GENERAL RULES FOR UNDERGROUND COAL MINES

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Department of Mines,
Brisbane, 19 May, 1983.

HIS Excellency the Governor, acting by and with the advice of the Executive Council and in pursuance of the provisions of the *Coal Mining Act* 1925–1981, has been pleased to make Rules, in the manner hereinafter set forth, to take effect on and from 21 May, 1983 and entitled:—

(i) General Rules for Underground Coal Mines;
(ii) Special Rules for Underground Coal Mines; and
(iii) Code of Symbols for Mine Plans.

IVAN J. GIBBS,
Minister for Mines and Energy.

GENERAL RULES FOR UNDERGROUND COAL MINES

PART 1—PRELIMINARY

1.1 Short title. These Rules may be cited as the General Rules for Underground Coal Mines.

1.2 Arrangement. These Rules are divided in Parts as follows:—

As amended by Rules pubd. Gaz. 3 December 1983, pp. 1470-72.

1.3 Interpretation. In these Rules, the terms used shall have the meanings respectively assigned to them by section 4 of this Act and unless the contrary intention appears—

"approved" means approved in writing by the Chief Inspector;

"artificial landing" means a level above the lowest landing of a shaft at which conveyance landing speed tests can be carried out safely on a winding engine by setting the automatic contrivance as though that level was the lowest landing;

"Australian Standard" means a standard rule, code or specification of the Standards Association of Australia;

"authorised person" means a capable person who has been properly instructed in the duties under these Rules in respect of which the expression is used and who has been appointed by the manager to perform those duties;

"auxiliary fan" means a fan used belowground wholly or mainly for ventilating a heading, drift or blind end;

"blow pipe" means copper tube with connections for air and/or water used to clean out a hole;

"break detector" means a stiff rod or tube fitted with a prong and being made to an approved design for use to detect and measure breaks in a hole exceeding 3 mm in width;

"butt" means that portion of a blast hole left in a face after blasting and which could still retain explosives;

"cartridge" means a preformed unit of high explosives wrapped to a predetermined diameter and length;

"charge" means the explosive charge;

"charging" means the act of placing explosives in the desired position for firing;

"circuit" means the wiring connecting electric detonators to each other and the source of power to be used for initiating them;

"circuit tester" means an electrical instrument for testing electrical firing circuits or the components thereof;

"competent person" means a person who by reason of his qualifications and experience has the skills necessary to perform the duties under these Rules in respect of which the expression is used, and who has been appointed by the manager to perform those duties;

"contraband article" means any match or any apparatus of any kind capable of creating an open arc, spark or flame, any appliance of any kind for striking a light, any pipe, cigar or cigarette tobacco (excluding chewing tobacco or snuff), or any contrivance or material for smoking;

"delay detonator" means an electric detonator which fires at a fixed time interval after the ignition of the fuse head therein;

"electric detonator" means a detonator having electrical means of ignition;

"electric firing" means the initiation of explosive charges by means of electrical detonators;

"electric safety lamp" means a lamp for personal use, either a cap lamp with a proper fitting for carrying on a safety helmet, or a hand held lamp;

"firing" means the act of initiating explosives;

"flame safety lamp" means a flame lamp for use below ground with or without a relighting device;

"flammable gas content" means the percentage by volume of flammable gas present in the general atmosphere of the mine or, as the case may be, in a part of the mine;

"friction winding" means winding where a load is attached to each end of one or more ropes and movement is produced by friction between the rope or ropes and the treads of a driven drum or sheave of a winding engine;

"gassy mine" means an underground coal mine in which flammable gas has been ignited, or has been found in the general mine atmosphere by an approved gas detector or by air analysis in an amount of one quarter per centum or more;

"gassy place" means any portion of a ventilating district situated in an intake airway of an underground coal mine within 100 metres of the first working place of such district and all return airways in that mine;

"general lighting" means lighting designed to provide general illumination of an area without special provision for additional illumination of any part or parts of such area;

"glare" means a visual condition which results in discomfort, annoyance, interference with visual efficiency or eye fatigue due to the brightness of a portion of the field of view (lamps, luminaires, or other surfaces) being markedly greater than the rest;

"hours of darkness" means that period of time from half an hour after sunset to half an hour before sunrise;

"initiate" means the process of inducing the rapid chemical reaction which releases the energy from an explosive either by applying heat (ignition) or by imparting a shock (detonation);

"lamproom" means an area at the surface of a mine set aside and used for the care and maintenance of lamps;

"leadwires" means the wires which are permanently attached to an electric detonator;

"luminous flux" means the light emitted by a light source of luminaire, or received by a surface, irrespective of the directions in which it is distributed. The unit is the lumen (lm);

"misfire" means a charge or part of a charge of explosives which for any reason fails to explode;

"primer cartridge" means the cartridge or that portion of a charge which carries a detonator or is attached to detonating fuse with which the remainder of the charge is initiated;

"record book" means the record book referred to in section 65 of this Act;

"rope haulage" means the transport of wheeled vehicles on rail track by means of a rope or ropes;

"round" means the selected pattern of holes used in drilling a face underground;

"shot" means a charge of explosives;

"stemming" means clay, sand or non-flammable material used to fill up holes after charging;

"winding" means the use of any mechanical appliance for the raising or lowering of persons or materials in a vertical shaft by means of a rope attached to a skip, bucket, or other type of conveyance.

"working face" means that part of a working place where coal or earth is extracted, and that part of a working place adjacent thereto where operations necessary for the extraction of such coal or earth are being carried out.

As amended by Rules pubd. Gaz. 3 December 1983. pp. 1470-72.

1.4 Adoption of Standards. (1) For the purposes of these Rules, any standard rules, codes or specifications adopted shall be read and construed as forming part of these Rules subject to any modification which may be expressed in the Rule adopting such standard rule, code or specification.

(2) Where any standard rule, code or specification adopted by these Rules adopts by way of reference any other standard rule, code or specification or part thereof then such other rule code or specification or part thereof as the case may be, shall be taken to be adopted by these Rules to the extent necessary to give full force and effect to the first-mentioned standard rule, code or specification.

(3) Where any of these Rules adopts by reference any standard rule, code or specification, that adoption, unless the relevant Rule specifies otherwise, shall not include the adoption of any provision—

(a) specifying or defining the respective rights, responsibilities, or obligations as between themselves of any manufacturer, supplier or purchaser;

(b) requiring the submission for approval of any machinery, equipment or other article to any person other than a person specifically empowered by this Act to give that approval;

(c) specifying that any machinery, equipment or other article used in mining operations in, on or about a mine shall be submitted to the Standards Association of Australia or a committee of the association for expression of opinion; or

(d) permitting a departure from any provision of the standard rule, code or specification at the sole discretion of the manufacturer or purchaser, or by arrangement between the manufacturer and purchaser.

(4) A reference in any Rule to any standard rule, code or specification shall be taken to be a reference to any document that supersedes that document or to any document that supersedes a previous superseding document.

1.5 Variation of Rules. (1) Where a Rule or part thereof is expressed to apply subject to any variation or modification directed or allowed by an inspector, the inspector may, by entry in the record book, direct or allow that Rule or part thereof to be varied or modified in respect of the working of a particular coal mine for a specified time or without limit of time.

(2) The inspector shall, at the time of making such entry, also record particulars in the record book of the facts and circumstances of the mine that were considered by him to be relevant to the Rule or part thereof being varied or modified.

(3) The inspector may, by entry in the record book, direct that any such variation or modification of a Rule or part thereof shall cease to have effect if he is satisfied that there has been a substantial change in circumstances in respect of the working of that mine.

1.6 Requisition of Inspector. (1) Every requisition issued by an inspector under these Rules—

(a) shall be in writing;

(b) shall specify the time within which the requirements of the requisition are to be complied with;

(c) may subsequently be revoked by the inspector; and

(d) shall be recorded by the inspector in the record book.

(2) The Chief Inspector may, upon application in writing made to him by the owner, agent or manager of the mine, review any requisition issued by an inspector, and the Chief Inspector upon such review may confirm, vary or revoke the requisition. The decision of the Chief Inspector upon any such review shall be recorded by the inspector in the record book.

(4) The manager of the mine shall ensure that the requisition of an inspector is complied with within the time therein specified.

1.7 Approval of Chief Inspector. (1) Where the Chief Inspector gives an approval under these Rules, such approval shall be given in writing to the manager of the mine.

(2) Where the Chief Inspector refuses to give his approval in respect of an application in writing made to him under these Rules, he shall give his refusal in writing and he shall therein specify the reasons for such refusal.

(3) If at any time the Chief Inspector is satisfied that there has been a substantial change in circumstances since the granting of any approval, he may by notice in writing to the manager of the mine revoke such approval and he shall therein specify the time when such revocation is to take effect.

1.8 Exemptions. (1) Where any part of these rules or any rule or part thereof is expressed to apply subject to any exemption granted by the Chief Inspector, he may, if he thinks fit, exempt any person from compliance with that requirement of these Rules if he is satisfied that—

(a) compliance with the requirement is unnecessary in the circumstances of the case; or

(b) the action taken or provision made in respect of the requirement is as effective as, or more effective than, actual compliance with the requirement.

(2) Where he grants any such exemption, the Chief Inspector shall issue an exemption certificate specifying the requirements from which the person is exempt and the conditions, if any, subject to which the exemption is granted.

