the brake of the drum against the normal starting power or normal starting current of the engine applied in the direction to hold the load suspended from the said drum, no such unclutching operation or test shall be performed while persons are in any conveyance operated by the engine; and
- (h) shall, when the drum is unclutched, use the brake only for the purpose of maintaining such drum stationary and shall on no account lower from unclutched drum; and
 - (i) shall observe only authorized signals and operate his engine in accordance therewith; and
 - (j) shall, whenever any conveyance is not in use, leave such conveyance at some point in the shaft or winze other than at the bank or at a station; and
 - (k) shall, at the first available opportunity after taking over the engine, test the brakes and such overwind prevention devices of the winding engine as can be reset by the driver; and
 - (l) if, during the test required by paragraph (k), there is discovered any defect by which the safety of any person may be endangered, shall record in ink such defect in the Driver's Log Book immediately and shall report it to the responsible official in charge, and, until such weakness or defect be remedied, shall not use the winding plant; and
 - (m) having taken charge of a winding engine, shall, throughout his period of duty, remain available to act in accordance with all authorized signals received; and
 - (n) after receiving the "shaft locked" signal, shall not move his engine until he has received the "shaft unlocked" signal.
- (2) For the purposes of paragraph (k) of subsection (1), the brakes shall be considered satisfactory only if the test shows they are capable of holding the drums stationary against the normal starting power or normal starting current of the engine applied in the direction of the out of balance load.

Persons not to be lowered by hoist driven by friction, flat belt or chain

148. No winding plant driven by friction, flat belt or chain shall be used for the raising or lowering of persons. This restriction shall not be construed to prohibit the use of a friction hoist commonly referred to as a "Koepe" winder which may be used for the raising and lowering of persons.

Provisions concerning motive power of winding plants

149. (1) Every winding plant worked by—

- (a) steam or compressed air shall be equipped with a proper pressure gauge to indicate to the winding engine driver the amount of pressure available for working it;
- (b) electricity shall be equipped with an efficient device to indicate to the winding engine driver any disruption of the power supply.

(2) In no case shall the steam, compressed air or other motive power of a winding plant be cut off unless and until the person in charge of the generating plant on the surface has given due notice thereof to the winding engine driver.

**B. RAISING AND LOWERING OF PERSONS
ET CETERA**

Hoisting signals

150. (1) In shafts or winzes exceeding thirty-five metres in depth hoisting signals shall be given by means of bell rings or other means approved by an inspector.

(2) Subject to subsection (3), where such signals are given by means of bell rings or knocks, the following code shall be used and strictly observed—

Knocks or rings

1
1
1
2

Meaning

Raise when engine at rest
Stop when engine in motion
(From driver) Repeat signal last given
Lower

2 pause 1	"Clear" signal-engine-driver may move at his discretion
2 pause 2	Lower conveyance slowly
3	Persons about to travel
3	(In reply from driver) Persons may travel or may enter conveyance for purpose of travelling
3	(From driver when conveyance is brought to rest) Persons may enter or leave conveyance
3 pause 3	Raise conveyance slowly
3 pause 3 pause 3	Person giving signal about to travel
3 pause 3 pause 3	(In reply from driver) Acknowledgement that person giving signal about to travel
2 pause 2 pause 2	(From driver) Persons must leave conveyance
2 pause 2 pause 2	(In reply to driver) No persons in conveyance
4	(From driver) Engine temporarily unavailable
4 pause 4	(To driver) "Mark" signal
4 pause 4	(In reply from driver) Acknowledgement of "Mark" signal
4 pause 4 pause 4	(To driver) "Clutching" signal
4 pause 4 pause 4	(In reply from driver) Clutching operations completed
5 pause 5	(To driver) Explosives about to be placed in conveyance
5 pause 5	(In reply from driver) Explosives may be placed in conveyance
5 pause 5 pause 5	All explosives removed from conveyance

6 pause 6	(To driver) Winding compartments served by engine locked
6 pause 6	(In reply from driver) Acknowledgement of "compartment locked" signal
6 pause 6 pause followed by station signal	(To driver) Shaft locked below station designated
6 pause 6 pause followed by station signal	(In reply from driver) Acknowledgement that shaft locked below station designated
6 pause 6 pause 6	(To driver) Compartments served by engine re-opened
6 pause 6 pause 6	(In reply from driver) Acknowledgement that compartments served by engine re-opened
7 followed by station signal	Accident to persons, station where conveyance required
10	Telephone communication required
13	Electrician testing bells
13	(In reply) Bell test satisfactory
1 long ring	Accident in shift, winding operations to be suspended immediately in all compartments of the shaft until a responsible person instructs the driver as to further procedure.

(3) The manager of a mine may authorize such additional signals as local conditions may demand.

(4) Copies of the code of signals, including any additional signals authorized by the manager, in use on a mine shall be suitably displayed in the winding engine driver's platform or in a suitable place in the winding engine room and at the bank and at all shaft stations for the time being in use.

Provided that, in the case of a winding compartment where some only of the above-mentioned signals are in use, it shall be necessary to display only that portion of the code which is in use in that compartment.

(5) Copies of the code of signals required by subsection (4) shall be maintained in proper repair and shall be so placed that they can conveniently be read by persons operating the signalling system.

(6) Where blasting operations are being carried out in a shaft or winze in the course of sinking—

(a) the person in charge of the blasting operations shall notify the engine driver when blasting is about to take place by means of a special "blasting" signal, namely, five knocks or rings; and

(b) except in the case of remote firing by electricity, the engine driver shall reply to that special "blasting" signal by raising and lowering the conveyance approximately one metre; and

(c) on receiving the signal to raise persons, the engine driver shall raise the conveyance without delay.

(7) No person shall fail to observe the code of signal set out in subsection (2) or any additional signals authorized by the manager in terms of subsection (3) or the special signals specified in subsection (6).

Provisions for signals during examination of shaft or winze

151. Every shaft or winze where persons travel on or in the conveyance while carrying out examinations thereof shall be provided with some efficient means, in respect of each conveyance used in connexion with such examinations, whereby such persons can signal effectively from any depth in the shaft or winze to the winding engine driver.

Cages to have doors

152. (1) Subject to subsection (2), in all cases where cages are used for lowering or raising of persons, suitably constructed doors shall be provided for use and used when persons are travelling to prevent them from inadvertently falling out of cages.

(2) Only when repairs, maintenance and installation work in the shaft is being carried out may use of the doors required by subsection (1) be dispensed with.

Notice of maximum number of persons to be conveyed

153. Notice of the maximum number of persons permitted to ride at any one time in a cage, skip or other means of conveyance shall be posted, up and kept so posted in legible character at the top of the shaft or winze and at each station in use.

Facilities for maintenance of headgear

154. In every headgear there shall be provided such permanent ladderways and platforms as may be necessary for the proper maintenance of all equipment installed thereat.

Provisions for winding plant

155. (1) Every winding engine shall be such that—

(a) when running at various speeds with light and heavy loads, it can readily be slowed and stopped and after stopping can immediately be started again in either direction by the driver;

(b) each winding drum, when unclutched from the engine, can be maintained in a position of rest by means of its own brake or brakes with no slipping when loaded to double the maximum permitted mass of persons or to the maximum permitted mass of mineral, whichever is the greater;

(c) where no part of the rope is rigidly fixed to the drum or sheave, there shall be no dangerous slipping of the rope on the drum or sheave, under any possible working conditions.

(2) In calculating the mass of persons for the purposes of paragraph (b) of subsection (1), seventy kilograms shall be allowed for each person.

Further provisions for winding plant

156. (1) Subject to subsections (2) and (3), every winding plant shall—

(a) in the case of—

(i) a single drum or single sheave winder, have an overlay rope; and

(ii) a double drum or double sheave winder, have an overlay rope on the drum or sheave on the right-hand side as seen from the driver's control position;

which overlay rope shall be termed the "reference rope"; and

- (b) on the drum or sheaves thereof, have such grooves, flanges or horns and, if the drum is conical, such other appliances in addition thereto as may be sufficient to prevent the rope from slipping off; and
 - (c) have, in the case of a dial depth indicator, a pointer which moves in a clockwise direction, when the reference rope is lowered and, in the case of a post or spiral depth indicator, a pointer which moves up or down as the reference rope moves up or down:
- Provided that, in the case of balanced winding where two depth indicators are fitted to one winding engine, the direction of movement of each depth indicator shall be determined by considering the rope carrying the conveyance as being the reference rope; and
- (d) have all bolts and fittings which, in the event of their becoming loosened might be a source of danger rendered secure by means of suitable locking devices; and
 - (e) be provided with a locking device which shall prevent inadvertent withdrawal of the clutch; and
 - (f) be fitted with an interlocking device making it impossible to—
 - (i) unclutch any drum unless the brakes of such drum are fully applied; and
 - (ii) release the brakes of such drum until the clutch is full engaged and securely locked; and
 - (g) be provided with protective devices to shut off the power and apply the brakes automatically in the event of an overwind of a conveyance or in the event of the speed of a conveyance exceeding the maximum authorized speed of fifteen per centum:

Provided that—

- (i) in the case of a winding engine operating a conveyance in a shaft or winze in the course of

sinking such overwind devices need be provided only to guard against overwind of a conveyance above the highest stopping place;

- (ii) in the case of a winding engine used for regular man winding, such devices shall be so set that any passenger conveyance will be brought to rest within a distance of three metres above the highest stopping place used for passenger landing and three metres below the lowest stopping place used for passenger landing; and
- (h) when fitted with a multi-toothed type clutch or clutches which are not visible to the driver from his position at the controls, be so provided with mirrors or other suitable means that the driver can see, without moving from his position at the controls, whether or not a clutch is in correct position for engagement;
- (i) have an efficient brake for each drum or sheave which shall be kept in proper working order; and
- (j) when the winding engine is driven by electric power, be fitted in addition with an emergency brake system which shall be so arranged that the brakes will be applied automatically in the event of a failure of the electric power supply, save however, that the brake shoes may be common to both breaking systems; and
- (k) where necessary, be provided with guards over the drums and brake paths to protect the driver and any control gear from flying rope dressing; and
- (l) except in the case of a friction-drive or sheave-type winding engine, have not less than three turns of rope round the drum when the conveyance is at the lowest point in the shaft from which winding is effected and have the end of the rope securely fastened to the shaft, hub, boss or an arm of the drum; and
- (m) have an indicating device which will clearly and accurately show the winding engine driver the position of the conveyance in the shaft:

Provided that, in the case of a sheave-type winder, disconnection of the indicator driver for the purpose of adjusting the indicator position shall automatically apply the brakes; and

- (n) when it is used for regular man winding and the speed of the winding rope may exceed three hundred metres per minute, be provided with a device which will prevent the brakes from being applied at high rope speed with such pressure as to produce dangerous rate of deceleration; and
 - (o) have all instruments, signal light, switches and push buttons required by the driver for control of the winding engine clearly labelled with their functions where such function is not obvious; and
 - (p) have all push buttons, controls, adjusting devices and levers, including clutch operating levers, used by the driver for the control of the winding engine within the reach of the driver without moving from his driving position; and
 - (q) have a control lever which follows the reference rope in direction of movement; and
 - (r) have a positive brake lever which, if it is a hand-operated lever, must be pulled towards the driver in order to apply the brakes; and
 - (s) except in the case of a winding plant having an authorized maximum rope speed of less than three hundred metres per minute be fitted with a rope speed indicator which shall be so situated that the winding speed can at all times be read easily by the winding engine driver from his driving position; and
 - (t) be provided with a proper pressure gauge or, in the case of electrical power, with metres to indicate to the driver at all times the amount of motive power available for it.
- (2) Paragraphs (c), (g), (j), (m), (q) and (t) of subsection (1) shall not apply in respect of small hoists:
- Provided that a small hoist shall be provided with reliable means, either by conspicuous marks on the rope or by some other suitable method, showing clearly and accurately to the hoist driver at his operating position the position of the cage, skip or other conveyance in relation to all established landing and stopping places approaching which a reduction in winding speed is necessary.

(3) The Chief Government Mining Engineer may grant exemption in writing from any of the provisions of subsection (1) in respect of any winding plant in operation immediately before the date of commencement of these regulations.

Provision for overwinding

157. (1) Except where the winding plant is being used for sinking or equipping, in any vertical shaft or winze in which the raising and lowering of persons is regularly carried out and the authorized maximum rope is more than one hundred and fifty metres per minute—

- (a) where the end of the winding rope is fastened to the drum of the winding engine—
 - (i) for each winding engine there shall be provided catch plates and safety detaching hooks to detach from the winding rope and to support any conveyance overwound in the headgear; and
 - (ii) the headgear shall be carried sufficiently high to allow an unobstructed space of at least seven comma five metres in which the conveyance can travel above or beyond the highest landing place for persons before it comes into contact with any fixed obstacle;
 - (iii) the shaft shall be carried sufficiently deep to allow an overrun space of at least seven comma five metres in which the conveyance can travel below or beyond the lowest land place before it comes into contact with any fixed obstacle;

Provided that such overrun space need not be provided in a shaft in the course of being sunk or in a shaft not exceeding three hundred metres in depth or length below bank where the winding system does not include the use of a balance rope or tail rope;

- (b) where the winding rope is not fastened to the drum or sheave of the winding engine—
 - (i) the overrun space in the headgear above the highest established stopping place shall be provided with rigid or other appliances so arranged that an

overwound conveyance is retarded in order to minimize the risk of the conveyance colliding with the rope sheave or any fixed obstacle in the headgear; and

- (ii) the overrun space at the bottom of the shaft below the lowest established stopping place shall be provided with rigid guides or other appliances so arranged that an overwound conveyance is retarded and arrested before it can collide with any fixed obstacle; and
- (iii) there shall be fitted spring keps or jack-catches above the bank to arrest any conveyance which becomes accidentally disconnected from the rope as a result of an overwind.