(3) A person to whom an exemption is granted subject to conditions shall ensure that such conditions are complied with in every respect.

(4) If at any time the Chief Inspector is satisfied that there has been a substantial change in circumstances since the granting of the exemption, or that any condition of an exemption has not been complied with in every respect, he may by notice in writing revoke such exemption and he shall therein specify the time when such revocation is to take effect.

(5) Every exemption and any revocation thereof shall be recorded by the inspector in the record book.

1.9 Offences and penalties. (1) A person who contravenes or fails to comply with any provision of these rules commits an offence against these rules.

(2) A person who—

(a) fails to do that which he is directed or required to do;

(b) does that which he is forbidden to do,

by a person acting under the authority of these rules commits an offence against these rules.

(3) A person who commits an offence against these rules is liable to a penalty of $200.

PART 2—GENERAL REQUIREMENTS FOR VENTILATION

2.1 (1) Ventilation shall be constantly produced in all parts of the mine belowground and such ventilation shall be adequate for the purposes of—

(a) providing air containing a sufficiency of oxygen amounting to at least 19 per centum by volume of the general body of the air;

(b) diluting gases that are flammable or noxious so as to render them harmless and removing them; and

(c) restricting the concentration of any noxious gas in the general body of the air so that it does not exceed the maximum allowable in the following table:—

TABLE

Gas	Maximum Allowable Concentration	
	Percentage by Volume	Parts per Million
Carbon Dioxide (CO_2)	0·5%	5 000
Carbon Monoxide (CO)	0·005%	50
Oxides of Nitrogen (Expressed as NO_2)	0·0005%	5
Hydrogen Sulphide (H_2S)	0·001%	10

(2) The Chief Inspector, on receiving a written application from the manager of the mine, may grant exemption from the maximum allowable concentration of the above gases.

(3) Nothing in rule 2.1 (1) shall be construed as requiring the production of ventilation—

(a) in any part of a mine which is stopped off in an approved manner; or

(b) in any waste where access thereto is restricted to a deputy or holder of a higher certificate granted under this Act.

(4) Where, in any part of a mine required by this rule to be ventilated the ventilation is interrupted or ceases to be adequate for the purposes of rule 2.1 (1), the deputy or other person in charge of that part of the mine shall, until such ventilation is restored—

(a) ensure that access to that part of the mine is restricted so as to prevent any person from entering it who is not authorised by a deputy or holder of a higher certificate granted under this Act to do so;

(b) ensure that no person is permitted to remain in or pass through such part except for the purpose of restoring the ventilation.

2.2 For the purposes of rule 2.1 the manager of an underground coal mine shall ensure the maintenance in the mine of working conditions in relation to:—

(a) Temperature and humidity;

(b) Minimum air velocity; and

(c) Amount of dust in the atmosphere

which comply with the requirements of these rules in respect of working places. The manager of an underground coal mine shall ensure that no person is employed in any part of such mine which does not comply with such requirements, except for the purpose of restoring the ventilation to comply with the prescribed requirements.

2.3 (1) The manager of an underground coal mine which contains waste shall ensure—

(a) that there is adequate ventilation constantly produced in the waste in accordance with rules 2.1 and 2.2; or

(b) that appropriate measures are taken to prevent the dangerous emission from the waste of flammable or noxious gas into places in which persons work or travel.

(2) This rule does not apply to—

(a) waste which is securely stopped off; or

(b) waste which has been proved by tests conducted by a competent person to contain—

(i) no flammable gas; and

(ii) no noxious gas in a concentration higher than the maximum allowed by rule 2.1.

2.4 (1) There shall be provided and maintained on the surface of an underground coal mine mechanically operated apparatus capable of producing ventilation sufficient (apart from any ventilation produced by a mechanically operated apparatus belowground) to enable all the persons who are belowground in the mine at any one time to leave it safely. Such apparatus shall, if it is not normally used to produce ventilation, be used once at least in each week and be kept constantly available for use.

(2) A mechanical appliance for ventilation (other than an underground installation) shall be in such position and placed under such conditions that the appliance is not likely to be rendered inoperative by an explosion.

(3) Compressed air shall not be used for the purpose of diluting or removing flammable or noxious gas other than to operate a mechanical fan or venturi, except where the manager of the mine satisfies an inspector that there is no other means available for that purpose.

2.5 If an inspector is of the opinion, in respect of a part of a mine that is by rule 2.1 required to be ventilated that, in the interests of the safety or health of the persons employed therein, it is necessary to improve the ventilation produced therein, he shall give to the manager

of the mine a requisition specifying that part and stating that he is of such opinion and requiring (according as specified in the requisition) either—

(a) that the ventilation which is produced in that part of the mine shall, within the period specified in the requisition, conform to the requirements specified in the requisition; or

(b) that such works for the purpose of improving the ventilation in that part of the mine as may be specified in the requisition shall be executed within the period specified in the requisition.

2.6 (1) Where a diesel engine is operated belowground in an underground coal mine—

(a) the quantity of fresh air in all mine workings where the diesel engine is operated shall not contain combustible or other contaminating gases in such concentration as to affect combustion in the diesel engine and significantly increase the emission of noxious or other objectionable gases; and

(b) the diesel engine shall not be operated in any place where the concentration of any noxious gas exceeds the maximum allowable concentration in the following table:—

TABLE

Gas	Maximum Allowable Concentration	
	Percentage by Volume	Parts per Million
Methane (CH_4)	1·25%	12 500
Carbon Dioxide (CO_2)	0·5%	5 000
Carbon Monoxide (CO)	0·005%	50
Oxides of Nitrogen (Expressed as NO_2)	0·0005%	5

(2) If it is found that the concentration of any noxious gas exceeds the maximum allowable by sub-rule 2.6 (1), the diesel engine shall be stopped immediately and shall not be re-started until the concentration has been reduced so that it does not exceed the prescribed limit.

(3) The Chief Inspector, on receiving written application from the manager of a mine, may grant an exemption from the maximum allowable concentration of carbon dioxide.

(4) (a) When a diesel engine is in operation belowground the atmosphere of the roadways in which it may operate shall be tested daily with approved detectors capable of detecting 10 parts per million

of carbon monoxide (CO), 1 part per million of oxides of nitrogen (read as (NO_2), and 0·1 per cent of carbon dioxide (CO_2). The tests shall be carried out in that portion of the roadways where the quantity of air in the ventilating current is least along all roadways in which the diesel engine may run.

(b) Such tests shall be made approximately 1 metre from the diesel engine and approximately 1·5 metres from the floor on the return air side of the engine exhaust and shall be recorded in a report book to be kept at the mine for that purpose.

2.7 (1) Subject to this rule—

(a) A person shall not be employed in a working place underground if the effective temperature of such working place is or exceeds 29·4 degrees Celsius;

(b) A person shall not be employed at a working face underground if the minimum air movement maintained at such working face is less than 15·2 metres per minute.

(2) The provisions of paragraph 2.7 (1) (a) shall not apply in case of emergency or in the case of any person or persons engaged in work designed to reduce the effective temperature of a working place below 29·4 degrees Celsius or to increase air movement at a working face to not less than 15·2 metres per minute.

(3) Subject to paragraph 2.7 (1) (b), a person may be employed in a working place underground if the effective temperature in such working place exceeds 27·2 degrees but is less than 29·4 degrees Celsius. The working time of every person so employed shall be reduced by 40 minutes for each 0·56 degree by which the effective temperature exceeds 27·2 degrees provided that the total reduction in working time shall not exceed one-third of the time actually spent in such working place.

(4) For the purposes of this rule "Working time" means the duration of the shift as prescribed by the appropriate industrial award less the time normally taken in travelling from the surface of the mine to the working place and from the working place to the surface of the mine.

(5) The effective temperature shall be calculated from the Tables set forth in the Schedule to this rule, namely Table A which shows the effective temperature under "still air conditions" and Table B which shows the deductions to be made from the "still air effective temperature" scale according to air movement in metres per minute recorded in the working place concerned.

(6) A sling or whirling psychrometer shall be used to measure all wet bulb and dry bulb temperatures for the purposes of Table A. The effective temperature accepted shall be the average of 3 determinations of effective temperatures made with an interval of 5 minutes each between the first and second determinations and between the second and third

determinations. Each determination shall be made at a distance of not less than 1·52 metres from any other determination and in the case of a working face the determinations shall extend across such working face.

(7) A Kata-thermometer or other approved device shall be used in calculating air movements for the purposes of sub-rule 2.7 (1) and also for the purposes of Table B. The accepted air movement shall be the average of 3 determinations of air movement made with intervals of 5 minutes each between the first and second determinations and the second and third determinations. Each determination shall be made at a distance of not less than 1·5 metres from any other determination and in the case of a working face the determinations shall extend across such working face.

SCHEDULE

TABLE A

Showing "still air effective temperatures" nearest tenth degree Celsius.

Wet Bulb Temp. in Deg. C.	Dry Bulb Temperatures in Degrees Celsius										
	29·4	28·9	28·3	27·8	27·2	26·7	26·1	25·6	25·0	24·4	23·9
29·4	29·4										
28·9	29·1	28·9									
28·3	28·6	28·6	28·3								
27·8	28·3	28·0	28·0	27·8							
27·2	28·0	27·8	27·5	27·5	27·2						
26·7	27·8	27·5	27·2	26·9	26·9	26·7					
26·1	27·2	26·9	26·9	26·7	26·4	26·4	26·1				
25·6	26·9	26·7	26·4	26·4	26·1	25·8	25·8	25·6			
25·0	26·7	26·4	26·1	26·1	25·8	25·5	25·5	25·3	25·0		
24·4	26·1	26·1	25·8	25·8	25·6	25·3	25·0	24·7	24·7	24·4	
23·9	25·8	25·8	25·6	25·3	25·3	25·0	24·7	24·4	24·1	24·1	23·9
23·3	25·5	25·3	25·3	25·0	24·7	24·7	24·4	24·1	23·9	23·9	23·6
22·8	25·3	25·0	25·0	24·7	24·4	24·1	24·1	23·9	23·6	23·6	23·3
22·2	25·0	24·7	24·7	24·4	24·1	23·9	23·9	23·6	23·3	23·0	22·8
21·7	24·7	24·4	24·1	24·1	23·9	23·6	23·3	23·3	23·0	22·8	22·5
21·1	24·4	24·1	24·1	23·9	23·6	23·3	23·3	23·0	22·8	22·5	22·2

TABLE B

Correction to be applied to "still air effective temperature" obtained from Table A to allow for air movement.

Air Movement in Metres per Minute		Correction to be Subtracted in Degrees Celsius
From—	To—	
0·00	2·74	0·00
3·05	7·93	0·28
8·23	12·80	0·55
13·10	17·98	0·83
18·29	23·77	1·10
24·08	30·48	1·38
30·79	38·41	1·65
38·71	46·94	1·93
47·24	57·00	2·20
57·30	67·36	2·48
67·67	78·03	2·75
78·34	89·00	3·04

(8) An underground coal mine shall be provided with a barograph and a thermometer which shall be placed above ground in a conspicuous place near the entrance to the mine.

2.8 If an inspector is of the opinion in respect of any part of a mine that is by rule 2.1 required to be ventilated that, in the interests of the safety or health of the persons employed therein, it is necessary to take tests and readings of the atmospheric conditions therein, he shall give to the manager of the mine a requisition specifying that part and stating that he is of such opinion and requiring (according as specified in the requisition) tests and readings of the atmospheric conditions therein to be taken at specified intervals and entered in the record book.

2.9 Every instrument that is provided at a mine for taking tests or readings of the mine atmosphere shall be properly maintained so as to give accurate readings at all times. Unless otherwise approved, such instruments shall be maintained to the standards of the National Measurement Laboratory.

2.10 In the event of a stoppage of the mechanically operated ventilating apparatus situated on the surface of an underground coal mine—

(a) all electrical power supply belowground to a gassy mine or a gassy place shall be switched off automatically and concurrently with the stoppage of such apparatus provided that it shall not be necessary to automatically switch off the power to an intrinsically safe circuit (Ex.i.) as classified by Australian Standard 3000—1981—SAA Wiring Rules;

(b) if the stoppage of such apparatus continues for a period of 30 minutes, all persons shall be withdrawn from belowground and brought to the surface without delay;

(c) a person, other than a deputy or holder of a higher certificate granted under this Act, shall not go belowground after withdrawal of persons in accordance with paragraph (b) until an examination has been made by a deputy or holder of a higher certificate granted under this Act and it has been found safe for persons to proceed belowground; and

(d) electrical power supply shall not be restored to any part of the mine until a deputy or holder of a higher certificate granted under this Act has ensured by examination that there is less than one and one-quarter per centum flammable gas in the general body of the air in that part of the mine where electrical apparatus or cable is installed.

PART 3—PREVENTION OF AIR LEAKAGE

3.1 An efficient air-lock shall be provided at each shaft or outlet which is directly connected to a fan on the surface of an underground coal mine, where access may be required to the shaft or outlet.

3.2 A road that is not required for the working of the mine, and which connects airways which as regards any working face are intake and return airways, shall be stopped off forthwith so as to minimise leakage of air through it.

3.3 (1) Air doors, stoppings, crossovers, and sheets or other ventilating appliances shall be installed where necessary for the regulation of ventilating air currents, and shall be of flame-resistant material and shall be kept in good order and condition.

(2) For the proper conduct of air into and along the working places and roads, all doors, sheets, stoppings and walls shall be kept as air tight as practicable.

(3) All stoppings between intake and return airways shall be constructed of masonry, brickwork, concrete or other approved flame-resistant material.

(4) The face of every stopping shall be kept clear for the purpose of inspection.

(5) The floor and walls of all air-crossings in intake or return airways shall be constructed of masonry, brickwork, or concrete or other approved flame-resistant material.

(6) Every ventilating sheet shall be of approved flame-resistant material and shall be properly maintained.

3.4 (1) In every road which is required for the working of an underground coal mine and which is a connection between a main intake airway and a main return airway, at least two suitable doors constructed of flame-resistant material shall be installed to minimise the leakage of air. Such doors shall be self-closing and of substantial construction so that they are not damaged by normal usage, and shall be properly maintained. Provided that only one such door not exceeding 0·6 square metres in area may be installed for man access purposes.

(2) In any other road the ventilation in which is to be restricted by means of any doors or sheets for the purpose of preventing short circuiting of an air current, at least 2 doors shall be installed and properly maintained or, if that is impracticable, at least one door and one sheet, or two sheets.

(3) Doors and sheets shall be so spaced that, whenever one door or sheet is opened, at least one other door or sheet can be kept shut.

(4) Doors and sheets shall not be left in an open position except where and for so long as it is necessary to allow persons or equipment to pass through.

(5) Any person who opens any such door or sheet shall ensure that it is closed again as soon as possible.

3.5 (1) In every underground coal mine stoppings shall be erected to seal off—

(a) a mine fire or a heated area;

(b) a goafed area in a seam liable to spontaneous combustion; and

(c) a goafed area which could be subject to heating from another seam.

(2) Every stopping required by sub-rule (1):—

(a) shall be fitted with an air sampling pipe and valve to allow sampling of the atmosphere inside the stopping to be made from a position outside of the sealed area. Such pipe and valve shall be positioned equidistant from the sides of the stopping and as high as practicable from the floor; and

(b) shall be constructed with suitable materials and in a workmanlike manner provided that the inspector may, by requisition given to the manager of the mine, require any stopping to be altered or modified if he is of the opinion that the stopping does not meet the standards prescribed by this rule.

(3) Where stoppings are constructed in a part of the mine where there is likely to be a leakage of air across the sealed area, suitable means shall be provided to maintain a satisfactory balance of the pressures at the outer faces of the stoppings.

(4) The means of balancing pressures at the outer faces of stoppings shall include one or both of the following arrangements—

(a) Equalising roads or ducts connecting the outer faces of stoppings to equalise the pressure at the outer faces of those stoppings;

(b) Pressure chambers adjacent to the outer face of the stoppings which will enable adjustment of pressure therein to be made equal to the pressure in the sealed areas behind the stoppings.

(5) For the purposes of this rule, a seam at any mine shall be taken to be liable to spontaneous combustion if there has been in that seam a heating or fire the cause of which has not been proved to be other than spontaneous combustion.

(6) Every stopping that is constructed as a final seal shall comply with the following additional requirements—

(a) The stopping shall be capable of withstanding a pressure of at least 345 kPa; and

(b) The stopping shall be sited to allow for the construction of a pressure chamber, whether required immediately or at some future time.

PART 4—DISTRIBUTION OF AIR

4.1 The ventilation system of an underground coal mine shall be arranged so that—

(a) intake air does not travel through any place where it is likely to be affected by steam, stagnant water, stables or abandoned workings; and

(b) intake air does not travel across the face of any stoppings used to seal any area which has contained a fire or heating or which has been abandoned unless the ventilating pressure at such stoppings is equalised: Provided that in a mine existing at 19th January, 1978, wherein intake air does not travel clear of stoppings used to seal any such area, an exemption may be granted by the Chief Inspector.

4.2 (1) In an underground coal mine other than a mine existing at 1st July, 1978, provision shall be made for an intake airway other than a roadway containing a belt conveyor. This requirement shall apply to any part of such mine other than a panel or sub-panel where the method of working limits the number of roadways to less than three: Provided that in the initial development of a new mine the belt conveyor roadway may serve as the only intake airway for such time as is reasonably required to provide a second intake airway.

(2) All belt conveyor roadways shall be segregated from other intake airways and from return airways.

4.3 Air flow shall be maintained in every part of an underground coal mine in which a person works or travels. Neutral areas (being areas without perceptible air movement) created by pressure equalization or inefficient air distribution shall not be allowed.

4.4 The mine ventilation system shall be arranged so that intake air to a coal production unit or drivage in operation travels clear of any other coal production unit or drivage in operation.

4.5 (1) The manager of an underground coal mine shall ensure that at least once in every calendar month the velocity and quantity of air in the main current and in every split, and at such other points as may be required by an inspector, are measured and entered in the record book.

(2) For the purposes of this rule, the measuring points shall be located—

(a) In every intake airway at a point as near as practicable to the surface to determine the total intake air quantity;

(b) In every return airway at a point as near as practicable to the surface to determine the total return air quantity; and

(c) In every split at a point in the return airway where the total quantity of air ventilating the working face can be determined.