(2) In respect of any winding plant in operation before the date of commencement of these regulations or in respect of any winding plant where the provisions of subsection (1) are inappropriate in relation to safety, the Chief Government Mining Engineer may grant exemption from any of the provisions of subsection (1).

Winding ropes

158. (1) Every rope used for the suspension of a conveyance shall be made of steel wire when the depth of wind exceeds thirty metres.

(2) Every steel wire rope used for the suspension of a conveyance shall be such that the diameter of the wires used in the construction of the rope is suited to the diameter of the sheaves and the drums fitted.

(3) In no case shall a winding rope be used which has a splice or join of any kind except at its attachments.

(4) The connexion between a winding rope and a conveyance shall be of such a nature that no accidental disconnexion can take place, the rope attachments shall be properly made and no pen hooks shall be used therefore.

(5) No winding rope shall be turned end for end during its period of use.

(6) No friction hoisting rope shall be used unless it is of an improved construction.

Initial testing and care of winding ropes: Rope Record Book

159. (1) Whenever a winding rope or balance rope for use in a shaft or winze is not accompanied by a certificate from the manufacturer showing the breaking force as obtained by actual test on a whole sample of the rope, such rope shall not be used until a specimen cut from the rope has been tested by a reliable authority and the result of such test has been furnished to the manager.

(2) A winding rope or balance rope newly put on, whether new or previously used, and the attachments connecting any such rope to any conveyance shall be carefully examined by a competent person appointed for the purpose by the manager and shall not be used until the conveyance loaded with maximum permitted mass has been run at least two trips down and up between the highest and lowest stopping places ordinarily in use and found to be in order.

(3) The result of the examination and test required by subsection (2) shall be recorded in a Rope Record Book provided for the purpose by the manager and the record shall be signed by the person who conducted the examination and test.

(4) New ropes and ropes not in use shall be stored under cover in a dry place and the reels shall be jacked up clear of the ground or floor and shall be turned through half a turn at intervals of not more than three months so as to prevent migration of the rope lubrication to the bottom of the reel.

(5) The Rope Record Book shall, in addition to the results of the examination test required by subsection (2), contain the name of every person appointed in terms of section 172 and the following particulars regarding the rope—

- (a) the manufacturer of the rope;
- (b) the date of manufacture;
- (c) the date of purchase;
- (d) the date on which the rope was installed;
- (e) a full description, the make and construction of the rope;
- (f) the length of the rope in metres;
- (g) the diameter of rope in millimetres or width and thickness of rope in millimetres;

- (h) the mass of the rope per metre in kilograms;
- (i) the breaking force of the rope in kilonewtons as per manufacturer's certificate where the rope was accompanied by such certificate;
- (j) the ordinary working load;
- (k) the date of cutting and recapping and, additionally or alternatively the date of the non-destructive test;
- (l) the breaking force at each test and date of each such test;
- (m) the summary of condition of the rope at the time of cutting and the recapping;
- (n) the details and results of non-destructive test;
- (o) the date the rope was taken off;
- (p) where applicable, the date of annealing or renewing attachments.

Periodic testing and examination of ropes

160. (1) For every winding plant used in a shaft or winze in which winding is carried out, unless the winding plant is such that it does not allow for the shortening of the winding rope, a portion of the rope shall be cut off from the end attached to the conveyance, the balance mass or the counterpoise, as the case may be, at intervals not exceeding six months and the rope recapped.
- (2) The portion cut off for the purposes of subsection (1) shall be of a length of at least four metres or such shorter length as the Chief Government Mining Engineer may permit in writing.
- (3) From the portion of rope cut off, a specimen shall be sent by the manager, without delay, for a test to an approved testing station where its actual breaking force and general condition shall be determined at the expense of the owner.
- (4) If the specimen of the rope received at the testing station is in a condition not admitting of a satisfactory test for the purpose of subsection (3), a fresh specimen shall be sent by the manager.
- (5) On completion of the test required by subsection (3) the testing station shall send the manager a certificate showing the results of such test and shall send a copy of the certificate to the Chief Government Mining Engineer.

- (6) Where a winding plant is such that it does not allow for the shortening of the winding rope, the winding rope shall be examined at intervals not exceeding six months by non-destructive means with approved equipment.

Particulars to be given when new rope fitted

161. Whenever a new winding rope, balance rope or tail rope is put on a winding plant, the following particulars of such winding rope, balance rope or tail rope shall be forwarded in writing to the Chief Government Mining Engineer and to an approved testing-station—

- (a) the name of the mine concerned;
- (b) the name of the shaft and compartment in which the rope is used;
- (c) a description of the shaft referred to in paragraph (b);
- (d) the coil number of the rope;
- (e) the date on which the rope was installed;
- (f) the date of manufacture of the rope;
- (g) the date on which the rope was installed;
- (h) the length of the rope in metres;
- (i) the diameter of the rope in millimetres;
- (j) the mass of the rope per metre in kilograms;
- (k) the construction of the rope and the number of wires in each strand and the number of strands;
- (l) the diameter of all wires used in the rope, in millimetres;
- (m) the lay of the rope;
- (n) the class of the heart or core of the rope;
- (o) the quality of steel used for the wire in the rope and the tensile strength in megapascals;
- (p) the breaking force of the rope in kilonewtons;
- (q) the coil number of the rope being replaced.

Special provisions for interpretation of section 163 to 168

162. (1) For the purposes of sections 163 to 168—
- “Attachments” includes any balance or tail rope and everything suspended from or attached to the conveyance other than the winding rope;
- “effective combined mass” means—

- (a) where winding is conducted in a vertical plane, the static force resulting from the mass of any load;
- (b) where winding is conducted in an inclined plane, one comma nought five times the incline component of the static force resulting from the mass of any load.

(2) In determining, in accordance with the provisions of sections 163 to 168 the minimum allowable breaking force of any rope used in connexion with winding, the force in newtons exerted by any mass carried by the rope shall be obtained by multiplying that mass in kilograms by a factor of nine comma eight.

(3) In calculating the mass of persons for the purposes of sections 163 to 168 seventy kilograms shall be allowed for each person.

Total mass to be attached to winding rope

163. The total mass attached to the winding rope when persons or material are conveyed shall not exceed nought comma nine times the mass attached to the winding rope when mineral is conveyed.

Use of more than one rope

164. Where a conveyance is suspended by two or more winding ropes—

- (a) the ropes shall be of approximately equal size and strength; and
- (b) adequate arrangements shall be made to equalize the tension in the ropes; and
- (c) in calculating the breaking force of the ropes, each rope shall be assumed to carry an equal share of the load.

Periodically tested winding ropes: minimum breaking force

165. Where the winding system is such that it allows of the periodic testing of the winding rope or ropes as required by section 160 and a balance rope or tail rope is not used, a winding rope shall not be used for the raising or lowering of persons or materials, if the breaking force at any point in the rope is less than whichever is the greatest of—

- (a) ten times the force exerted by the effective combined mass of the conveyance and its attachments and the maximum number of persons or load of materials; or
- (b) nine times the force exerted by the effective combined mass of the conveyance and its attachments and the maximum permitted load of mineral; or
- (c) five times the force exerted by the effective combined mass of the length winding rope between the headgear sheave and the lowest working point of the conveyance and its attachments and the maximum permitted number of persons or load of materials; or
- (d) four comma five times the force exerted by the effective combined mass of the length of winding rope between the headgear sheave and the lowest working point of the conveyance and its attachments and the maximum permitted load of mineral.

Winding ropes not periodically tested: minimum breaking force

166. (1) Where the winding system is such that it does not allow of the periodic testing of the winding rope or ropes as required by section 160 and a balance rope or tail rope is used, a winding rope shall not be used for the raising or lowering of persons or material if the breaking force at any point in the rope, when new, is less than a multiplying factor of eight, less nought comma nought one five of the length in metres between the headgear sheave and the lowest working point of the conveyance, multiplied by the effective combined mass of conveyance and its attachments and the maximum mass permitted of persons or of material, whichever is the greater, plus the whole mass of the balance rope or tail rope plus nought comma five of the total suspended mass of the tail carriage if used:

Provided that in no case shall the multiplying factor be less than six.

(2) Where the mass of the conveyance and balance rope or tail rope is suspended from more than one winding rope in such manner that, as far as is practicable, the load is shared equally between the winding ropes, then the winding ropes shall not be

used for the raising or lowering of persons if the combined breaking force of the winding ropes, when new is less than the minimum breaking force calculated according to subsection (1).

Application of sections 165 and 166 to plant not used for conveyance of persons or material

167. Where a winding plant which is not used for the raising or lowering of persons or material operates in a shaft or winze where persons are regularly conveyed, no winding rope shall be used on such winding plant if the breaking force at any point in the rope is less than the minimum permitted for a similar winding system by sections 165 and 166, as the case may be.

Balance ropes and tail ropes: minimum breaking force

168. No balance rope or tail rope shall be used in any winding system in a shaft or winze where persons are regularly conveyed if the breaking force at any point in such rope is less than—

- (a) six times the effective force exerted by the combined mass of the rope and nought comma five times the mass of the tail carriage, if any; or
- (b) nought comma nine times the initial breaking force of the rope, whichever is the greater.

Circumstances in which ropes shall not be used

169. (1) No winding rope, balance rope or tail rope shall be used—

- (a) when its breaking force determined by a test carried out in terms of section 160 is less than nought comma nine times its breaking force when new; or
- (b) when marked external corrosion appears; or
- (c) when the extent of internal corrosion indicates that the rope is no longer in a safe condition; or
- (d) when a detailed examination of cleaned portions of the rope indicates that the rope is no longer in a safe condition.

(2) No winding rope shall be used for a period exceeding two years except with the written permission of the Chief Government Mining Engineer.

Guide ropes: minimum breaking force, examination and testing

170. (1) A guide shall not be used in a shaft or winze where persons are regularly conveyed if the breaking force at any point in the rope is less than six times the force exerted by the effective combined mass of the rope and its tensioning mass.

(2) Subsection (1) shall not apply to any guide rope which is also used as winding rope to raise or lower a stage, in which case the breaking force at any point in the rope shall not be less than five times the force exerted by the effective combined mass of the length of winding rope between the headgear sheave and the lowest working point of the stage and its share of the combined mass of the stage and attachments, the maximum permitted mass of persons and material.

(3) A guide rope shall be of approved construction with a minimum diameter of sixteen millimetres. Discarded winding rope shall not be used as guide rope.

(4) All guide ropes shall be examined once a week and the results of such examination shall be recorded in ink in a Rope Record Book provided for the purpose by the manager and the record shall be signed by the person who conducted the examination.

(5) All guide ropes shall be recapped at intervals not exceeding once a year so as to shift the positions liable to maximum wear. At intervals not exceeding two years a portion of each guide rope of at least three metres in length shall be cut off immediately above its bottom attachment. Such cut off specimen shall be sent by the manager, without delay, for a test to an approved testing station where its actual breaking force and general condition shall be determined at the expense of the owner.

(6) If the specimen of the rope received at the testing station is in a condition not admitting of a satisfactory test for the purpose of subsection (5), a fresh specimen shall be sent by the manager.

(7) On completion of the test required by subsection (5) the testing station shall send the manager a certificate showing the results of such test and shall send a copy of the certificate to the chief Government Mining Engineer.

(8) Except in sinking shafts or winzes tensioning of guide ropes shall be carried out by means of fixed weights freely suspended from the lowest point of each guide rope or by some other suitable tensioning device authorized by the Chief Government Mining Engineer. The minimum tension on each guide rope shall be ten kilograms per metre length.

(9) Where—

(a) guide ropes are limited to two in each hoisting compartment there shall be a difference of twenty *per centum* in the mass of each fixed weight;

(b) more than two guide ropes are used in each hoisting compartment the tensioning weights suspended from each guide rope shall vary from a minimum of ten *per centum* above to ten *per centum* below the average mass of each weight.

(10) Where guide ropes are installed in a shaft where hoisting takes place in more than one compartment an inspector may require rubbing ropes to be installed to such specifications as he may direct should he consider there to be a danger of collision between conveyance in each compartment:

Provided that the Chief Government Mining Engineer may grant exemption in writing from any of the provisions of this section under such conditions and for such periods as he may deem fit.

Suspension gear and attachments

171. (1) This section shall apply to every winding plant in a shaft or winze in which persons are regularly conveyed.

(2) The suspension gear and attachments between the rope and the conveyance and between the conveyance and the balance rope shall—

(a) be of good quality, sound manufacture and free from patent defect; and

(b) have a designed static factor of safety of not less than ten in respect of the load suspended from the rope; and

(c) be such that no accidental disconnexion can take place; and

(d) in cases where more than one rope is used, shall be designed to provide, as far as is practicable, for the equal sharing of the load between the ropes from which a conveyance is suspended.

(3) At intervals of not more than twelve months the suspension gear and attachments referred to in subsection (2) shall be dismantled, cleaned and examined carefully for any weakness or defect by the competent person appointed in terms of section 172 and, where it is necessary to do so in order to relieve stress and to restore the designed physical properties of the material, shall be annealed or subjected to other suitable heat treatment or discarded and replaced.

(4) A record of all examinations and tests carried out in terms of this section and details of any heat treatment or replacement of the suspension gear or attachments, shall be entered in ink in the Rope Record Book.

Maintenance and examination of winding plant

172. (1) Each winding plant used in a shaft or winze where regular winding is carried out shall be properly maintained in a proper working order and the manager shall appoint in writing some competent person or persons whose duty it shall be to examine carefully and, except as otherwise provided in paragraph (d), to record his findings in ink in a book, to be termed the Machinery Record Book, provided for the purpose by the manager—

(a) at least once in each working day, the winding rope attachments to the drums and the conveyances, the brakes and depth indicators, the conveyances, and safety devices and all external parts of the winding equipment upon the proper working of which the safety of persons depends; and

(b) at least once in each week at intervals not exceeding ten days, the guides or rails and the winding compartments generally; and

(c) at least once in each week at intervals not exceeding ten days, the external parts of the winding engine and the condition and operation of all controls and all safety devices and circuits, the hoisting ropes, balance

ropes, tail ropes, guide ropes, stage ropes and the signalling arrangements, head frame fittings, sheave wheels and all ancillary equipment for loading and unloading of conveyances;

- (d) at least once in each calendar month at intervals not exceeding forty-five days in respect of the structure of the hoisting ropes, balance ropes, tail ropes, rubbing ropes, guide ropes and stage ropes with a view to ascertaining the amount of deterioration thereof; for the purpose of this examination, the rope shall be thoroughly cleaned at places selected by the person carrying out the examination who shall note and record in ink in the Rope Record Book any reduction in the diameter or circumference of the rope; the superficial condition of the wires as to wear, corrosion, fractures and brittleness and all other data for ascertaining the amount, extent and distribution of the deterioration of the rope.

(2) Notwithstanding subsection (1), where the winding system is to be shut down for a prolonged period, the examinations and tests required by that subsection may be waived, in which event the plant may not be put back into service until one each of such examinations and tests as would otherwise have been required within the period of shutdown has been carried out.

(3) If, during any examination required by this section, there is discovered any defect by which the safety of persons may be endangered, such defect shall be recorded in ink in the Driver's Log Book immediately and reported to the responsible person in charge and, until such weakness or defect has been remedied, the winding plant shall not be used.

Books open to inspection

173. The Machinery and Rope Record Books and the Driver's Log Book shall at all times be open to inspection by an inspector.

C. TRAMMING

Riding on trucks, et cetera

174. No person shall do, or cause or permit any other to do any one or more of the following in or about a mine—

- (a) ride in or on a vehicle or drive a vehicle in such a position as to endanger himself or any other person;
- (b) ride in or on a vehicle or loaded truck unless authorized in writing to do so by the manager or an official;
- (c) get on to or off a vehicle while it is in motion, except during shunting operations on the surface in which he is directly employed;
- (d) ride on a haulage rope;
- (e) drive or operate a vehicle unless he is competent to do so and has been authorized in writing by the manager or an official in terms of section 176;
- (f) wilfully damage or interfere with or order any other person to damage or interfere with any vehicle or part thereof;
- (g) neglect to inspect or maintain any vehicle which he is required to inspect or maintain in terms of these regulations.

Safety devices for trucks or cars

175. (1) On every inclined track excluding tracks in shafts where trucks or cars are attached to a rope or chain adequate safety devices shall be provided and maintained in good order to prevent danger from such trucks or cars in the event of a runaway.

(2) On any inclined plane or portion of an inclined plane exceeding a gradient of 1 in 50 where vehicles are used there shall be provided and used on the vehicle or on the inclined plane an adequate number of effective devices to prevent such vehicle endangering the safety of persons should the vehicle run out of control.

(3) As far as practicable every device provided in terms of subsection (2) shall be of a type to operate automatically.

(4) Where a device provided in terms of subsection (2) is hand operated, any person operating it shall be properly instructed in its operation and shall be afforded adequate protection from any moving truck or car.

(5) Daily inspections of all safety devices shall be undertaken by a person appointed by the manager or an official.

Appointment of drivers of locomotives and self-propelled vehicles

176. (1) No person shall drive or be permitted to drive any locomotive or any other self-propelled vehicle unless he has been authorized in writing to do so by the manager or an official.

(2) The manager or official shall satisfy himself that all persons authorized in terms of subsection (1)—

- (a) are competent to carry out the duties assigned to them;
- (b) have adequate sight and hearing to drive such locomotives or self-propelled vehicles and do not suffer from any infirmity, mental or physical or are under medication or treatment which is likely to interfere with the efficient discharge of their duties.

(3) All persons authorized to drive any locomotive or any other self-propelled vehicle in terms of subsection (1) shall undergo a medical examination by a registered medical practitioner at intervals not exceeding twelve months and the result of each such examination shall be available to an inspector. The medical examination shall be conducted to comply with paragraph (b) of subsection (2).

Moving vehicles down inclines by hand and devices for holding vehicles

177. (1) No person when moving a vehicle by hand down a gradient exceeding 1 : 12, shall precede the vehicle.

(2) No person shall move any vehicle by hand down an incline in circumstances in which he cannot by his own strength control the vehicle from behind unless there is provided such a contrivance as to enable him to control it from behind.

(3) A sufficient supply of a suitable sprags, lockers or drags shall be provided, maintained and used for the purpose of holding vehicles—

- (a) at the top of every incline on which vehicles are moved by gravity operated rope haulage apparatus; and
- (b) at every place at which vehicles are coupled or uncoupled from the haulage apparatus.

Clearances and refuge holes in haulageways

178. (1) In any haulageway in which mechanical rope haulage or locomotive haulage operates and in which persons travel on foot, a continuous unobstructed travellingway shall be maintained with a clearance of at least five hundred millimetres between the side of every moving vehicle and the sidewall or, where the travellingway lies between a double line of tracks, between the sides of any two vehicles passing each other on the respective tracks.

(2) Where the clearance prescribed in subsection (1) is reduced or in any haulageway in which self-propelled vehicles which do not run on a track or rails operate and along which any person may have to pass when the vehicle is in motion, suitable refuge holes of adequate size shall be provided at intervals not exceeding thirty metres.

(3) The clearance and refuge holes required by this section shall be kept clean and free from any obstruction.

Vehicles attached to ropes

179. (1) On any haulageway where vehicles which run on rails are attached to a rope operated by a winch or haulage engine there shall be provided, used and maintained in good working order effective signalling arrangements whereby distinct signals can be given to the driver from all places where vehicles are attached to or detached from the rope and from any other places along the haulageway where the giving of signals is necessary for the safe and efficient conduct of tramming operations.

(2) No vehicle shall be placed or moved into a position from which it may run out of control unless it is securely attached to the winch rope or haulage rope or is held in position by a stop block or other adequate device for the prevention of a runaway.

(3) The Manager or an official shall satisfy himself by daily written reports by the operator in charge of the haulageway that the signalling arrangements and other safety devices referred to in this section are in good working order.

Shaft protection

180. (1) Where a haulage track leads to a shaft or winze on surface or underground, there shall be provided and installed a suitable arresting device, sufficiently strong to withstand any impact by collision with a truck, car, vehicle or train.

(2) Every person opening the arresting device shall close it immediately after the car, vehicle, train or truck has cleared the arresting device.

(3) An inspector may order a derailing switch to be installed.

Lights and warning devices for locomotives and trains

181. (1) Every moving train of vehicles operated by a locomotive or any other power-driven vehicle, and every moving locomotive or other power-driven vehicle unattached to trucks or other conveyances, shall be provided with a white headlight shining in the direction of travel, a whistle, bell, horn or other audible warning device, and a red light:

Provided that, where the train of vehicles or unattached vehicle is operated underground, the red light may be replaced by an effective red reflector or red reflective strip.

(2) The headlight referred to in subsection (1) shall—

(a) be capable of illuminating the way ahead for a distance of at least thirty metres; and

(b) be affixed to the front of the front vehicle in the train of vehicles, whether or not it is the vehicle operating the train, or to the front of the unattached vehicle, as the case may be.

(3) The red light, red reflector or red reflective strip referred to in subsection (1) shall be affixed to the rear of the last vehicle in the train of vehicles, whether or not it is the vehicle operating the train, or to the rear of the unattached vehicle, as the case may be, in such a manner as to be clearly visible.

(4) The lights, red reflector or red reflective strip referred to in subsection (1) shall be used—

(a) whenever the train of vehicles or unattached vehicle concerned is operating underground; and

(b) on surface between the hours of sunset and sunrise.

(5) The manager of a mine shall ensure that adequate safety precautions are taken to warn persons who may have to work or travel by foot in any haulageway which is used by any mobile operated vehicle, locomotive or train.

Duties of driver of vehicle

182. It shall be the duty of the driver in charge of any self-propelled vehicle to ensure that—

(a) the brakes are in good working order and that the vehicle is not moved if the brakes are not in good working order; and

(b) the warning signals and lights are in good working order and affixed and, if they are not in good working order or are not affixed, that such vehicle is not moved except to the nearest place where repairs can be effected; and

(c) all attachment devices are in good working order and effective.

Vehicles not to be left unattended

183. The driver of any self-propelled vehicle shall not leave the vehicle unattended, other than at the place where it is normally kept when not in use, unless he has taken reasonable precautions to ensure it cannot inadvertently be set in motion.

Scheme for testing of vehicles to be instituted

184. (1) The manager of a mine shall ensure that there is in force at the mine a scheme for the systematic inspection, examination and testing of all self-propelled vehicles in use which is sufficient to ensure that the external parts of the engine or motor, the condition and operation of all controls, safety devices and signal arrangements are in all respects in proper working order.

(2) The results of an inspection, examination or test carried out in terms of subsection (1) shall be recorded in ink in a book provided by the manager for the purpose.

(3) The book referred to in subsection (2) shall at all times be open to inspection by an inspector.

PART IX
MACHINERY
A. GENERAL

Interpretation in this Part

185. (1) In this Part—

"elevator" means any lift, hoist or other appliance used or intended to be used for the conveyance of persons, material or mineral by means of a car in a hatchway or elevator shaft on guides, where the driving machinery is not normally operated manually from the motor room;

"elevator shaft" means any vertical or inclined way known as a hatchway in which a car, elevator or lift is operated;

"lifting machine" means any crane, excavator, drag-line, winch pulley, windlass, block, chain block, fork-lift or similar equipment for raising or lowering;

"lifting tackle" means any chain sling, rope sling, ring, link hook, shackle, swivel, eye bolt, spreader, shear legs, derrick or similar appliance.

General requirements for all machinery

186. (1) No machinery shall be used at any mine unless it is of good construction, sound material, adequate strength, free from patent defect and maintained in good condition.

(2) Efficient guards shall be provided to such parts of machinery and electrical apparatus as may be a source of danger to persons.

(3) The manager shall ensure that such guards are kept in position and suitably maintained:

Provided that, when such guards are temporarily removed for the purpose of repairs, proper precaution shall be taken for the safety of persons and, on completion of such repairs the guards shall be securely and immediately replaced.

Surface drilling

187. In surface drilling every person in charge of drills shall be responsible for the proper erection and maintenance where

necessary of proper and well-fenced platforms from which workers can attend to waterswivel, change of tools, drill lengths, casings, *et cetera* and for the provisions of ladders thereto.

Belt-driven machinery

188. (1) Belt-driven machinery which it is necessary to stop and start without interfering with the speed of the prime mover shall be permanently fitted with a satisfactory appliance for the purpose.

(2) Driving belts shall not be shipped or unshipped while the machinery is in motion, save for the customary shifting of light belts on the coned pulleys of machine tools for the purpose of alterations in the working speed.

Loose clothing prohibited near moving machinery

189. (1) No person in charge of or in close proximity to moving machinery shall wear loose outer clothing.

(2) The person in immediate charge of moving machinery or supervising other persons working in the neighbourhood of moving machinery shall not allow any person engaged in close proximity to such machinery to wear loose outer clothing.

Repair, et cetera, of moving machinery

190. The repairing, adjusting, cleaning or lubricating of machinery in motion shall only be undertaken by a competent person and then only when it is impracticable to stop such machinery.

Protection of eyes

191. Suitable goggles or effective screens shall be provided to protect the eyes of persons engaged in the dry grinding of metals, in the electrical or oxy-acetylene welding or cutting of metals and in any other process in which injury to the eyes is likely to occur.

Noise control

192. (1) The manager shall take all reasonable measures to ensure that noise levels at any working place do not exceed ninety decibels 90 dB(A) and where the noise exceeds this level, the manager shall provide approved protective ear equipment to persons working at that place.

(2) Any person who is supplied with protective ear equipment in terms of subsection (1) who fails to wear it at the working place shall be guilty of an offence.

(3) The Chief Government Mining Engineer may stipulate in writing to the manager at which working places approved protective ear equipment shall be worn.

Charge of machinery

193. (1) The manager shall ensure that all machinery shall be in the charge of a competent person.

(2) No person having charge of any machinery which is required to be constantly supervised in the interest of safety shall for any reason whatsoever absent himself or cease to have continuous supervision of such machinery during the time for which he is in charge, unless he is replaced by another competent person.

Maximum hours of work for machine supervisors

194. No person in charge of any machinery which, for the safety of life or limb requires continuous supervision shall be caused or permitted to work for more than ten hours during any continuous period of twenty-four hours:

Provided that this limit when ordered by the manager or other person in authority in cases of emergency or when written permission has been granted by an inspector, may be exceeded. Also provided that during the normal change over of his working shift such person may work, within one twenty-four hour period two shifts of not more than eight hours duration each, which shall be separated by a period of not less than eight hours between the end of the first shift and the start of the second shift.

Safety appliances

195. Every safety appliance at a mine shall be maintained in good working order and properly used.

Machine to be stopped in case of danger and warning before starting a machine

196. (1) The working of every piece of apparatus of any machinery, the using of which appears in any way to have become dangerous, shall immediately be stopped.

(2) No machine shall be started if by so doing any person is likely to be exposed to danger unless adequate warning has been given that such machine is about to be started.

Safety measures during repairs to machinery

197. (1) When any work or repairs are undertaken on any machinery the person in immediate charge of such work or repairs shall ensure that the power supply to such machinery is switched off or disconnected and adequate precautions are taken for the supply to remain switched off or disconnected until the work or repairs have been completed.

(2) No person shall conduct maintenance or repair work, and no person shall cause or permit such work to be done, until all reasonable precautions have been taken to ensure that the work can be done safely.