4.6 The manager of an underground coal mine in which a seam liable to spontaneous combustion is being mined shall—

(a) ensure that the CO/O_2 deficiency ratio is determined in respect of each district return airway at least once in each calendar month;

(b) ensure that for at least one week prior to, and during, pillar or other block extraction operations, the district return is either continuously monitored or analysed daily for carbon monoxide, and that a record of every monitoring and analysis is entered in the record book;

(c) ensure that during pillar or other block extraction operations, weekly measurements of air quality and quantity in the district return are made to establish the volume of flammable

gas and of carbon monoxide being emitted and the CO/O_2 deficiency ratio, and that a record of such data is entered in the record book;

(d) ensure that before pillar or other block extraction in any district is commenced, preparations for the rapid erection of a seal in each entrance to that district have been completed. Such preparation shall consist of the installation and supply of all necessary materials so that seals that are, as near as practicable, air-tight may be erected in all such entrances within a period not exceeding three hours.

4.7 At least once in every calendar month the wet and dry bulb registration of the temperature of the atmosphere as well as the effective temperature in the working places of each ventilating district in every underground mine shall be taken by an authorised person. The highest registration so observed as well as that in the first place on the intake end of the ventilating district and in the last place on the return end of such ventilating district shall be recorded in the record book.

4.8 An inspector may take such ventilation measurements as he thinks fit and he may, by requisition given to the manager of the mine, require such measurements to be made in the mine at stated intervals in those workings where the inspector considers such measurements to be necessary to facilitate compliance with these rules. The results of all such measurements shall be recorded in the record book.

4.9 Where an inspector considers it necessary for the safety or health of the persons employed in any part of a mine he may, by requisition given to the manager, require that an additional quantity of air be circulated.

4.10 Where it is intended to make any alteration in the main ventilation system of an underground coal mine, the manager shall, prior to making any such alteration, notify an inspector in writing and give full particulars of the proposed alteration.

4.11 Notwithstanding anything contained in this Part, whenever any alteration is made in the arrangements for ventilating a mine which effects or may effect substantially the quantity of air passing any point at which measurements thereof are required to be taken, a measurement of the quantity of air at each such point shall be taken as soon as any substantial change is apparent in the quantity of air flowing.

PART 5—VENTILATING MACHINERY AND FANS

5.1 There shall be provided in connection with every ventilating fan driven by mechanical power (other than an auxiliary fan) a water gauge and instrumentation to record either the power consumption of the fan

or the ventilating pressure. The water gauge or an instrument recording the ventilating pressure shall be installed in a position where it can be conveniently read by any person.

5.2 The manager of the mine shall give directions as to the speed at which a fan (other than an auxiliary fan) is to be run, and where applicable, the angle at which the fan blades are to be set, to the persons appointed in writing by the manager to be in charge of that machinery. No person other than the manager shall give such directions.

5.3 (1) During the time that any person is belowground, the person in charge of the machinery driving a fan (other than an auxiliary fan) shall observe the water gauge or instrument recording the ventilating pressure at intervals not exceeding 8 hours or at more frequent intervals if so required by the inspector in the interests of the safety or health of the persons employed belowground.

(2) During the time that any person is belowground and where an instrument recording the ventilating pressure is not in use, the person in charge of the machinery driving a fan (other than an auxiliary fan) shall at the end of each period of 4 hours enter in a report book to be kept at the mine for the purpose the power consumption of the fan and the pressure shown by the water gauge at the end of that period.

(3) The person in charge of the machinery driving a fan (other than an auxiliary fan) shall forthwith report to the official of the mine under whose direction he works—

(a) any damage to or defect or derangement in or stoppage of that machinery; and

(b) any unusual variation in the pressure shown by the water gauge.

5.4 The manager of an underground coal mine shall ensure that an auxiliary fan is not used belowground unless it is of an approved type. An auxiliary exhaust fan shall be of such a design that the electric motors are at all times ventilated by air drawn from outside the external casing of the fan.

5.5 The following requirements shall apply in respect of the operation of an auxiliary fan:—

(a) the quantity of air of the main ventilating current at the site of the auxiliary fan shall be at least 30 per centum greater than the quantity of air which the auxiliary fan is capable of producing in open circuit. Such main ventilating current shall be determined when the auxiliary fan is not in operation;

(b) as far as practicable, air re-circulation shall not be allowed to occur;

(c) an auxiliary fan shall be switched off automatically in the event of any failure of the main ventilation system;

(d) in the event of any failure of an auxiliary fan other than a momentary stoppage, unless other means are provided to adequately ventilate the part of the mine served by the auxiliary fan, the following provisions shall apply in respect of that part of the mine:—

(i) All persons shall be withdrawn immediately from that part of the mine;

(ii) Electric power shall be cut off immediately from all cables and apparatus in that part of the mine; and

(iii) A person other than a deputy or the holder of a higher certificate granted under this Act shall not re-enter that part of the mine, and electric power shall not be restored to the cables or apparatus therein, until the ventilation system has been restored and the deputy or the holder of a higher certificate granted under this Act has ensured that the ventilation is adequate;

(e) a person other than the deputy in charge of a district affected or an official of the mine authorised by the manager or a person authorised by such a deputy or official shall not start, stop, remove or alter a fan installed belowground at a mine;

(f) a deputy or other official shall not start or authorise any person to start such a fan on any occasion unless the deputy or official is satisfied that it is safe for the fan to be so started;

(g) in the event of a fan having to be used to remove an accumulation of gas, the tubing in that place where such accumulation exists shall be disconnected back at a point where one and one-quarter per centum or greater percentage of flammable gas cannot be detected using a locked flame safety lamp or other device of an approved type. If this point is not closer to the fan than 20 metres, the fan may be re-started, and the tubing extended to dilute the flammable gas and render it harmless;

(h) a forcing auxiliary fan shall be installed on the intake side of the place to be ventilated by it or an exhausting auxiliary fan shall be installed on the return side of the place to be ventilated by it;

(j) an auxiliary fan shall not be installed at a point which is less than 4·5 metres from the nearer side of the entrance to the place to be ventilated by it; Provided that in the case of two or more fans installed in series this requirement shall apply only to one of them;

(k) an auxiliary fan, whether driven electrically or otherwise, shall be effectively earthed in accordance with Australian Standard 1020–1970, Static Electricity Code; and

(l) there shall be installed and maintained in connection with an auxiliary fan a suitable air duct to ensure adequate ventilation of the working place served by the fan and to minimize leakage.

5.6 The manager shall notify an inspector within 24 hours of the installation of an auxiliary fan belowground. An inspector may, by requisition given to the manager of the mine, impose such further requirements, not inconsistent with the provisions of rule 5.5, as he may consider necessary in relation to the installation and operation of an auxiliary fan, having regard to the circumstances of the particular working place.

5.7 (1) Not more than one auxiliary fan shall be used at any time in a ventilating split without the written permission of an inspector.

(2) The inspector shall give such permission if he is satisfied that the fans may be used with safety.

5.8 (1) The manager of the mine shall ensure that at least once in every week an authorised person measures the quantity of air being delivered or exhausted by an auxiliary fan and determines whether any air is being re-circulated by that fan.

(2) Particulars of the quantity measured shall be recorded forthwith by the manager or the authorised person, as the case may be, in the record book.

5.9 (1) A fan (other than an auxiliary fan) shall not be installed belowground without the written permission of the Chief Inspector.

(2) Application for such permission shall be made in writing by the manager of the mine giving full details of a survey of the ventilation of every part of the mine which will or may be substantially affected and a report upon the appropriate type, size and location of the proposed fan, being a survey and report made by a competent person or persons appointed by the manager of the mine or employed by the owner for the purpose.

(3) The Chief Inspector shall give such permission if he is satisfied that the fan may be used with safety.

5.10 An inspector may, by requisition given to the manager of the mine, require that additional auxiliary fans be provided for the ventilation of any working place if he is of the opinion that such fans are necessary to provide adequate ventilation therein.

PART 6—FLAMMABLE GAS CONTENT

6.1 (1) The manager of an underground coal mine shall ensure that every airway therein, which as regards any working face is an intake airway, is normally kept free from flammable gas.

(2) The provisions of this rule shall not apply to any part of such an airway within 100 metres of the first working place at that working face.

(3) For the purposes of this rule, an intake airway shall be deemed not to be normally kept free from flammable gas if the average percentage by volume of flammable gas found in 6 samples of air taken by an inspector in the general body of the air in that airway at intervals of not less than 24 hours between samples over a period of not less than 14 days exceeds one quarter per centum.

6.2 Every underground coal mine that is a gassy mine shall be so declared by the manager of the mine or by the inspector by entry in the record book.

6.3 (1) Where an underground coal mine which has been declared to be a gassy mine the manager of the mine may make application to the Chief Inspector to have such declaration cancelled if, but only if—

(a) the manager has established to the satisfaction of the inspector that in the 6 months period preceding the date of application flammable gas in an amount of one quarter per centum or more has not been found in 6 determinations made at intervals of not less than 21 days; and

(b) flammable gas has not been ignited in the mine at any time during the 2 years immediately preceding the date of the application.

(2) The Chief Inspector may grant the application if he is satisfied the conditions in the mine and in its projected workings do not warrant the continuance of the declaration of the mine as a gassy mine but nothing in this rule shall prevent the future application of rule 6.2 to the mine.

PART 7—DETERMINATION OF FLAMMABLE GAS CONTENT

7.1 Determinations of the flammable gas content of an underground coal mine shall be made—

(a) by an authorised person and by the use of an approved apparatus; or

(b) by means of samples of air taken by an authorised person and analysed within 7 days of the taking thereof.