General requisites for lifting machines

198. No lifting machine or lifting tackle shall be used unless it is—

- (a) of good construction, sound material, adequate strength and free from any patent defect; and
- (b) so used that the safety of persons is not endangered; and
- (c) provided, where practicable, with a brake or other device which automatically prevents the inadvertent downward movement of the load when the raising effort is removed; and
- (d) provided, where practicable, with a limiting device which will cut off automatically the power and apply the brakes when the load reaches its highest safe working position.

Provisions concerning ropes and chains

199. (1) Any rope or chain forming part of a lifting machine shall have a factor of safety, calculated on its static load—

- (a) in the case of a fibre rope, of at least ten;
- (b) in the case of a steel wire rope or a chain, of at least six;

save that when the load is shared equally by two or more ropes or chains, the factor of safety may be calculated on the sum of their breaking forces.

(2) A steel wire rope shall not be used on a lifting machine unless the diameter and construction of such rope are suited to the diameter of the drum, pulley or sheave on which it is used.

Windlasses, et cetera

200. (1) On every windlass—

(a) the winding rope shall have at least four turns around the drum of the windlass when the conveyance is at the lowest point of travel; and

(b) the end of the winding rope shall be securely fastened to the drum or the drum shaft.

(2) Every windlass, crab or winder operated by hand shall be fitted with a proper, crank handle for applying torque:

Provided that, where persons are being raised or lowered thereby, two such crank handles shall be provided and at least one person shall manipulate each handle.

Hooks for lifting

201. Every hook used for lifting of loads shall be so designed and proportioned or shall be provided with a device to ensure that no accidental disconnexion of the load can take place.

Attachment of slings, et cetera

202. No person shall attach and no person shall cause or permit the attachment of any sling, or any rope or chain to any load, lifting machine or lifting tackle unless—

(a) it is so attached that no accidental disconnexion can take place; and

(b) the stability of the load and the lifting machine during lifting or transportation is ensured and maintained.

Suspended load not to be left unattended

203. No load shall be left suspended from any lifting machine which is unattended under conditions which may be a danger to any person.

Precautions against spillage

204. Any container used for the raising or lowering of material, mineral or rocks shall be so designed, maintained and operated as to prevent spillage:

Provided that this section shall not apply to a grab, shovel, or similar equipment if adequate precautions are taken to ensure the safety of persons.

Persons not be raised, et cetera, by lifting machines

205. (1) No person shall be raised or lowered by means of any lifting machine other than a windlass, crab or winder used in accordance with the proviso to subsection (2) of section 200:

Provided that a person may be raised or lowered within the safe limits of a lifting machine solely for the purpose of making a working place safe.

(2) No person shall be transported by means of a lifting machine except on the drivers platform thereof.

B. BOILERS

Regulation of erection and use of boilers

206. (1) No person shall commence to erect any boiler on any mine unless such intended erection has been approved by the Chief Government Mining Engineer.

(2) No boiler shall be operated unless a certificate of permission to do so has been issued by the Chief Government Mining Engineer.

(3) In every certificate of permission issued in terms of subsection (2) the Chief Government Mining Engineer shall specify the authorized working pressure of the boiler.

(4) The Chief Government Mining Engineer may from time to time, if it appears to him to be necessary or desirable to do so, approve in writing a new working pressure for any boiler which shall then be regarded as the authorized working pressure of the boiler.

(5) No boiler shall be used at a pressure exceeding the authorized working pressure.

Safety valves

207. (1) Every boiler shall be provided with one or more properly constructed, installed and reliable safety valves.

(2) The loading of safety valves on a boiler shall be such that at least one will lift when the authorized working pressure in such boiler is exceeded.

(3) The loading of safety valves on a boiler and the aggregate area available for the discharge of steam shall be such as to prevent an accumulation of steam pressure in the boiler greater than ten *per centum* above the authorized working pressure.

(4) Each safety valve shall be attached directly to the boiler without the intervention of a stop valve.

Stop valves and non-return valves

208. (1) Every boiler shall be provided with a main steam stop valve as close as practicable to the point of draw-off from the boiler.

(2) Where more than one boiler is connected to the same steam range a non-return valve, which may be of the screw-down type and combined with the main steam stop valve, shall be placed between each boiler and the range.

Pressure gauges

209. (1) Every boiler shall be provided with one or more reliable pressure gauges which shall be—

(a) designed to show the correct internal pressure of the boiler; and

(b) so calibrated as to have a range greater than the authorized working pressure of the boiler by not less than twenty *per centum* and not more than one hundred *per centum*; and

(c) so installed that any gauge may be changed while the boiler is in service.

(2) The authorized working pressure of the boiler shall be marked with a red line on the dial of every pressure gauge.

Water Supply

210. (1) Every boiler shall be provided with two or more reliable and independent means of feed water supply, each of which shall be capable of amply supplying the feed requirements of the boiler under all operating conditions and one of which shall be either a power pump or an injector:

Provided that one reliable means of feed water supply shall suffice for—

(a) any boiler having a total internal capacity of one hundred litres or less; or

(b) any oil, gas or electrically heated boiler where means are provided for automatically isolating the source of heat in the event of deficiency of water.

(2) The feeding apparatuses required by subsection (1) shall be independent of each other except that, when a separate feed discharge stop valve is fitted to each pump or injector, one feed delivery pipe shall be considered to be sufficient.

(3) Where the feed delivery pipe enters a boiler, such pipe shall be provided with a self-acting non-return valve and a stop-valve, the stop-valve to be fitted between the non-return valve and the boiler:

Provided that the two valves may have a common body.

(4) For the purposes of this section, two or more boilers combined for joint working shall be regarded as one boiler.

Water level indicators

211. (1) Every boiler shall be provided with two or more reliable water level indicators, one of which shall be a glass water level gauge with proper blow-through cocks or valves:

Provided that one glass water level shall be sufficient for a boiler with a total internal capacity of one hundred litres or less.

(2) For stationary boilers the lowest working water level shall be at least seventy five millimetres above the highest parts of the fire passing round or through the boiler.

(3) Every boiler shall be provided with fusible plugs and an automatic device to give warning should the level of the water in the boiler become dangerously low.

Blow-down valves

212. (1) Every boiler shall be provided with at least one blow-down valve placed at the lowest point and connected, either directly by flange or by means of a flanged pipe, and where such flanges are not integral with the pipe or valve, they shall not be fastened by means of screw threads alone.

(2) The discharge from every blow-down valve shall be conducted, by means of a blow-down pipe which shall be graded so that the discharge will flow freely thereto, into an open or suitably vented tank, drain or sump which is so situated and guarded as to prevent danger to any person.

(3) Every boiler shall be blown down continuously or with sufficient frequency so as to ensure that no dangerous amount of sludge or dissolved salts is allowed to accumulate.

General safety provisions for boilers

213. (1) Every boiler shall be properly and adequately equipped with all other necessary fittings and auxiliaries or suitable material to ensure safe operations.

(2) A high grade of metal piping shall be used for conveying steam and for all the boiler fittings connected therewith and cast iron pipes or fittings shall not be used.

(3) Every boiler safety valve, pressure gauge, water gauge, fittings and auxiliaries shall be inspected and maintained in proper working order to ensure their safety.

Attachment for pressure test

214. (1) Every boiler shall be provided with a suitable attachment to enable an inspector to affix a pressure gauge for the purpose of carrying out pressure tests.

(2) The attachment referred to in subsection (1) shall be so placed as to enable the inspector's test gauge and the boiler's pressure gauge to be read from one place.

Periodical examination by inspector

215. Every boiler in service or on standby for emergency generation shall, at intervals not exceeding two years, be thoroughly examined internally and externally as far as is practicable, by an

inspector and before being put back into service shall be hydraulically tested in the presence of and to the satisfaction of such inspector:

Provided that in certain circumstances the above examination may be conducted by a competent person with the approval of an inspector and the result of the examination and test shall be recorded in ink in a book provided by the manager in terms of section 218.

Hydraulic testing

216. (1) Any boiler having an authorized working pressure of less than five hundred kilopascals shall be hydraulically tested to double such pressure.

(2) Any boiler having an authorized working pressure of five hundred kilopascals or more shall be hydraulically tested to not more than one comma two times such pressure plus four hundred kilopascals.

(3) No masonry or casing of any boiler may be replaced before the prescribed examination and test by hydraulic pressure has been carried out except with the permission of an inspector.

Precautions during entry to one of battery of boilers

217. When any boiler of a battery or boilers is entered for cleaning, repairing, examination or any other purpose the person in charge shall ensure that it is safe to do so and that all valves are closed and locked or securely lashed during the period that such work is being carried on.

Boiler Record Book

218. (1) A Boiler Record Book provided for the purpose by the manager shall be kept of the working of each separate boiler used for generating steam on a mine in which shall be entered in ink the date on which the boiler is cleaned or examined and the condition of the boiler at such examination and a full report of any alterations or repairs to the boiler. The results of any hydraulic test shall also be recorded in ink.

(2) Each entry in the Boiler Record Book shall be initialled by the manager or some duly qualified person appointed by him.

C. COMPRESSORS AND PRESSURE VESSELS

Construction and maintenance of pressure vessels

219. Every air receiver, cylinder or other pressure vessel shall be—

- (a) constructed to the approval and satisfaction of the Chief Government Mining Engineer; and
- (b) kept clean and free from—
 - (i) carbonized oil or other inflammable material which may ignite under working conditions; and
 - (ii) material which may cause corrosion; and
 - (iii) materials which is liable to chemical reaction which may cause an uncontrolled rise in pressure; and
- (c) maintained in safe working condition at all times.

Information to be marked on pressure vessels

220. (1) Every pressure vessel shall have marked upon it so as to be clearly visible the year of manufacture and the serial number, if known, and the authorized working pressure.
- (2) The authorized working pressure of a pressure vessel shall be the designed safe working pressure or such other pressure as may be fixed from time to time by an inspector.

Examination and test of pressure vessels

221. (1) Every pressure vessel shall be—
- (a) so far as is practicable, provided with a suitable man-hole, handhold or other means which will allow the interior to be thoroughly cleaned and inspected;
 - (b) at intervals not exceeding six months, examined internally by a competent person appointed by the manager who shall ensure compliance with paragraph (b) of section 219.

Provided that, if it is so constructed that the internal surfaces cannot be thoroughly examined, a pressure vessel shall instead be tested by hydraulic pressure to the satisfaction of an inspector to a pressure, one comma five times the authorized working pressure;

- (c) at intervals not exceeding two years, tested by hydraulic pressure to the satisfaction of an inspector to a pressure one comma five times the authorized working pressure.

(2) The results of any examination or test required by subsection (1) shall be suitably recorded in ink and the record signed by the competent person carrying out such cleaning, examination, repair and tests.

Air compressors

222. (1) The supply of air for air compressors shall be drawn from the purest and coolest source available.

(2) Every air compressor in which compression takes place in the presence of lubricating oil shall, where possible, be filled with a fusible plug as close as practicable to the outlet valve or discharge port of every stage.

(3) Every air compressor having a rating exceeding one comma five cubic metres of free air per second shall be fitted with a thermometer or pyrometer as close as practicable to the outlet valve or discharge port of every stage and the maximum design temperature shall be indicated by a red mark on the scale of each thermometer or pyrometer.

Pressure gauges

223. (1) All cylinders, receivers or other vessels which are subjected to a higher pressure than atmosphere, other than working cylinders or chambers of heat engine, air engines or portable gas cylinders, shall be fitted with a reliable pressure gauge at all times showing the internal pressure.

(2) The dial of every pressure gauge shall be so calibrated as to have a range greater than the authorized working pressure of such pressure vessel by not less than twenty *per centum* and not more than one hundred *per centum*.

Safety and other valves

224. (1) Every pressure vessel shall have at least one reliable safety valve which shall be so loaded that it will lift when the authorized working pressure is exceeded and the area available for discharge of gas shall be such as to prevent accumulation of pressure greater than ten *per centum* above the authorized working pressure.

(2) Adequate precautions shall be taken to ensure that the load setting of every safety valve on a pressure vessel cannot be altered by any unauthorized person.

(3) When a safety valve on a pressure vessel is directly loaded by springs, the compression nuts shall abut against metal stops or washers at the working load compression or be positively locked in position.

(4) No stop valve on a pressure vessel shall be placed between any safety valve and any receiver which it serves.

(5) When a safety valve on a pressure vessel is loaded by a weight or spring acting on a lever, the load shall act only at the extreme end of such lever.

(6) Every safety valve on a pressure vessel shall be so constructed that it shall be free to rotate on its seat.

(7) Every air compressor, except one which discharges into an air receiver and cannot be closed off therefrom, shall be provided with a pressure relief valve or other automatic device capable of preventing an accumulation of pressure greater than—

(a) the pressure for which such air compressor was designed; or

(b) ten per centum above the pressure for which the system into which the air compressor discharges was designed; whichever is the lesser.

Drain for liquid

225. Every pressure vessel in which liquid may collect shall be provided with a suitable drain at the lowest part of the vessel the discharge from which shall be controlled by a cock or valve and shall be led to a safe place.

D. ELEVATORS

Use of elevator to be authorized by Chief Government Mining Engineer

226. (1) No elevator installation shall be used until such use has been approved by the Chief Government Mining Engineer,

(2) In approving the use of an elevator installation, the Chief Government Mining Engineer shall specify the maximum working load of the installation and he may from time to time fix a new maximum working load.

(3) The maximum working load of an elevator installation shall not be exceeded.

Requisites for elevators

227. Every elevator installation and every part thereof shall be of good construction, suitable material, adequate strength, free from patent defect and shall be properly maintained.

Periodical inspection and Elevator Record Book

228. (1) A competent person appointed by the manager shall examine carefully—

(a) at least once in each week at intervals not exceeding ten days, the motor or engine, elevator shaft, guides and drums, ropes and connexions, sheaves and all safety appliances of each elevator; and

(b) at least once in each month at intervals not exceeding forty-five days, the entire elevator installation and all fittings in connexion therewith.

(2) The competent person appointed in terms of subsection (1) shall make a report on the result of any test, examination, repairs or inspection carried out on an elevator which shall, as soon as as is practicable, be entered in ink in a book to be termed the Elevator Record Book which shall be provided by the manager and kept in a suitable place.

(3) Each entry in the Elevator Record Book shall be signed in ink by the competent person responsible for the entry.

(4) The Elevator Record Book shall at all times be available for inspection by an inspector.

Protection of elevator shafts

229. Every elevator shaft shall be effectively protected by gates so as to prevent when such gates are closed, any person falling down such elevator shaft or coming into contact with any moving part in such elevator shaft.

Prevention of overruns

230. In every elevator installation efficient automatic devices shall be provided and maintained which shall ensure that the platform or conveyance does not overrun the highest or lowest point to which it is for the time being constructed to travel.

Protection against failure of ropes, et cetera

231. In every elevator installation efficient devices shall be provided and maintained which will support the conveyance, together with its maximum working load, in the event of failure of the ropes or any other part of such installation.

Requisites for conveyance carrying persons

232. Every elevator installation used for carrying persons shall be provided with a conveyance which is so constructed as to prevent any person carried from falling out or being trapped between any part of such conveyance and any fixed structure or other moving part of such elevator or being struck by articles or materials falling down the elevator shaft.

Ropes

233. (1) No rope shall be used for supporting an elevator conveyance or counterpoise unless it is of good quality and manufacture and of adequate strength and free from any defect.

(2) Any rope referred to in subsection (1) shall be made of wire and the diameter of the wires used in the construction thereof shall be suited to the diameter of the sheaves and drum.

(3) No rope shall be used for supporting an elevator conveyance or counterpoise when the breaking force at any point therein has become reduced to less than five times the maximum working load, the supporting effect of the other rope, if any, being ignored:

Provided that, in the case of any elevator in which the conveyance or counterpoise is suspended by more than two ropes fitted with appliances for equally distributing the load, a minimum factor of safety of ten on the aggregate strength of all the ropes shall be sufficient, as long as no single rope has a factor of safety lower than three, with respect to the maximum working load.

(4) In the case of any elevator where no part of the rope is rigidly fixed to the drum, the construction shall be such that there shall be no dangerous slipping of the ropes on the drum under any possible working condition, the safety of the apparatus to be judged by an inspector.

(5) When the lifting and counterpoise ropes are rigidly fixed to the drum, there shall be at least three full turns of rope on the drum when they run the limit.

Brakes

234. In every elevator installation, the drum, engine or motor shall be provided with an adequate brake which shall be kept in proper working order.

Clear spaces at top and bottom of elevator shaft

235. A clear space of not less than one metre shall be provided—

- (a) between the bottom of the elevator shaft or any equipment at the bottom of the elevator shaft and the lowest point of the underside of the elevator car when the car is at its lowest landing; and
- (b) between the top of the elevator car and the underside of the overhead grating or floor when the car is at its top landing; and
- (c) between the top of the counterpoise and the underside of the sheave or beams when the elevator car is at its lowest landing:

Provided that, in the case of elevators which run at a speed greater than one hundred metres per minute, the clear space at the top or bottom shall not be less than one comma five metres.

Elevator not to be used during repairs in elevator shaft

236. No elevator shall be used whilst repairs are being effected in the elevator shaft.

PART X

ELECTRICAL APPARATUS, WIRING AND LIGHTING

Interpretation in this Part

237. (1) In this Part—

“circuit” means an electrical circuit forming a system or branch of a system;

“conductor” means an electrical conductor so arranged as to be electrically connected to a system;

“covered with insulating material” means adequately covered with insulating material of such quality and thickness that there is no likelihood of leakage;

- "competent person", in relation to any duty or function, means a person who has had adequate training and experience to enable him to perform that duty or discharge that function without avoidable danger to himself or any other person;
- "danger" means danger to health, life or limb through shock, burn or other injury to the person or from fire attendant upon the generation, transformation, distribution or use of electrical energy;
- "dead" means at or about zero potential and disconnected from any live system;
- "earthed" means connected to the general mass of earth in such manner as will ensure at all times an immediate discharge of electrical energy without danger;
- "electrical apparatus" includes all electrical cables and conductors and any part of any machinery, apparatus or appliance in which conductors are used or of which they form a part;
- "earth leakage protection" means protection based on the principle of sensing current flowing from the live parts of an installation to earth. The sensitivity and time response characteristics of the protection shall be consistent with the object of minimising danger;
- "flexible cable" means any cable which is designed to be movable while in use and has its conductors stranded to conform with accepted practice for such cable;
- "live" means electrically charged;
- "metallic covering", in relation to any electrical cable or conductor, means any metallic covering, armouring, sheath or pipe through which any conductor passes;
- "portable apparatus" means any electrically-operated apparatus which is designed to be held in the hands while being operated;
- "qualified electrician" means a person who either holds a recognized certificate of competency as an electrician issued by a registered industrial council or has served a recognized apprenticeship;

- "substation" means a building or designated area containing electrical apparatus for the control of an electrical power system or circuit;
- "system" means an electrical system in which all the conductors and apparatus are electrically connected to a common source of electromotive force;
- "transportable apparatus" means any electrically-operated apparatus which is capable of being moved, whilst working from place to place under its own power or by means of any other mechanical power;
- "voltage" means the difference of electrical potential between any two live conductors or, if there be only one live conductor, between that conductor and earth;
- "extra-low-voltage" means a voltage normally not exceeding thirty volts root-mean-square alternating current or fifty volts direct current;
- "low voltage" means a voltage normally exceeding extra-low voltage, but not exceeding two hundred and fifty volts;
- "medium voltage" means a voltage normally exceeding two hundred and fifty volts, but not exceeding six hundred and fifty volts;
- "high voltage" means a voltage normally exceeding six hundred and fifty volts.

(2) In this Part any reference to a specific voltage shall be construed as including a reference to any voltage falling within a permissible variation therefrom prescribed by the Standard Association of Zimbabwe Safety Code CCI of 1964.

Application of Standard Association of Zimbabwe Safety Code for Electrical Wiring of Premises

238. (1) Without derogation from the provisions of this Part, the installation of any electrical cable switchgear, transformer and electrical apparatus of any kind at any mine shall generally conform to the Standard Association of Zimbabwe Safety Code for the Electrical Wiring of Premises S.A.Z.S. No. CCI of 1964, where it is applicable.

(2) In the event of any inconsistency in the provisions of these regulations and the code referred to in subsection (1) the provisions of these regulations shall prevail.

General provisions regarding electrical apparatus

239. (1) All electrical apparatus and conductors shall be—

- (a) of suitable design and of sufficient rating or capacity to avoid dangerous overloading; and
- (b) so installed, worked and protected as to prevent any danger arising out of normal use; and
- (c) properly maintained in a safe condition.

(2) All distribution systems operating at a voltage exceeding low voltage shall be adequately equipped with main switches which shall have over-current protection and earth leakage protection.

(3) Except in offices and domestic premises, low-voltage circuits or sub-circuits installed for supplying electric power by means of flexible cables to portable or transportable apparatus shall be provided with suitable and effective earth leakage protection.

(4) each individual item of transportable apparatus operating at a voltage exceeding low voltage which uses flexible cables shall be provided with suitable and effective earth leakage protection.

(5) Electrical apparatus shall be kept clear of obstruction and, unless specifically constructed for operation under wet or dirty conditions, shall be kept dry and clean.

Diagrams of general electrical arrangement on mine

240. At any mine at which there is installed electrical apparatus operating at a voltage in excess of medium voltage there shall be kept at the surface of the mine plans or distribution diagrams showing the general electrical arrangement for all such apparatus as far as reasonably possible.

Cutting-off at surface of supply to apparatus underground

241. (1) There shall be provided at the surface at very mine in which there is installed below ground electrical apparatus, other than telephone and signalling apparatus, suitable switchgear for cutting off the supply of electricity to such apparatus.

(2) Efficient arrangements shall be maintained whereby a competent person is in attendance at the mine or readily available on call for the purpose of operating such switchgear whenever any cable below ground is live and any person is at work below ground.

(3) An effective means of communication shall be provided between the place at which such switchgear is situated and—

- (a) each established shaft main station; and
- (b) a place at or near each main substation immediately controlled by such switchgear.

Cutting-off of supply to circuits, motors, et cetera

242. (1) There shall be provided, in relation to every electrical circuit at every mine, whether at the surface or below ground, such effective means suitably placed for cutting off supply of electricity to that circuit as may be necessary to prevent danger and, without prejudice to the generality of the foregoing such means shall be provided for cutting off supply to any flexible cable at the apparatus by which such flexible cable is connected to a fixed cable.

(2) There shall be provided, in relation to every electrical circuit at every mine, whether at the surface or below ground, such effective means of cutting off automatically the supply of electricity to such circuit in the event of any fault or overload occurring in any part of such circuit as may be necessary to prevent danger.

(3) There shall be provided such effective means of preventing the automatic making live of any electrical circuit or electric apparatus as may be necessary to prevent danger; this shall not preclude the use of autoreclosers on overhead lines.

(4) There shall be provided, in relation to every electric motor at every mine, switchgear which will enable the supply of electricity to be entirely cut off from the motor, such switchgear being placed so that it may be readily operated by the person operating the motor and, wherever the motor is remotely controlled and the switchgear cannot be locked in the "OFF" position, an additional isolater shall be provided which shall be mounted on or adjacent to the motor.

(5) Where a standby generating plant is installed to provide a source of electric power as an alternative to the normal source of supply, a change over switch of the design approved by an inspector or other arrangement approved by an inspector or the electricity supply authority, shall be installed which shall render it impossible for the standby plant to become electrically interconnected with the normal source of supply.

Restrictions on voltages

243. (1) Electricity at a voltage exceeding medium voltage shall not be applied to—

(a) any transportable apparatus:

Provided that higher voltages may be applied to such apparatus with the prior approval in writing of the Chief Government Mining Engineer; or

(b) any motor rated at less than fifteen kilowatts; or

(c) the rotating parts of any apparatus:

Provided that the provisions of paragraphs (b) and (c) shall not apply to slip ring motors or armatures of direct current generators and motors or any other apparatus where the prior approval in writing has been obtained from the Chief Government Mining Engineer.

(2) Electricity at a voltage exceeding low voltage shall not be applied to any portable apparatus.

Inspection, examination and testing of electrical apparatus

244. The manager shall ensure that there is in force a scheme for the systematic inspection, examination and testing of all electrical apparatus in order to ensure as far as is practicable the safety of persons.

Maintenance and protection of electrical apparatus

245. (1) All electrical apparatus shall be so installed as to minimize the danger of fire arising therefrom and shall be kept dry.

(2) No inflammable or explosive material shall be stored in any room or compartment containing operating electrical apparatus or in dangerous proximity to any such electrical apparatus.

(3) Every electricity-generating plant and all main sub-station transforming and switching equipment shall be adequately fenced off or enclosed and notices prohibiting unauthorized persons from entering shall be placed at all designed places of ingress and, when such plant or equipment is unattended by an authorized person all designed places of ingress shall be kept closed and locked to prevent unauthorized access.

Access to electrical apparatus

246. (1) All parts of electrical apparatus that require attention and all handles for the operation of electrical apparatus shall be so placed that there is free means of access thereto and adequate working space thereat.

(2) All handles referred to in subsection (1) shall be kept free of obstruction and be conveniently placed for operation.

(3) Wherever it is necessary to prevent danger, electrical apparatus shall be identified by a suitably placed label at the point of control.

Prohibition of damage to or interference with electrical apparatus

247. (1) Every person doing any work which may result in such damage to any electrical apparatus that the apparatus might be a source of danger to persons employed thereat shall take adequate precautions to protect it from such damage.

(2) No person on a mine shall wilfully damage any electrical apparatus or, without proper authority, operate, interfere with, remove or render useless any electrical apparatus but in an emergency any person may operate electrical apparatus in order to cut off the supply.

Insulation

248. (1) All material used in any mine for the purpose of insulating any conductor shall be suitable, having regard to—

(a) the degree of installation and mechanical strength required; and

(b) the conditions of temperature and moisture to which it is likely to be subjected; and

(c) any means provided for its protection.

(2) Every conductor forming part of any electrical system shall be kept efficiently insulated from earth:

Provided that—

(i) in the case of any system with polyphase supply, all neutral points in that supply shall be connected to an earth continuity system which shall be earthed at the surface of the mine; and

(ii) in the case of any system with singled phase or direct current supply the mid-voltage point or one pole in that supply shall be connected to an earth continuity systems which shall be earthed at the surface of the mine.

(3) In relation to every electrical system efficient means shall be provided to ensure that, as far as is practicable, wherever any dangerous defect arises in the insulation of the system the supply of electricity to the fault is automatically cut off.

Earthing

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

- (a) every metallic covering of any cable; and
- (b) the outer conductor of every concentric cable; and
- (c) every metallic of any covering or container of or mounting for any other electrical apparatus; and
- (d) every metallic handle for the operation of any electrical apparatus;

Provided that this subsection shall not apply to any electrical apparatus having approved double insulations.

(2) Any earthing conductor installed for the purpose of subsection (1) shall have a conductivity throughout, including any joint, not less than nought comma five that of the conductor or having the greatest current carrying capacity in relation to which it is provided, save, that the equivalent copper cross-section area shall however not be less than two comma five square millimetres and need not exceed seventy square millimetres.

(3) Subject to compliance with the provisions of subsections (1) and (2) and to the provisions of sections 250, the metallic covering of any cable may be used as an additional earthing conductor.

(4) No switch, fuse or circuit breaker shall be placed in any earthing conductor:

Provided that this subsection shall not preclude the use of an isolator in the neutral earthing connexions of alternators or transformers.