7.2 Determinations of the flammable gas content in any part of a mine which comprises a working face shall be made in respect of the general body of the air in that part of the mine and at suitable points fixed by the manager.

7.3 An inspector may, by requisition given to the manager of the mine, require determinations of the flammable gas content to be made at other points in the mine, whether in addition to or in substitution for the points referred to in rule 7.2, if the inspector is of the opinion that determinations at such other points are necessary for the correct determination of the flammable gas content.

7.4 In every gassy mine determinations of the flammable gas content shall be made at every point required by or under rules 7.2 and 7.3 at intervals not exceeding 7 days: Provided that—

(a) If any determination at any such point shows a flammable gas content exceeding one per centum by volume, further determinations shall be made at the corresponding point at intervals not exceeding 24 hours for so long as the flammable gas content exceeds that percentage and for the 7 next following working days, unless an inspector by notice given to the manager directs otherwise;

(b) If every determination made during a period of 28 days at any such point shows a flammable gas content not exceeding 0·8 per centum by volume, it shall be sufficient to make determinations at the corresponding point at intervals not exceeding 28 days for as long as the flammable gas content shown thereby does not exceed that percentage;

7.5 Notwithstanding anything in rule 7.4, whenever any alteration is made in the arrangements for ventilating a mine which affects or may affect substantially any part of the mine in which determinations of the flammable gas content have to be made, a determination of the flammable gas content at each point in that part of the mine shall be made as soon as any substantial effect of the alteration would be apparent.

7.6 Any determination of the flammable gas content for the purposes of this Part shall be made during the latter half of the shift normally producing the most coal:

Provided that if it appears to the manager or an inspector that the flammable gas content is normally greatest at any point at any other stage of mining operations, determination at that point may be made at that stage if an inspector by notice given to the manager so allows, and shall be made at that stage if an inspector by notice given to the manager so directs.

7.7 In an underground coal mine other than a gassy mine, a determination of the flammable gas content shall be made in the atmosphere in each district return airway at intervals not exceeding 3 months.

7.8 On every occasion on which a determination of flammable gas content is required to be made in respect of a return airway serving a longwall face, a determination of flammable gas content shall also be made as near as is practicable to the point in that airway 10 metres from the junction thereof with any other return airway.

7.9 (1) On each occasion when a determination of flammable gas content is made for the purposes of this Part, the air quantity passing the point of gas determination shall be measured at the time of making such determination.

(2) Particulars of every determination of flammable gas content together with the quantity of air passing at the time of such determination shall be recorded forthwith in the record book.

7.10 If any determination (other than one made pursuant to rule 7.8) shows a flammable gas content exceeding one per centum by volume, the manager of the mine shall forthwith give notice thereof to an inspector unless the inspector by notice given to the manager has otherwise directed.

7.11 Where the general body of the air in any part of the mine is found to have a flammable gas content of 1·25 per centum or more by volume—

(a) the electric power shall be switched off immediately from all cables, switchgear and machinery in that part of the mine; and

(b) the electric power shall not be restored until the general body of the air therein has been improved to the extent that it contains less than one and one-quarter per centum of flammable gas by volume.

7.12 Where the general body of the air in any part of the mine is found to have a flammable gas content of 2·5 per centum or more by volume—

(a) all persons shall be withdrawn immediately from that part of the mine; and

(b) a person, other than a person working to re-establish adequate ventilation, shall not be permitted to re-enter until the general body of the air therein has been improved to the extent that it contains less than 2·5 per centum of flammable gas by volume.

7.13 Gas detectors shall be provided in an underground coal mine for detecting the presence of flammable gas and noxious gas. Such detectors shall be of an approved type and shall be provided in such number as will enable the provisions of these rules to be complied with.

7.14 Unless otherwise approved, every gas detector (other than a flame safety lamp) used at an underground coal mine shall be checked and calibrated to the standards of the National Measurement Laboratory at intervals of not more than 6 months. The test certificate for each such check and calibration shall be kept at the office of the mine.

The manager of the mine shall ensure that no gas detector is used unless it has been tested as required by this rule. Such test certificates shall be produced to an inspector upon demand.

7.15 Every portable gas detector that is in use belowground shall at all times be in the personal charge of an authorised person.

7.16 (1) Gas detectors shall be provided in an underground coal mine for detecting the presence of flammable gas and noxious gas at the following places—

(a) at each place where a coal-getting or coal-cutting machine is in use, one gas detector;

(b) at each other working face (including a drift or heading in stone), one gas detector; and

(c) at each longwall face, one gas detector for each eight persons wholly or mainly employed at that face during the shift, in addition to that required by paragraph (a).

(2) Where an electrical coal-getting or coal-cutting machine is used at a working face and the average of 6 determinations of flammable gas content made at a point on the return side of that face exceeds 0·5 per centum by volume in the general body of the return air, an approved automatic flammable gas detector shall be installed on that machine so that the sensing device is situated in the air ventilating that electrical machine which is closest to the working face. Such detector shall be arranged to provide audible and visual warning should the flammable gas content at the sensing device be one per centum by volume in the atmosphere at that point. The detector shall also be arranged to de-energise automatically the machine on which it is installed when—

(a) such detector is not operating properly; or

(b) the flammable gas content at the sensing device is two per centum by volume in the atmosphere at that point.

(3) In the case of a longwall face, an approved automatic flammable gas detector shall also be installed on any electrical equipment situated at the return airway end of the longwall face, if the average of 6 determinations of flammable gas content made at a point, on the return side of the face exceeds 0·5 per centum by volume in the general body of the return air.

Such detector shall be installed so that the sensing device is situated in the air current ventilating the electrical equipment, and shall be arranged to provide audible and visual warning should the flammable gas content at the sensing device be one per centum by volume in the atmosphere at that point. The detector shall also be arranged to de-energise automatically the electrical equipment when—

(a) such detector is not operating properly; or

(b) the flammable gas content at the sensing device is one and one-quarter per centum by volume in the atmosphere at that point.

(4) Following the de-energising of electrical equipment by an automatic detector, power shall not be restored to that equipment until the flammable gas content in the atmosphere has been determined to be less than one and one-quarter per centum by volume.

(5) For the purposes of this rule, the 6 determinations of flammable gas content shall mean the last 6 determinations made under this Part or the last 6 determinations made by an inspector at intervals of not less than 14 days.

7.17 The manager shall give directions to the persons who are to have charge of gas detectors (other than detectors which operate automatically) as to the minimum number of tests for flammable gas to be made by them.

7.18 (1) A person who uses a flame safety lamp for the purpose of testing for the presence of flammable gas shall not raise the lamp higher, or insert the lamp into the gas further, than is necessary to allow the presence of flammable gas to be detected with reasonable certainty.

(2) Where any flammable gas is detected, any further tests shall be made by means of a device that is designed to introduce a sample of mine atmosphere directly into the flame safety lamp.

(3) Where any gas ignites in a flame safety lamp during any test referred to in sub-rule (1), the person using the lamp shall immediately withdraw it from the place that is being tested and he shall, if necessary, forthwith extinguish the lamp carefully so as to prevent, as far as practicable, any continued burning or explosion of the flammable gas in the lamp.

PART 8—GAS MONITORS

8.1 Where flammable gas content in any return airway of an underground coal mine (other than a bleeder heading from a goaf area before its junction with any other return airway) exceeds 0·5 per centum, an approved continuous monitoring system shall be provided and installed so that the percentage of flammable gas content in that return airway is automatically recorded.

PART 9—SELF RESCUERS

9.1 In this Part a "self-rescuer" means a self-rescuer of an approved type, subject to any conditions the Chief Inspector may impose in relation to its use.

9.2 Self-rescuers shall be provided for use by all persons who go belowground in an underground coal mine. The manager shall ensure that all self-rescuers are maintained in serviceable condition and that a self-rescuer is issued to every person who goes belowground.

9.3 A person shall not be belowground in an underground coal mine at any time unless:—

(a) he is carrying a self-rescuer or has one available within one metre of his person, ready for immediate use;

(b) he has been fully instructed in the use of the self-rescuer; and

(c) he has examined the self-rescuer, and, before proceeding belowground, satisfied himself that it has not suffered external damage and that any external seal is in position and intact.

9.4 A person who has been issued with a self-rescuer shall be responsible for its safe keeping and for ensuring that, as far as practicable, the self-rescuer is not damaged whilst in his possession or control.

9.5 The manager of a mine shall ensure that all self-rescuers are used in the mine in accordance with any conditions imposed in relation to their use by the Chief Inspector.

PART 10—EXAMINATION OF WORKINGS

10.1 For the purpose of the inspections required by this Part, a station shall be appointed at the surface entrance to an underground coal mine and a person shall not be permitted to pass beyond such station until all parts of the mine beyond that station have been examined and reported to be safe in the manner prescribed.

10.2 (1) A deputy or deputies of the mine appointed by the manager for the purpose shall, within the period of 2 hours immediately before the commencement of work in a shift, inspect with a locked flame safety-lamp or other approved apparatus and an approved electric lamp every part of the mine situated beyond the station and in which workmen are to work or travel during that shift and all working-places in which work is temporarily stopped which are safely accessible on the intake side of the last working-place, and shall ascertain the conditions thereof so far as the presence of gas, ventilation, roof and sides, and general safety are concerned.

(2) A deputy shall not while in any mine for the purpose of any inspection under this rule carry or have in his possession—

(a) any lamp other than a locked flame safety-lamp or approved electric lamp; or

(b) any match or matches or any apparatus of any kind for producing a light or spark or any smoking tobacco, cigar, cigarette, pipe or contrivance for smoking.

10.3 (1) A full and accurate report specifying the condition of the ventilation, and the location of noxious or flammable gas found, and what defects in roof or sides and other sources of danger (if any) were observed, shall be recorded without delay in a report book to be kept at the appointed station referred to in rule 10.1. Such report shall be accessible to all the workmen.

(2) Such report shall state what part of the mine has been inspected and whether the same is considered to be safe, and shall be signed by, and so far as the same does not consist of printed matter, shall be in the hand-writing of the person who made the inspection, and shall be delivered by him to the mine official in charge of the shift.

(3) Whenever it is impracticable, owing to the extensiveness of the mine, for the deputy or deputies to return to the surface for the purpose of making a report within the time fixed, the Chief Inspector may approve a system of reporting whereby the report is written at an underground station referred to in rule 10.5 and is then telephoned in full to the manager or person in charge who shall forthwith make a certified written copy of the telephoned report in the report book at the surface.

10.4 Notwithstanding the foregoing provisions of this Part, when any part of the mine has been inspected in accordance with rules 10.5 and 10.6, it shall not be necessary to inspect such part of the mine before the commencement of work in a shift which succeeds without any interval the shift in the course of which such part has been inspected.

10.5 A similar inspection shall be made in the course of each working shift, of all parts of the mine beyond one or more underground stations appointed for the purpose at the entrance to a ventilating district on the intake airway and in which workmen are to work or travel during the shift and a similar report of such inspection shall be made at the end of the shift in the report book kept at the surface.

10.6 Further similar inspections shall be made of all places in each ventilating district where men are to work beyond the stations referred to in rule 10.5 so that no greater period than 4 hours shall elapse between such inspections:

Provided that in the case of a mine worked by a succession of shifts at least one inspection shall be made on each shift of all places temporarily stopped which are safely accessible on the intake side of the last working-place and the result of such inspections shall be included in the report to be made at the end of the shift in the report book kept at the surface.

10.7 Any person finding flammable gas in the workings of a mine at any time or detecting evidence of the occurrence of burning or self heating of coal, or gas, or other material whatsoever shall forthwith report the finding of such flammable gas, burning or heating to the mine official in charge of the shift and shall also before leaving the mine make an appropriate entry in the report book kept at the surface.

10.8 (1) A deputy shall at least once in every week, accompanied by an experienced miner, examine as far as is practicable the state of the waste workings and make and sign a true report of the state thereof in the report book kept at the surface.

(2) A deputy shall at least once in every week examine all main airways not otherwise required by these Rules to be examined and make and sign a true report of the state thereof in the report book kept at the surface.

10.9 (1) The additional tests and examinations referred to in this rule shall be made in a gassy mine before any electrical coal cutting, loading or mobile machine is used within 20 metres of any working face belowground.

(2) The Deputy for the time being in charge of such machines shall make regular tests for flammable gas, in addition to those required by rules 10.2, 10.5 and 10.6, in the working places where such machines are employed.

(3) Should flammable gas be detected, further tests shall be made to determine the flammable gas content.

(4) The place shall not be deemed safe for the introduction of the machine if flammable gas in excess of 1·25 per centum is detected, but it shall be deemed safe for the withdrawal of the machine, if the general body of the air in the vicinity of the machine is free from flammable gas in excess of 1·25 per centum.

(5) A machine shall not be placed within 20 metres of any working place unless and until tests have been made to establish that such place is free from flammable gas in the percentages prescribed.

(6) The electricity supply shall be disconnected immediately from any cables or apparatus in any part of a mine where the percentage of flammable gas in the general body of the air in such part is 1·25 per centum or upwards.

PART 11—COMBUSTIBLE DUST

11.1 This Part applies to and in relation to coal dust produced from underground mining operations and deposited in roads and likely to be raised into the ventilating current or open spaces thereby creating an explosion propagating condition.

11.2 (1) As far as practicable no coal dust shall be allowed to enter an intake airway from any source on the surface of the mine.

(2) The dust produced in any operation belowground shall be minimised.

(3) Every conveyance used for coal transport shall be constructed and maintained so as to prevent, as far as practicable, coal dust escaping therefrom.

(4) Every conveyor used for coal transport shall be designed, constructed and maintained so that dispersal of dust into the atmosphere and its deposition in roadways is minimised.

11.3 The methods of prevention, suppression and collection of coal dust in all operations of winning and transporting of coal belowground shall be regularly reviewed by the owner and the manager of the mine so that any necessary improvements may be made.

11.4 (1) The Manager of an underground coal mine shall make and carry out efficient arrangements to ensure that, in respect of every length of road which is required to be ventilated, any dust on the floor, roof or sides thereof, which can be raised into the air, shall contain not less than the minimum percentage of incombustible matter determined in accordance with the following table in relation to coal in connection with the working of which that length of road is used.

TABLE

MINIMUM PERCENTAGE OF INCOMBUSTIBLE MATTER REQUIRED FOR COALS OF VARIOUS VOLATILE MATTER CONTENTS

Average Volatile Matter Content of Coal	Minimum Percentage of Incombustible Matter Required
Per cent	
Not Exceeding 20	50
22	55
25	60
27	65
30	68
32	70
35	72
Exceeding 35	75

(2) The incombustible matter in any dust includes the moisture contained therein.

(3) The average volatile matter content of the coal shall be calculated on an ash free dry basis of the seam of coal worked through the road (or if more than one seam is so worked of that seam which has the highest average volatile matter content), and shall be taken to be more than 35 per centum unless the contrary has been proved by an analysis made and communicated to the Inspector within the previous 12 months. The analysis shall be made in accordance with Australian Standard 1038, Methods for the Analysis and Testing of Coal and Coke, on a sample of coal from a representative section of the seam, or from a representative quantity of the run-of-mine coal from the seam.

11.5 Limestone dust (or other approved dust) to the following specification shall be used for the treatment of coal dust as required by these rules:—

(a) After drying to 105°C to constant weight the dust shall not contain more than 10 per centum by weight of dust which does not pass through a 60 mesh test sieve;

(b) The dust shall be of such fineness that, of the dry dust which passes through a 60 mesh sieve, not less than 50 per centum by weight and not more than 75 per centum by weight shall pass through a 240 mesh sieve;

(c) The dust shall contain less than 3 per centum of free silica; and

(d) The dust shall be of such character that it is readily dispersable into the air, and, when in use in places where it is not directly wetted by water from the strata, does not cake but is dispersed into the air when blown upon with the mouth or by a suitable appliance.

11.6 For the purposes of this Part, the term "road" or "roadway" includes all roads extending from the shaft or outlet to within 13 metres of the working face.

11.7 The following provisions shall apply in mines where mining is carried out by continuous mining machinery—

(a) nothing in this Part shall require the application of stonedust on the immediate intake side of the working face during production operations;

(b) following the completion of coal production on any day the excavation formed on that day shall be treated with stonedust in accordance with sub-rule 11.4 (1) and coal production shall not be resumed until such excavation has been so treated;

(c) when a continuous miner, or other coal producing machine is in operation, a trickle-duster, or other effective means of continually placing incombustible dust, shall operate to treat the coal dust in the immediate return airway.

PART 12—SAMPLING AND ANALYSIS OF COMBUSTIBLE DUST

12.1 For the purpose of establishing the efficacy of his arrangements made for the purposes of sub-rule 11.4 (1), the Manager of the mine shall ensure that a sufficient number of samples of the dust on every length of road to which that rule applies are systematically collected and analysed at intervals not exceeding 30 days.

12.2 (1) In the case of any length of road which is used for the transport of coal or which is within 183 metres of a working face and is used as a return airway in respect of that face, the number of samples of dust collected and analysed shall not be less than in the proportion of 6 per kilometre.

(2) An inspector may direct or allow this rule to be varied or modified in respect of the working of a particular coal mine.

12.3 If in the case of any length of road every analysis of a sample of dust collected within the preceding 6 months indicates that the natural conditions of the road are such that the requisite percentage of combustible matter is maintained without the application of incombustible dust or if, in the case of a length of road to which rule 12.2 does not apply, every such analysis indicates that the application of incombustible dust is not necessary at intervals of less than 6 months, it shall be sufficient for samples to be collected and analysed at intervals not exceeding 90 days or at such longer intervals as may be approved by the Chief Inspector:

Provided that if there is any change in the natural conditions or in the method of working which affects or may affect substantially the percentage of incombustible matter in any such length of road, samples shall be collected and analysed as soon as any effect of the change would be apparent.

12.4 The Manager shall ensure the result of every analysis required to be made by these rules is, within 28 days of the collection of the sample of dust, entered in a report book to be kept at the mine for the purpose. Entries in the report book relating to each length of road shall be distinguished by colour, number, letter or mark which shall be identified with that length of road by means of a suitable plan preserved with that book.

12.5 When any sample is collected to ascertain the percentage of incombustible matter in any dust in any road for the purposes of these rules, the sample shall be collected—

(a) over a length of road not less than 46 metres in length;

(b) in the case of dust on the roof or sides, to a depth not exceeding 6 millimetres or, in the case of dust on the floor, to a depth not exceeding 25 millimetres; and

(c) in the manner specified in rule 12.9.