Cables

250. (1) This section shall apply to all electric cables at a mine, other than—

- (a) flexible cables for portable and transportable apparatus; and
- (b) telephone and signalling cables; and
- (c) blasting cables; and
- (d) at the surface, other cables so placed or otherwise safeguarded as to prevent danger.

(2) Every conductor in any cable to which this section applies other than an earthed outer conductor of a concentric cable and a metallic covering of a cable used as an earthing conductor in accordance with subsection (3) of section 249 shall be covered with insulating material.

(3) Every such cable shall be efficiently protected from mechanical damage and supported at such intervals and in such manner as to prevent damage or danger thereto.

(4) Every such cable which is used for transmitting electricity at a voltage exceeding low voltage and which is situated in any underground excavation in which vehicles are moved otherwise than by hand or in which conveyors are used or at a place where there may be danger or igniting inflammable material, shall be protected by a metallic covering containing all the conductors forming part of the electrical system at that place.

(5) Where such cable is protected by a metallic covering, such covering shall be—

- (a) electrically continuous throughout; and
- (b) where necessary having regard to its position, protected against corrosion; and
- (c) at any place at which there may be a danger of igniting inflammable material, so constructed as to minimize the risk of ignition of that material in the event of any fault in or leakage of current from a live conductor in that cable.

Flexible cables

251. (1) Every flexible cable at any mine shall be adequately protected against mechanical damage and shall be of an approved specification.

(2) No single core flexible cable shall be used at any time for supplying portable or transportable apparatus other than welding electrode holders or trolley-wire locomotives.

(3) Each conductor in a flexible cable shall be covered with insulating material and the conductor and insulating material shall be efficiently protected from damage.

(4) No flexible cable shall be connected to any other electrical apparatus except by means of a properly constructed connector.

(5) A metallic covering provided to protect a flexible cable from damage shall not be used as the sole earthing conductor in respect of such cable or any apparatus connected thereto.

(6) Every flexible cable in use shall be examined by a competent person at least once in each week and every such cable used with portable apparatus shall be examined immediately before use by the person authorized to use the apparatus and, if any such cable is found to be damaged or defective, it shall be repaired forthwith or taken out of service and not used further until it has been effectively repaired.

Switchgear and connexions

252. (1) All parts of switchgear and of electrical connexions at every mine shall be of sufficient mechanical strength and current carrying capacity to prevent danger, in particular from rough usage.

(2) All live parts of such switchgear and connexions shall be so enclosed or otherwise protected as to prevent—

- (a) the risk of persons accidentally coming into contact therewith; and
- (b) the deposition of dust or other injurious matter thereon; and
- (c) the entry of moisture.

(3) Whenever any such switchgear or connexion is at any place at which there may be risk of igniting any inflammable material, all live parts thereof shall be so protected as to prevent such ignition.

(4) Any material insulating any conductor in any cable shall be efficiently protected and sealed at any point at which that conductor is connected to other apparatus and where the insulating property of the material might be diminished by moisture or otherwise.

(5) Whenever any cable protected by a metallic covering is connected to other apparatus, such metallic covering shall be securely and safely attached, both mechanically and electrically, to such apparatus.

Blasting cables

253. (1) Every blasting cable shall be readily identifiable by some specific colour or colouring.

(2) Blasting cables shall not be used for any other purpose than blasting.

(3) Current from telephone, signalling or lighting circuit or from any other source other than a blasting box, or other blasting device approved for blasting shall not be used in a blasting circuit.

(4) Adequate precautions shall be taken to prevent cables or conductors used in blasting circuits from coming into contact with other cables or electrical apparatus other than an approved blasting box, or other device approved for blasting.

Transformers

254. In any transformer at a mine suitable provisions shall be made to guard against danger arising from the charging of lower voltage components by contact with or leakage from higher voltage components.

Telephone and signalling systems

255. (1) Adequate precautions shall be taken to prevent any telephone wire or signalling conductor coming into contact with any cable or electrical apparatus connected to a higher voltage systems.

(2) Contact makers in telephone or signalling apparatus shall be so constructed as to prevent the accidental closing of the circuit.

(3) In any electrical signalling system where failure or disconnection would be likely to cause a dangerous situation due to loss of signalling facilities a means of verbal communication or alternative signalling shall be provided.

Posting of notices

256. It shall be the duty of the manager at every mine to ensure that the under-mentioned notices are kept posted within all generating stations, winding engine rooms, main substations and pump stations and elsewhere, as may be necessary to minimise danger, in such characters as to be easily seen and read—

- (a) a notice prohibiting unauthorized person from interfering with electrical apparatus; and
- (b) a notice containing directions for procedure in case of fire; and
- (c) a notice containing directions for treatment of persons suffering from electric shock.

Persons working on or operating electrical apparatus

257. (1) Any person doing any work with or on any electrical apparatus, which may make such apparatus a source of danger to persons, shall take adequate precautions to ensure the safety of such persons.

(2) Any person neglecting to maintain or inspect or carry out work on electrical apparatus as instructed by a competent person shall be guilty of an offence.

(3) No person shall be instructed to carry out any duty on any electrical apparatus, for which technical knowledge and experience are necessary to avoid danger, except under such a degree of supervision as may be appropriate having regard to the nature of the work and the knowledge and experience of the person concerned.

(4) No person shall commence any work upon conductor, or in proximity to any exposed conductor, being in either case a conductor in a circuit in which the voltage exceeds extra low voltage, until he has ensured that such conductor has been made dead, and has taken steps, by earthing or other adequate means, to ensure that it will remain dead until he is satisfied that it is safe to restore the current:

Provided that this subsection shall not apply to any work on electrical apparatus which due to the location of such apparatus cannot be made dead in which case such work is done by or under the constant supervision of a qualified electrician authorized in writing by the manager to carry out duties incidental to the generation, transmission, distribution or use of electrical energy.

(5) No person whose duties include the operation of any transportable or portable apparatus supplied with electricity by means of a flexible cable shall at any time either leave that apparatus while it is working or leave the working place, except for the purpose of cutting off the supply of electricity to the cable, without ensuring that the cable has been made dead, unless his instructions expressly authorize him to do so.

(6) A person whose duties include the operation during his shift of any electrical apparatus supplied with electricity by means of a flexible cable shall ensure, before using that cable during that shift, that so much of it as is accessible is examined and that any further parts which subsequently become accessible are also then examined, and he shall not use any cable which is found to be damaged or defective.

(7) For the purposes of this section "qualified electrician" means a person who either holds a recognized certificate of competency as an electrician issued by a registered industrial council or has served a recognized apprenticeship.

Permissible voltages for lighting

258. (1) Subject to subsection (2), the maximum permissible voltage for lighting underground shall be—

- (a) one hundred and thirty volts alternating current between line and earth; or

- (b) two hundred and twenty-five volts between phases (line voltage) in a three phase alternating system if the neutral point is earthed or two hundred and fifty volts in a single phase system if the centre point is earthed; or
- (c) one hundred and thirty volts direct current.

(2) Subsection (1) shall not apply to electric discharge lamps but the conductors, lamps and all equipment associated with such lighting shall be contained in an adequate earthed protective enclosure.

(3) The maximum permissible voltage for lighting on the surface shall be two hundred and twenty-five volts alternating or direct current to earth:

Provided that this shall not apply to the starting and operating voltage of electric discharge lamps.

Overhead lines

259. (1) Where bare overhead wires are used for the transmission or distribution of electrical energy on the surface, glazed porcelain or glass insulators of the correct type and voltage rating shall be used.

(2) Except in the case of electric trolley wires and service lines, the minimum height of any such bare wires or other overhead line conductor above ground or any gantry, dump or similar artificial surface shall be four comma nine metres for voltages not exceeding medium voltage and five comma five metres for high voltage systems.

(3) The height of the earth wire in the system of any voltage shall not be less than four comma six metres above ground.

(4) The minimum height above road or rail surface of any line conductor or earth wire shall be five comma eight metres whenever an overhead line crosses over a road or railway line normally open to traffic.

(5) In order to prevent danger arising from a broken line conductor or leakage from a line conductor, stay wires, supporting framework and metal poles shall be bonded to an earthed conductor carried continuously from pole to pole throughout the length of any overhead powerline.

(6) In the case of an electric trolley line system to be used on the surface or underground, the height of the overhead trolley conductor and the voltage at which such system operates shall be subject to the approval in writing of the Chief Government Mining Engineer.

Lines close to buildings

260. (1) Live conductor used on service lines in the terminal span of a connexion between an overhead line and a building or in a span between one building and another building shall be insulated conductors.

(2) The point of attachment of a service line shall—

- (a) where connected to an overhead line, be at a support;
- (b) where connected to a building be at a terminating device securely fixed to the building.

(3) A conductor, other than an earth conductor, leading to or from a transformer or other apparatus at a pole-mounted substation shall, at all points below a height of three comma five metres from the ground, be insulated and, in the case of a high voltage conductor, shall have earthed metal sheathing or earthed screening.

(4) Whenever any portion of any overhead line passes any building and thereby might be inadvertently touched by any person or be in such a position to be adversely affected by conditions of heat or moisture, that portion shall be insulated.

(5) The height above ground of any low or medium voltage insulated line conductors used in a service line in the terminal span of a connexion between an overhead line and a building shall, at any point up to and including the point of attachment to the building, be not less than three comma one metres:

Provided that the provisions of this subsection shall not apply to an overhead cable consisting of insulated conductors enclosed in earthed metal sheathing or armouring.

Protection of supports

261. Every support which carries overhead conductors or other electrical apparatus shall be adequately protected to prevent any unauthorized persons from coming into dangerous proximity to the conductors by climbing such support.

Trolley lines and electrically-propelled vehicles

262. (1) Unless otherwise authorized in writing by the Chief Government Mining Engineer, a trolley line conductor system shall be effectively protected throughout its length against the danger of persons making inadvertent contact with the current-carrying parts.

(2) Effective means shall be provided for cutting off the supply of electricity to the trolley line conductor system of any section on the same level and any such section so controlled shall not exceed an installed length of one thousand metres.

(3) Effective means shall be provided, by bonding or otherwise, to ensure that—

(a) the track system overrun by locomotives operating from trolley line conductors is continuous throughout its length; and

(b) the resistance of any joint does not exceed the resistance of ten metres of the track rail; and

(c) the resistance of the whole track system is not greater than four times the resistance of the overhead trolley conductor.

(4) Reasonable precautions shall be taken to ensure—

(a) that no metallic structure or articles in the vicinity of a trolley line conductor shall attain a potential above that of earth; and

(b) the safety at all times of any person working or walking in close proximity to trolley line conductors.

(5) The supply of electricity shall be cut off from any trolley line system which is not in regular daily use.

(6) There shall be provided on any locomotive exceeding eight tonnes mass and on any other electrically-propelled vehicle, whether supplied with electricity from trolley line conductors or storage batteries a device activated by the driver the release of which in an emergency will automatically disconnect the supply of electricity to the driving motors.

(7) Control levers of electrically-propelled vehicles shall be so arranged that such levers cannot accidentally be removed whilst there is a supply of electricity to the driving motors.

Charging batteries

263. (1) No person shall charge or change any battery of any storage-battery locomotive or storage-battery vehicle at any mine except at a place recognized for the purpose which, for the purpose of this section, shall be called a "charging station":

Provided that this subsection shall not apply to any combined battery and trolley line locomotive which is designed for battery charging while in use.

(2) Every charging station shall be—

(a) constructed of non-flammable material; and

(b) provided with suitable and sufficient apparatus for fighting outbreaks of fire; and

(c) under the control of a competent person; and

(d) adequately lighted; and

(e) provided with a clean water supply.

(3) Every charging station and all battery chargers shall be so arranged that the gases evolved in charging are adequately dispersed.

(4) Any person spilling any water or electrolyte on any battery or any electrolyte on the floor of any charging station shall forthwith remove it or cause it to be removed.

(5) No unauthorized person shall interfere with any battery charging equipment at any charging station.

(6) No person shall smoke or use any light, other than an adequately protected electric lamp, in or within ten metres of any charging station, and a suitable notice to this effect shall be conspicuously displayed.

(7) Every charging station shall be provided with suitable first aid equipment.

(8) No material other than that required for charging operations shall be stored in a charging station.

PART XI

INSPECTION AND ACCIDENTS

Powers and duties of inspectors

264. (1) An inspector shall have the power to do all or any of the following things—

- (a) to make examination and inquiry to ascertain whether the provisions of these regulations are being or have been complied with; and
- (b) to enter, inspect and examine any mine or any machinery in connexion therewith and every part thereof at all times by day and night:

Provided that unless it is unavoidable, no entry, inspection or examination shall be made in a manner which will impede or obstruct the working of the mine; and

- (c) to examine into and make inquiries respecting the state or condition of any mine or part thereof and of all matters or things connected therewith in so far as such relate to the well being or safety of persons employed therein or in any mine contiguous thereto; and
- (d) to inquire into the circumstances of accidents or breaches of these regulations.

(2) When at any mine a mining accident occurs involving the death of any person or the injury of any person which is likely to result in death, an inspector shall investigate and inquire into the circumstances of the accident and shall, as soon as possible thereafter, submit a full report in writing thereon together with any statements taken by him to the police.

Manager to provide facilities for inspector

265. Every manager shall furnish to an inspector the means necessary for making an entry, inspection, examination or inquiry in terms of these regulations.

Powers of Chief Government Mining Engineer

266. All the powers, rights and duties of an inspector may be exercised or performed by the Chief Government Mining Engineer or the Deputy Chief Government Mining Engineer.