12.6 Where any length of road is found to require treatment with incombustible dust more frequently or more recently than other parts of that road, the Inspector may, by requisition given to the manager of the mine, require separate samples be collected from such length of road.

12.7 Samples of the dust on the roof and sides of any length of road shall be collected together in the case of a length of road supported by steel arches and in the case of any other length of road unless the inspector has issued to the manager of the mine a requisition that samples of the dust on the roof and sides of that length of road are to be collected separately.

12.8 If in the case of any length of road the dust on the floor is systematically treated so as to consolidate it and render it indispersable, samples of the dust on that floor shall be collected to a depth of 6

millimetres, as nearly as may be, and be collected together with dust from the roof and sides of that length of road unless the inspector has issued to the manager of the mine a requisition that the samples are to be collected separately or to some other specified depth.

12.9 Every sample of dust shall be so collected as to be representative of the whole surface of the floor, roof, or sides, roof and sides or all of them, as the case may be, of the length of road in question and shall be collected—

(a) by a method of strip sampling by which the dust is collected from a succession of transverse strips as nearly as may be of equal width and equally spaced, not more than 4·5 metres apart and of an aggregate area not less than one per centum of the total area sampled; or

(b) by a method of spot sampling by which it is collected from one point for each metre of that length of road.

12.10 When any sample of dust is to be analysed for the purpose of these rules the dust shall be well mixed and a representative portion which is passed through a British Standard 60-mesh sieve shall be analysed by the method described in rule 12.12.

12.11 (1) The sample of dust for analysis shall be sieved through a 60-mesh sieve. The sieve may be tapped lightly to assist the passage of the dust through the sieve, but the dust shall not be rubbed through the sieve.

The dust that passes through the sieve shall be kept in an airtight container until it is analysed.

(2) If a dust sample is too damp to be sieved through the 60-mesh sieve, it shall be sieved through an 18-mesh sieve and the fraction passing through that sieve shall be allowed to dry in the air during one hour, and thereafter shall be sieved through a 60-mesh sieve, as described in Clause (1).

(3) The percentage loss of moisture from the dust during the preliminary drying in the air shall be determined, and a correction shall then be made to the determined incombustible content of the dust which has passed through the 60-mesh sieve.

This correction shall be calculated as follows:—

If M is the percentage loss in weight of the dust passing the 18-mesh sieve during air drying, and I is the percentage of total incombustible matter in the dust passing the 60-mesh sieve, then the corrected total incombustible content of the dust per centum is—

$$M + I \frac{(100 - M)}{100}$$

12.12 (1) Dust samples which contain no carbonates or gypsum shall be analysed as follows:—

(a) A weighted quantity of the sieved dust shall be dried at temperature between 105°C and 110°C, and the weight lost shall be reckoned as moisture;

(b) The residue shall then be brought to a red heat in an open vessel until it no longer loses weight. The weight of the incinerated residue added to the weight of the moisture shall be reckoned as incombustible matter, and be expressed as a percentage of the total weight of the sieved dust.

(2) Dust samples which contain carbonates shall be analysed as follows:—

(a) A weighted quantity of the sieved dust shall be dried at a temperature between 105°C and 110°C, and the loss in weight shall be reckoned as moisture;

(b) The residue shall then be heated in an open vessel to a temperature of at least 950°C until it no longer loses weight. The incinerated residue shall be weighed;

(c) A weighted quantity of the sieved dust shall be treated with dilute hydrochloric acid in a suitable apparatus, and the weight of carbon dioxide evolved from the dust shall be either—(i) determined directly; or (ii) calculated from the volume of carbon dioxide evolved; or (iii) determined in any other approved manner;

(d) The sum of the weights of moisture, carbon dioxide, and incinerated residue shall be reckoned as incombustible matter, and be expressed as a percentage of the total weight of the sieved dust.

(3) The incombustible content of the dust may be determined in accordance with any other approved procedure.

12.13 Within 28 days of the taking of each sample the result of the analysis of such sample shall be made available for inspection during the ordinary hours of work when so required by the Inspector, Miners' Inspector, or any employee.

PART 13—WATER AND STONE DUST BARRIERS

13.1 An efficient barrier of water or of stonedust, as prescribed by these rules, or some other approved barrier, shall be provided at the following locations in roadways in an underground coal mine where coal is transported by means of a belt conveyor:—

(a) Where the method of mining is bord and pillar or any other method with the exception of longwall, not less than 137 metres from the nearest working face and not more than 365 metres from the furthest working face;

(b) Where the method of mining is longwall, not less than 46 metres from the face and not more than 110 metres from the face.

13.2 (1) Where a water barrier is provided—

(a) no water pipe, conveyor or ventilating tube shall be suspended near the roof of the roadway for a distance of 27 metres inbye and outbye of the barrier; and

(b) means shall be provided for the filling and refilling of the barrier troughs from a reticulated water supply.

(2) Every water barrier shall comply with the following requirements:—

(a) The barrier shall consist of water-filled troughs rigidly held in support frames or bearers that in turn are attached to the ribs or the roof supports and form rows of troughs at right angles to the roadway direction;

(b) The space between the troughs of two adjacent rows of troughs shall not be less than 1·2 metres;

(c) The distance between the outside rims of the outside troughs in the same row shall not be less than 65 per centum of the maximum roadway width;

(d) The distance between troughs and the outer troughs and the ribs shall not in total exceed 1·5 metres and spaces between troughs in adjacent rows shall not be aligned in the roadway direction. Such spaces shall be measured at right angles to the roadway direction between trough rims or between trough rims and the rib;

(e) The troughs shall be set up with their long sides at right angles to the roadway direction;

(f) The troughs shall be placed as low as practicable in the upper third of the roadway;

(g) The barrier shall at all times contain at least 226 litres of water per square metre of roadway cross section and be at least 20 metres long;

(h) The volume of water in the barrier related to the space contained within the part of the roadway between the beginning and the end of the barrier shall be at least 5 litres per cubic metre, and be approximately uniformly distributed within the appropriate part of the roadway;

(j) The troughs shall have a volumetric capacity of not less than 55 litres and not more than 77 litres and shall contain water to a value of not less than 90 per cent of their volumetric capacity; and

(k) The troughs shall be made of vinyl-chloride mixed polymerisate or of some other material having the same characteristics as vinyl-chloride mixed polymerisate in respect of combustibility, strength, ageing, stability of shape and chemical stability.

(3) Every water barrier shall be inspected, reported on and maintained as follows:—

(a) The Manager of the mine shall appoint one or more persons to be responsible for examining and maintaining the barriers in a condition which satisfies the requirements of this Part;

(b) The duties of such persons shall include—

(i) examining once a week all water barriers assigned to them;

(ii) topping up the troughs to the required level where water has been lost;

(iii) arranging for the repair of any damage to or defect in the barrier;

(iv) supervising the erection of new barriers as required; and

(v) reporting weekly on the inspection carried out and on any action taken or required. Such reports shall be countersigned by the Manager or Under-Manager; and

(c) In addition, the Manager of the mine shall arrange for the reporting of any defect or damage to the barrier which may occur between the weekly inspections and for the immediate repair of the defect or damage so reported.

13.3 (1) Every stonedust barrier shall comply with the following requirements:—

(a) The barrier shall consist of a number of shelves sufficient to carry at least 390 kg of stonedust per square metre of cross-sectional area of the roadway in which the barrier is placed;

(b) Two-thirds of the shelves shall be of a size sufficient to carry at least 182 kg of stonedust per shelf and the remaining one-third of a size sufficient to carry 91 kg of stonedust per shelf;

(c) The lightly loaded shelves shall be placed at the inbye end of the barrier;

(d) The shelves shall be constructed of lightweight timber and in accordance with the sketches set out in rule 13.4;

(e) The interval between shelves shall be as specified in the sketches set out in rule 13.4;

(f) The shelves shall be placed as low as practicable in the upper third of the road, but in any case no part of any shelf or the stonedust on it shall be less than 100 millimetres from the roof or sides of the road or any support;

(g) To achieve maximum dispersability, the stonedust shall be piled loosely on the shelves; and

(h) The number of shelves to be used in any roadway shall be determined by the use of the nomogram set out in rule 13.4.

(2) Every stonedust barrier shall be inspected, reported on and maintained as follows:—

(a) The Manager of the mine shall appoint one or more persons to be responsible for examining and maintaining the barriers in a condition which satisfies the requirements of this Part;

(b) The duties of such persons shall include—

(i) examining once a week all stonedust barriers assigned to them;

(ii) as part of this examination, testing the dispersability of the dust by taking some in the hand and blowing on it. If this shows a tendency to caking or consolidation the dust in the barrier shall be renewed;

(iii) arranging for the repair of any damage to or defect in the barrier;

(iv) supervising the erection of new barriers as required; and

(v) reporting weekly on the inspections carried out and on any action taken or required. Such reports shall be countersigned by the Manager or Under-manager; and

(c) In addition, the Manager of the mine shall arrange for the reporting of any shelves which have been upset between the weekly inspections and for their immediate replacement;

(3) A board shall be provided at each stonedust barrier location containing the date of last inspection of the barrier.