Special powers of inspectors

267. (1) In any case where an inspector finds any mine or part thereof or any machinery, plant, matter, thing or practice therein or connected therewith to be dangerous or defective so as, in his opinion, to threaten the health or tend to the bodily injury of any person and the case is not, in his opinion, sufficiently provided for elsewhere in these regulations, the following special provisions shall apply—

- (a) the inspector shall, by requisition in writing addressed to the manager and delivered at the mine, specify the nature of such danger or defect and his reason for holding that the same exists and require the matter complained of to be remedied within a specified time;
- (b) on receipt of such requisition the manager shall comply therewith or, if he intends to object as provided in paragraph (c), he shall forthwith cease to use the said mine or part thereof, machine, plant, matter, thing or practice in respect of which such requisition has been given and shall forthwith withdraw all persons from the danger indicated by the inspector until such time as the matter shall have been determined by arbitration;

Provided that, if in the opinion of the inspector, there will be no immediate danger, he may allow work to proceed for such period and subject to such restrictions and conditions to ensure the safety of the workmen as he may deem necessary and stipulate in writing;

- (c) if the manager objects to complying with such requisition he may, within seven days after the delivery thereof as aforesaid, send his objections in writing, stating the ground of his objections to the inspector who shall send a copy thereof to the Chief Government Mining Engineer, and thereupon the matter shall be referred to the decision for a single arbitrator to be agreed upon by the manager and the inspector;

Provided that, if the manager and the inspector are unable to agree as to the person to be appointed, then the matter shall be decided by arbitrators to be appointed in terms of the Arbitration Act [Chapter 12] and the procedure laid down in that Act shall be followed;

(d) the manager shall comply within fourteen days with an award which is made on arbitration in terms of paragraph (c).

(2) If it is so directed in a requisition or award made in terms of subsection (1), the terms of the requisition or award or of any portion thereof shall be posted up in a conspicuous place at the mine concerned and, when and as long as they remain so posted up, the terms shall have the same force and effect as these regulations and any person who contravenes or fails to comply with them shall be guilty of an offence and liable to the penalties specified in subsection (2) of section 301.

Notification of accidents to persons

268. (1) The accidents to be notified for the purposes of this section shall be as follows—

- (a) any mining accident involving—
 - (i) the death of any person; or
 - (ii) an injury to any person which is likely to be fatal;
- (b) any mining accident in which any person becomes unconscious from heat stroke, heat exhaustion, electric shock or the inhalation of fumes or poisonous gas;
- (c) any mining accident involving an injury to any person which;
 - (i) incapacitates him from performing his normal or a similar occupation for a period totalling fourteen days or more; or
 - (ii) causes him to suffer the loss of a limb or part of a limb or to sustain a permanent disability.

(2) On the occurrence at any mine of an accident referred to in paragraph (a) or (b) of subsection (1) the manager shall—

- (a) immediately give notice thereof to an inspector by the quickest means available; and
- (b) without delay, give written confirmation to an inspector of such notice on the form specified in the Second Schedule.

(3) When an accident referred to in paragraph (c) of subsection (1) becomes notifiable for the purposes of this section, the manager of the mine at which the accident occurred shall—

- (a) immediately give notice thereof to an inspector by the quickest means available; and
- (b) within four days of the accident becoming notifiable, confirm such notice in writing on the form specified in the Second Schedule.

(4) In the case of a mining accident at a mine which involves the death of any person, the manager shall ensure that the police are notified thereof immediately by the quickest means available.

(5) If an accident referred to in subsection (1) occurs at a mine and involves a person engaged in mining operations on the mine but not directly employed by the mine, it shall be the duty of that person's employer to ensure that the accident is immediately reported to the manager.

Report of death resulting from injury: scene of accident not to be disturbed

269. (1) Where any person involved in an accident at any mine subsequently dies as a result thereof, the death shall, without delay, be reported to an inspector and the police.

(2) After the occurrence of an accident involving the death of any person or the injury of any person which results in or is likely to result in death, the place where the accident occurred shall not, without the consent of an inspector, be disturbed or altered before it has been examined by an inspector.

Provided that this subsection shall not apply to such disturbance or alterations as is unavoidable to prevent further accidents, to remove bodies or to rescue persons from danger.

Notifications of non-casualty accidents

270. Whether personal injury results or not, on the occurrence at a mine of any accident specified in the Third Schedule the manager shall—

- (a) immediately give notice thereof to an inspector by the quickest means available; and

- (b) without delay, give written confirmation to an inspector of such notice.

Register of accidents

271. (1) At every mine a register shall be kept in which there shall be recorded in ink, without delay, the particulars of all accidents at that mine which are required to be reported in terms of section 268 or 270.

(2) The register referred to in subsection (1) shall be available for inspection by an inspector.

PART XII

**ZIMBABWE GOVERNMENT MINE SURVEYOR'S
CERTIFICATE OF COMPETENCY**

Board of Examiners

272. (1) There shall be a Board of Examiners for the examination of candidates for the grant of the Zimbabwe Government Mine Surveyors Certificate of Competency (hereinafter called "the Certificate of Competency").

(2) The Board of Examiners shall consist of the Chief Government Mining Engineer, who shall be Chairman, and two other persons appointed by the Minister.

(3) There shall be a Secretary to the Board of Examiners who shall be appointed by the Minister but who shall not be a member of the Board.

Examination of candidates

273. (1) Any person wishing to be examined for the Certificate of Competency shall—

- (a) make application on Form M.M. 44 to the Board of Examiners for acceptance as a candidate giving—
 - (i) particulars of his educational qualifications; and
 - (ii) details of his practical mine surveying experience; and
 - (iii) particulars of recommendations as to his character and competency; and

(b) if accepted by the Board of Examiners as a candidate, make application in Form M.M. 45 to be examined for the Certificate of Competency; and

(c) pay the appropriate amount of the fee prescribed in subsection (3) at the time of making the application referred to in paragraph (b).

(2) The examination referred to in subsection (1) shall consist of two parts which may be written at different times or during the same examination—

(a) Part I shall consist of questions relating to—

- (i) mine valuation; and
- (ii) geology; and
- (iii) mine ventilation; and

(b) Part II shall consist of questions relating to surveying and Zimbabwe mining law;

and in addition a candidate shall be required to perform a trial survey and draw a plan and answer questions thereon.

(3) An examination fee of twenty dollars shall be payable by a candidate in respect of each Part of the examination.

Issue of Certificates of Competency to successful candidates

274. (1) Subject to the provisions of this Part, the Board of Examiners may frame instructions, make rules for the conduct of the examinations and issue Certificates of Competency.

(2) A Certificate of Competency shall not be issued unless the Board of Examiners is satisfied that the candidate possesses an adequate knowledge of all the subjects referred to in paragraphs (a) and (b) of subsection (2) of section 273.

Special provision for certificated land surveyors and holders of other Certificates of Competency

275. Notwithstanding subsection (2) of section 274, the Board of Examiners may grant a Certificate of Competency to any person who—

(a) is a certificated land surveyor and—

- (i) has had at least six months' experience of underground surveying; and

- (ii) passes an examination consisting of questions relating to mine valuation, geology, mine ventilation and Zimbabwe mining law; and
- (iii) pays a fee of twenty dollars; or
- (b) is in possession of a certificate which the Board of Examiners determines to be an equal or higher standard and—
 - (i) passes an examination consisting of questions relating to geology, mine ventilation and Zimbabwe mining law; and
 - (ii) pays a fee of twenty dollars;
- (c) is a candidate who satisfies the Board in terms of subparagraph (ii) of paragraph (a) and subparagraph (i) of paragraph (b) and shall before being granted his Certificate of Competency pay a further fee of twenty dollars.

Exemption from examinations

276. Notwithstanding the provisions of this Part, the Board of Examiners may exempt any candidate from examination in any one or more subjects referred to in subsection (2) of section 273 or from the trial survey requirements, if the candidate satisfies the Board that he has an adequate knowledge of the subject or subjects concerned.

Existing certificates

277. Any Mine Surveyor's Certificate of Competency issued under the provisions of any enactment relating to mines and minerals before the date of commencement of these regulations, and still valid immediately before that date shall be deemed to have been issued under the provisions of this Part.

PART XIII

ZIMBABWE GOVERNMENT MINING DIPLOMA

Board of Examiners

278. (1) There shall be a Board of Examiners for the examination of candidates for the grant of the Zimbabwe Government Mining Diploma (hereinafter called "the Diploma").

(2) The Board of Examiners shall consist of the Chief Government Mining Engineer, who shall be Chairman, and there other members appointed by the Minister:

Provided that further members may be co-opted to the Board of Examiners when the Minister considers this desirable.

(3) There shall be a Secretary to the Board of Examiners who shall be appointed by the Minister but who shall not be a member of the Board.

Application for examination

279. (1) Any person wishing to be examined for the Diploma shall make application to the Board of Examiners on Form M.M. 46

(2) Every application lodged in terms of subsection (1) shall be accompanied by a fee of twenty dollars.

Issue of Diploma

280. A Diploma may be issued by the Board of Examiners to a candidate who satisfies the Board that he—

- (a) possess an acceptable knowledge of Zimbabwe mining law, mining practice, mine ventilation and dust control, mineral dressing practice, plan reading and elementary surveying, mining machinery, mine valuation and basic economic geology; and
- (b) has the necessary supervisory experience and ability.

Powers of Board of Examiners

281. Subject to the provisions of this Part, the Board of Examiners may exempt any candidate from examination in any one or more subjects of any syllabus if he satisfies the Board that he has an adequate knowledge of such subject or subjects.

Saving of previous Diploma

282. (1) Any Mine Manager's Diploma now referred to as Mining Diploma issued under the provisions of any enactment relating to mines and minerals prior to the date of commencement of these regulations and still valid immediately before that date shall be deemed to have been issued under the provisions of this Part.

(2) Application by holders of Mine Manager's Diploma who wish to obtain the Mining Diploma as provided for in this Part shall be made to the Board of Examiners on Form M.M. 46 for such Diploma.

(3) The Board shall grant such Diploma without examining the candidate as provided for in section 280.

(4) Every application lodged in terms of subsection (2) shall be accompanied by a fee of twenty dollars.

PART XIV

ZIMBABWE GOVERNMENT MINE MANAGER'S CERTIFICATE OF COMPETENCY

Board of Examiners

283. (1) There shall be a Board of Examiners for the examination of candidates for the grant of the Zimbabwe Government Mine Manager's Certificate of Competency (hereinafter called "the Certificate of Competency").

(2) The Board of Examiners shall consist of the Chief Government Mining Engineer, who shall be Chairman and four other members appointed by the Minister:

Provided that further members may be co-opted to the Board of Examiners when the Minister considers this desirable.

Rules for examination

284. (1) Instruction for the guidance of the Board of Examiners, as well as rules for the conduct of the examination, including syllabuses for such examination, shall be framed by the Chief Government Mining Engineer in consultation with other Board members and the Board shall have power to amend such instructions or alter such rules as occasion may require.

(2) A Certificate of Competency shall not be issued unless the Board of Examiners is satisfied within the scope of the syllabuses as laid down in subsection (1) that the candidate possesses adequate knowledge in all the subjects as provided for in section 285.

Examination subjects

285. (1) The examination shall consist of two parts namely—

(a) Part A—subjects being mining, management principles, mine ventilation and geology;

Part B—subjects being metallurgy, Zimbabwe mining law, mechanical and electrical engineering and mine surveying and valuation.

(2) Parts A and B may be taken at the same examination or at separate examinations but a candidate who has passed one Part shall receive credit for such Part for a limited period only, as laid down in the rules framed in terms of section 284.

(3) An examination fee of fifty dollars shall be payable by the candidate in respect of each Part of the examination.

Qualifications of candidates

286. An applicant shall not be accepted as a candidate for the examination unless he has produced evidence satisfactory to the Board—

- (a) that he has attained the age of twenty-three years;
- (b) of his sobriety and general conduct;
- (c) that he is the holder of a full Zimbabwe blasting licence;
- (d) that he has had at least four years practical mining experience acceptable to the Board of which one year has been in a supervisory capacity at the working face on rock-breaking or mining minerals or work directly connected therewith.
- (e) that he is the holder of the Zimbabwe Government Mine Manager's Diploma or Mining Diploma or other qualifications acceptable to the Board.

Exemption from certain Parts or subjects

287. (1) An applicant who can satisfy the Board—

- (a) that he holds a mining engineering degree or any other certificate or qualification, provided that such degree, certificate or qualification is acceptable to the Board; and
- (b) that he has had such period of mining experience, acceptable for the purpose by the Board, gained in the working of a mine;

may be exempted from such Part or subjects of the examination as the Board may determine, provided he submits an application, together with the relevant documents or certified copies thereof, to the Secretary with the relevant fee for the whole examination.

(2) On receipt of the document and fee mentioned in paragraph (b) of subsection (1), the Board shall consider the application and notify the applicant on what Parts or subjects he has been granted exemption.

Application for examination

288. Any person wishing to be examined for the Certificate of Competency shall—

- (a) make application on form M.M.C. 47 to the Board of Examiners for acceptance as a candidate giving—
 - (i) all the relevant information as required on form M.M.C. 47;
 - (ii) any additional information which may be of assistance to the Board in their deliberations as to the suitability and acceptability of the applicant; and
- (b) if accepted by the Board of Examiners as a candidate, make application on form M.M.C. 48 to be examined for the Certificate of Competency; and
- (c) pay the appropriate fee prescribed in subsection (3) of section 285 at the time of making the application referred to in paragraph (b).

Savings of existing Mine Manager's Diploma (Advanced)

289. Any Mine Manager's Diploma (Advanced) now referred to as Mine Manager's Certificate of Competency issued under any enactment relating to mines and minerals before the date of commencement of these regulations, and still valid before that date shall be deemed to have been issued under the provisions of this Part.

Application by holder of Mine Manager's Diploma (Advanced)

290. (1) Any holder of the Mine Manager's Diploma (Advanced) who wishes to obtain the Mine Manager's Certificate of Competency as provided for in this Part may apply to the Board of Examiners on Form M.M.C. 48 for such certificate.

(2) The Board shall grant such certificate without examining the candidate.

(3) Every application lodged in terms of subsection (1) shall be accompanied by a fee of one hundred dollars.

PART XV

MISCELLANEOUS

Prevention of theft of gold

291. (1) In all mills and reduction plants all amalgamating plates, extractor boxes, launders, receptacles or other devices in which gold, gold amalgam, gold zinc slime, gold concentrate, or gold loaded carbon may collect shall be covered by screens or other devices approved by an inspector.

(2) All screens or devices approved in terms of subsection (1) shall be kept locked and no plate, screen, box, launder, receptacle or other device shall be uncovered by any person other than—

- (a) the owner of the mining location or his assign; or
- (b) the manager of the mine; or
- (c) any person authorized by either the owner, his assign or manager.

Safety precautions to be observed by all persons

292. (1) Every person in or about a mine shall, before commencing and while at work, use ordinary and reasonable care to satisfy himself that all appliances and equipment in use or about to be used by him are in a safe condition and that places in which he works are safe.

(2) No person in or about a mine shall—

- (a) cause or permit any other person to use anything which is unsafe;
- (b) cause or permit any other person to work in a place which is unsafe;
- (c) do any act or cause or permit any other person to do any act which may cause undue risk to any person.

(3) Except as otherwise provided in the Act or any other law, no person shall, without proper authority, enter or be upon

any mine working or upon any part of a mine where machinery or electrical apparatus is installed or where explosives are stored or handled.

Anything dangerous to be reported

293. (1) Every workman in or about a mine who observes anything likely to produce danger of any kind shall forthwith report the same to the person in immediate authority over him.

(2) Every person to whom a report is made in terms of subsection (1) shall, unless he himself is an official, immediately report the matter to an official, who shall, without delay, take appropriate action to obviate or eliminate such source of danger, and shall forthwith advise the manager of the nature of the danger and of the action which he has taken.

Intoxicated persons not to enter mine

294. (1) No person in a state of intoxication or of apparent intoxication or in any other condition which may render him incapable of taking care of himself or of persons under his charge shall enter a mine or be near any working place on the surface or any machine in motion.

(2) Any person who enters a mine or is found anywhere at any working place above or below ground in a state of intoxication or of apparent intoxication shall be guilty of an offence and shall be immediately removed from such working place by the responsible official or by the manager.

(3) No person shall take, consume or have in his possession any intoxicating liquor in the working of any mine or at any place of work on the surface of the mine unless he has received the prior permission of the manager.

Offences

295. No person shall—

- (a) forge or counterfeit any certificate, permit or licence required by, under or for the purpose of these regulations;
- (b) give or sign any such certificate, permit or licence knowing it to be false;

- (c) knowingly utter or make use of any such certificate, permit or licence so forged, counterfeit or falsified;
- (d) knowingly utter or make use of any such certificate, permit or licence which does not so apply;
- (e) personate any person named in any certificate, permit or licence;
- (f) falsely pretend to be an inspector;
- (g) wilfully connive at any such forging, counterfeit, giving, signing, uttering, making use of, personating or pretending as aforesaid;
- (h) wilfully make a false entry in any register, book, notice, certificate, permit, licence or document required by, under or for the purpose of these regulations, to be kept, served or sent;
- (i) wilfully make or sign a false declaration required by, under or for the purpose of these regulations;
- (j) knowingly make use of any false entry or declaration as aforesaid;
- (k) wilfully damage or delete any entry in any register, book, notice, certificate, permit, licence or document required by, under or for the purpose of these regulations, to be kept, served or sent.

Register of employees to be kept by manager

296. (1) Every manager shall keep at his mine a register in which shall be duly entered—

- (a) the name of every employee on such mine; and
- (b) the duties of commencement and termination of service of every such employee; and
- (c) in the case of the death of any such employee, the place, date and, so far as can be ascertained, the cause of death.

(2) Every register referred to in subsection (1) shall at all reasonable times be open to inspection by an inspector.

(3) Every manager shall, either before or within seven days after taking on employees at a mine for the purpose of commencement of working or resumption of working of the mine,

give written notice to an inspector of the mining district within which the mine is situated of the fact that persons are to be or are employed at the mine.

Conditions of employment

297. The Minister, if satisfied that such action is necessary for the preservation of the health of mine workers, may, by notice communicated to a manager in writing—

- (a) limit the number of hours of continuous employment of such workers on a mine or any section thereof;
- (b) limit the number of such workers employed on any one shift;
- (c) limit the number of shifts or rounds of blasting in twenty-four hours;
- (d) withdraw all workers or any class thereof from any mine or section thereof;
- (e) impose conditions as to the employment of any class of workers.

Inspector may grant exemptions

298. Without derogation from any other provision for exemption, whenever—

- (a) the circumstances at any mine are such that any provision of these regulations cannot be applied or are unduly onerous; or
- (b) it is necessary for the purpose of carrying out experiments or tests as to the expediency of any regulations or proposed regulations;

an inspector, with the written approval of the Chief Government Mining Engineer may grant written exemption from the operation of such provision for such period and subject to such conditions as he may specify in such exemption:

Provided that an exemption in terms of this section—

- (i) shall not be granted for a period of more than twelve months; and
- (ii) shall not be renewed or extended except by the Chief Government Mining Engineer for a further

period not exceeding twelve months, and thereafter by the Minister in terms of section 299.

Minister may grant exemption

299. The Minister may from time to time exempt in writing any mine or class of mines from the operation of any provision of these regulations for such period and subject to such conditions as he may specify.

Withdrawal or alteration of exemptions, permits, et cetera

300. When any provision of these regulations confers the power to grant, make or issue any exemption, approval, permit, permission, determination, prohibition, notice, requisition or order, that power shall be construed as including power, executable in the like manner and subject to the consent and conditions, if any, to vary or withdraw it.

Offences and penalties

301 (1) Any person who contravenes any provisions of these regulations or fails to comply with any provisions of these regulations with which it is his duty to comply with shall be guilty of an offence.

(2) Any person who is guilty of an offence in terms of subsection (1) shall be liable to a fine not exceeding two thousand dollars or to imprisonment for a period not exceeding two years or to both such fine and such imprisonment.

Repeals and savings

302. (1) The regulations specified in the Fourth Schedule are repealed.

(2) Notwithstanding the provisions of subsection (1)—

- (a) any person who, immediately before the date of commencement of these regulations, was an authorized person, manager or miner in charge in terms of the regulations specified in the Fourth Schedule shall be an authorized person, manager or miner in charge as the case may be, in terms of these regulations and subject to the provisions of these regulations;

- (b) anything which was done, or was deemed to have been done, in terms of the regulations specified in the Fourth Schedule and which was of force and effect, or was capable of having force and effect, immediately before the date of commencement of these regulations shall, on and after such date, continue to have force and effect or to be capable of having force and effect, as the case may be, as if it had been done under the appropriate provisions of these regulations.

MINES AND MINERALS ACT
ZIMBABWE GOVERNMENT MINE SURVEYORS CERTIFICATE
OF COMPETENCY

CANDIDATE'S APPLICATION FORM

I, the undersigned, hereby apply to be accepted as a candidate for the Zimbabwe Government Mine Surveyor's Certificate of Competency and append hereto details required in terms of section 273 of the Mining (Management and Safety) Regulations, 1989.

Surname:

Forename:

Address:

Present employer:

Type of employment:

Previous relevant experience, giving duration of such employment and posts held:

Educational and other qualifications (certificates to be attached)

Recommendations as to character and competency are attached:

Date

Signed

Form M.M. 45

MINES AND MINERALS ACT
ZIMBABWE GOVERNMENT MINE SURVEYOR'S CERTIFICATE
OF COMPETENCY

EXAMINATION APPLICATION FORM

Surname:

Forenames:

Address:

Application is hereby made in terms of section 273 of the Mining (Management and Safety) Regulations, 1989, for permission to write the under-mentioned Part(s) of the Zimbabwe Government Mine Surveyor's Certificate of Competency examination—

*Part I (Calculation, Geology, Mine Ventilation).

*Part II (Survey I, II, III, Mining Law).

*Delete the inapplicable.

Note.—Trial Survey and Plan must be submitted at candidate's first attempt at the examination irrespective of which Part is written unless previously exempted by the Board.

The examination fee of \$40/20* is enclosed as required in terms of subsection (3) of section 273 of the Mining (Management and Safety) Regulations, 1989.

*Delete the inapplicable

The prescribed fee is \$20 per Part payable by cheque or postal order in favour of "The Accountant, Ministry of Mines".

I CERTIFY that I have been accepted as a candidate in terms of section 273 of the Mining (Management and Safety) Regulations, 1989.

.....
 Signature

Form M.M. 46

MINES AND MINERALS ACT
ZIMBABWE GOVERNMENT MINING DIPLOMA
CANDIDATE'S APPLICATION FORM

I, the undersigned, hereby make application in terms of section 279 of the Mining (Management and Safety) Regulations, 1989, to be examined for the Zimbabwe Government Mining Diploma.

Surname:

Forenames:

Address:

Qualifications (certificates to be attached: certified copies accepted)

Zimbabwe Full Mining Licence Number:

Previous mining experience (evidence to be submitted: records of service)

Mine	Capacity in which employed	Duration of such employment
.....
.....
.....
.....
.....
.....
.....
.....

Present employer:

Date: Signature:

This application form must be accompanied by the prescribed fee of \$20.00 and letter of recommendation as to character and capabilities.

The fee should be paid either by cheque or postal order made payable to "The Accountant, Ministry of Mines".

Form M.M.C. 47

MINES AND MINERALS ACT
ZIMBABWE GOVERNMENT MINE MANAGER'S CERTIFICATE
OF COMPETENCY

CANDIDATE'S APPLICATION FORM

I, the undersigned hereby make applications, in terms of section 288 of the Mining (Management and Safety) Regulations, 1989, to be accepted as a candidate for the Zimbabwe Government Mine Manager's Certificate of Competency.

Surname:

Forenames:

Address:

Date of birth:

Qualifications (certificates to be attached: certified copies accepted)

Zimbabwe Full Blasting Licence Number:

Previous mining experience (evidence to be submitted records of service)

Mine	Capacity in which employed	Duration of such employment
.....
.....
.....
.....

Present employer:

Character reference to be attached:

Date: Signature:

Form M.M.C. 48

MINES AND MINERALS ACT
ZIMBABWE GOVERNMENT MINE MANAGER'S CERTIFICATE
OF COMPETENCY

EXAMINATION APPLICATION FORM

Surname:

Forenames:

Address:

Application is hereby made in terms of section 288 of the Mining (Management and Safety) Regulations, 1989, for permission to write the under-mentioned Part(s) of the Zimbabwe Government Mine Manager's Certificate of Competency examination—

*Part A—(Mining Management Principles, Mine Ventilation, Geology).

*Part B—(Metallurgy, Zimbabwe Mining Law, Mechanical and Electrical Engineering, Mine Surveying and Valuation).

The examination fee of \$100/50* is enclosed as required in terms of subsection (3) of section 285 of the Mining (Management and Safety) Regulations, 1989.

The prescribed fee is \$50 per Part, payable by cheque or postal order in favour of "The Accountant, Ministry of Mines".

I certify that I have been accepted as a candidate in terms of section 288 of the Mining (Management and Safety) Regulations, 1989.

*Delete the inapplicable

.....
 Signature

SECOND SCHEDULE (Section 268)

ACCIDENT REPORT

.....Mine *Fatal/Non fatal

Name of *injured/deceased person:

Mine No.:

Nature of employment:

Place of accident:

Date of accident:

If not employed by mine, state name of actual employer:

Nature and extent of injury:

Description of accident and cause:

Official in charge:

Date report despatched:

Signature of Manager

Delete word not applicable

THIRD SCHEDULE (Section 279)

NON-CASUALTY ACCIDENTS OCCURRENCE OF WHICH TO BE NOTIFIED

1. Winding plants

- (a) Running out of control of winding engine, winding drum or conveyance.
- (b) Fracture, failure or serious distortion of winding rope, fracture, failure or serious distortion of any connexion between the winding rope and the drum or between winding rope and conveyance or between the winding rope and any other load suspended from or attached to such rope; fracture, failure or serious distortion of any connexion between conveyances or between a conveyance and any suspended or attached load, fracture of guide rope or its connexion; fracture of balance or tail rope or its connexion.
- (c) Fracture or failure of any essential part of the winding engine, fracture or failure of any safety device used in connexion with the winding equipment.
- (d) Fracture or failure of winding rope or balance rope sheave; fracture or failure of any essential part of the headgear or other sheave support.
- (e) Derailing of conveyance.
- (f) Fracture or failure of the brakes or its operating mechanism.
- (g) Any overwinding or overrun of the conveyance to an extent which may have endangered persons or have caused damage to the winding equipment.
- (h) Failure of depth indicator.

2. Boilers

Fracture or failure of any essential part of a boiler.

3. Miscellaneous

- (a) Extensive cavings or subsidence in the ground or working causing or liable to cause damage to underground workings, or the surface or to endanger persons.
- (b) Any accident due to explosives, or any accidental ignition or detonation of explosives.
- (c) Flooding of any considerable portion of the workings or failure of any dam or reservoir used for conserving water or slimes.
- (d) Any fire or any indication or recrudescence of fire or of spontaneous combustion in the mine or any explosion or ignition of gas or dust.
- (e) Breakdown of any main ventilation fan.
- (f) The detection of any inflammable gas whatsoever in any mine not classified as a fiery mine.

Mining (Management and Safety) Regulations, 1990

FOURTH SCHEDULE (Section 302)

REPEALS

<i>Title</i>	<i>Statutory Instrument</i>
Mining (Management and Safety) Regulations, 1981	61 of 1981
Mining (Management and Safety) (Amendment) Regulations, 1983 (No. 1)	606 of 1983
Mining (Management and Safety) (Amendment) Regulations, 1983 (No. 1): Correction of Errors	652 of 1983
Mining (Management and Safety) (Amendment) Regulations, 1985 (No. 2)	200 of 1985