(4) A Stonedust Plan shall be kept at the office at the mine and shall include the following information in respect of each stonedust barrier—

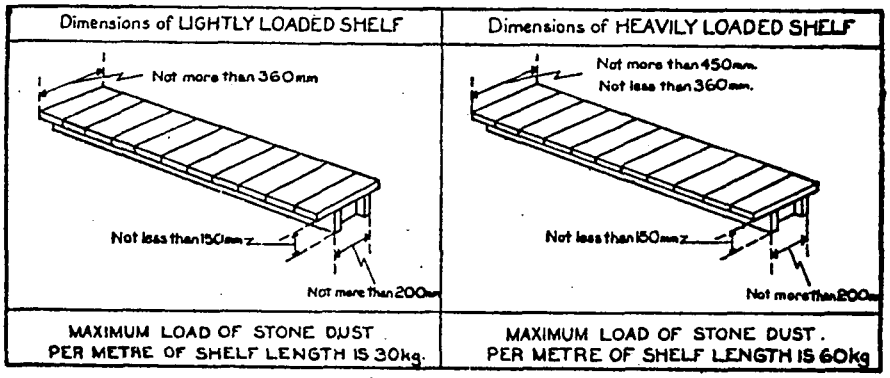
(i) cross-section of the road;

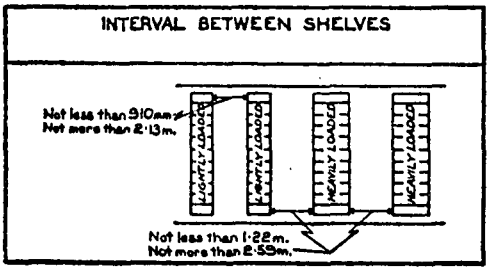
(ii) total dust loading of the barrier;

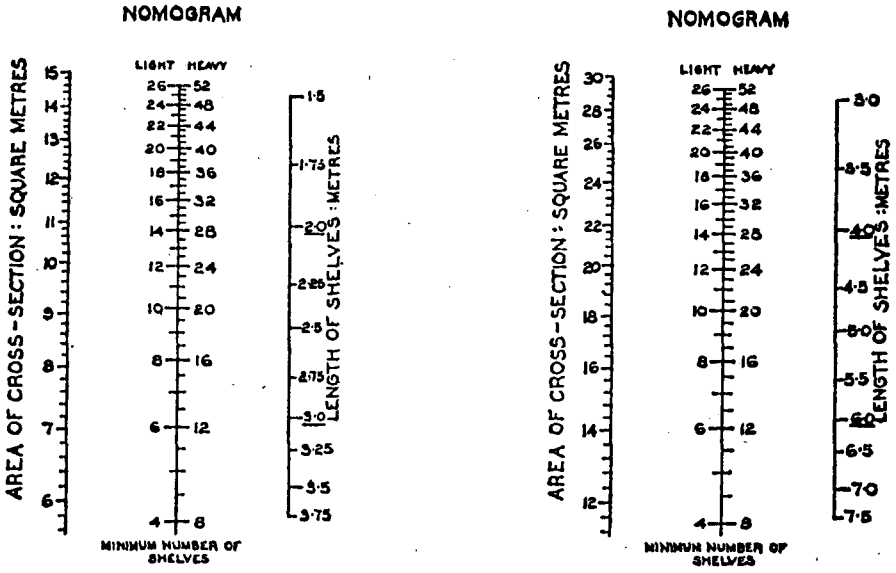
(iii) number and loading of shelves; and

(iv) date of last renewal of stonedust.

13.4 The design of stonedust barriers shall be in accordance with the following sketches and nomogram:—







To use the nomograms, place a straight edge joining the given value of the area of cross-section on the left hand scale and the length of the barrier shelf on the right hand scale, and read off the minimum number of shelves on the centre scale.

SKETCHES AND NOMOGRAMS TO FACILITATE THE DESIGN OF STONEDUST BARRIERS

PART 14—RESPIRABLE DUST

14.1 The manager of an underground coal mine shall ensure that the average concentration of respirable dust in the mine atmosphere to which any person is exposed during any shift does not exceed 3·00 milligrams per cubic metre of air.

14.2 Reference in these rules to concentration of respirable dust means the average concentration of respirable dust if measured with an MRE instrument for the time specified by the Chief Inspector or an equivalent concentration if measured with another approved device. The term "MRE instrument" used in these rules means the gravimetric dust sampler with four channel horizontal elutriator developed by the Mining Research Establishment of the National Coal Board, England.

14.3 For the purpose of rule 14.1 the term "Average concentration" means a determination which accurately represents the atmospheric conditions in the mine with regard to respirable dust to which each person is exposed, as measured over a single production shift or, if so required by the Chief Inspector, over a number of continuous production shifts.

14.4 (1) The dust resulting from drilling rock shall be controlled by the use of approved dust collectors, or by water or water with a wetting agent, or by some other approved method or device.

(2) Respiratory equipment in accordance with Australian Standards 1715–1975, Code of practice for respiratory protection, and 1716–1975, Specification for respiratory protective devices, shall be made available to each person who is exposed to a concentration of respirable dust in excess of that allowed by these rules.

(3) Such respiratory equipment shall be made available to each person who is exposed to an inhalation hazard from dust, gas, fumes or mist.

14.5 The respiratory equipment referred to in rule 14.4 shall be used for the purpose of providing additional respiratory protection and not as a substitute for the environmental control measures referred to in rule 14.1.

PART 15—SAFETY LAMPS

15.1 The Chief Inspector may direct or allow any rule of this Part or part thereof to be varied or modified in respect of the working of a particular coal mine.

15.2 (1) The manager of an underground coal mine shall ensure that no electric safety lamp or flame safety lamp is taken or used below ground unless such safety lamp is of an approved type.

(2) All safety lamps shall be maintained to the approved standard.

15.3 A lamproom shall be provided at every underground coal mine.

15.4 The manager of the mine shall appoint lampmen to have charge of the care and maintenance of the safety lamps at the mine.

15.5 (1) There shall be provided for every person who goes below ground an approved electric safety lamp and every person below ground shall have that lamp with him whilst so located even when working at a place provided with permanent lighting. A person to whom a safety lamp has been issued shall be responsible for its safe keeping and for ensuring that, as far as practicable, it is not damaged whilst in his possession or control.

(2) Every person issued with a safety lamp shall examine it externally and assure himself that it is locked and in safe working order before taking it below ground.

(3) Every person to whom a safety lamp is issued shall, immediately upon the completion of his period below ground, return it to the lamproom.

15.6 (1) A person, other than an inspector, district union inspector, superintendent, manager, under manager, deputy, shotfirer or an authorised person appointed by the manager in writing, shall not be issued with and use below ground a flame safety lamp fitted with a re-lighting device.

(2) A person shall not be issued with a flame safety lamp unless he has been instructed in its use and is authorised by the manager to possess and use a flame safety lamp below ground.

(3) If a safety lamp is damaged whilst below ground the person using or in charge of it shall immediately and carefully extinguish the light. The damaged lamp shall be returned to the surface as soon as possible. No attempt shall be made whilst below ground to repair or re-light a damaged lamp.

15.7 (1) A person shall not unlock or open any safety lamp below ground.

(2) A person issued with a flame safety lamp fitted with a re-lighting device shall not attempt to re-light such lamp below ground until he has examined it and found it to be undamaged.

(3) A person shall not re-light a flame safety lamp with a re-lighting device at any place at which there is reason to suspect the presence of flammable gas.

15.8 (1) Every electric safety lamp shall be tested for lighting performance by a competent person at intervals not exceeding 3 months to determine the luminous flux of the lamp. The test shall be made after the lamp has been used on any shift for the minimum period specified

in the approval for its use and after external cleansing and all tests shall be recorded in a report book to be kept at the mine for that purpose. Any lamp found to have a performance of less than 60 per cent of the performance specified in the approval for its use shall be taken out of service until it is restored to the performance so specified.

(2) Schedules giving full details and specifications of the design and construction of all types of approved electric safety lamps and flame safety lamps in use at the mine shall be kept in the lamproom. Every lampman appointed shall acquaint himself with the particulars given in such schedules.

PART 16—LIGHTING

16.1 An inspector may direct or allow any rule of this Part or part thereof to be varied or modified in respect of the working of a particular coal mine.

16.2 (1) Permanent general lighting shall be provided at the following places when persons are working below ground in an underground coal mine—

(a) the entrance to every shaft or drift regularly used;

(b) the bottom of every shaft or drift where persons or vehicles regularly pass;

(c) every permanent location of any engine or motor;

(d) at every conveyor belt drive head and transfer point where persons are employed or regularly pass;

(e) at every shaft landing and siding where vehicles may be coupled or uncoupled or materials may be loaded or unloaded; and

(f) at the main substation.

(2) This rule does not apply so as to require the provision of general lighting below ground—

(a) at a mine where not more than 10 persons are employed below ground;

(b) at the working face unless an inspector, by requisition given to the manager of the mine, so requires in the interests of safety.

16.3 Permanent general lighting shall be provided at the following places at the surface where work is regularly carried out during the hours of darkness or where normal daylight is inadequate for safe working—

(a) at every coal screening, crushing and preparation plant including stairways and walkways at such plant;

(b) at every place where coal is loaded into rail wagons, motor vehicles or barges during the hours of darkness;

(c) at every fan and permanent location of an engine and compressor;

(d) at every lamproom, bath house, rescue room, office and store room;

(e) at every place where rail wagons or lorries are moved and where persons are required regularly to walk during the hours of darkness; and

(f) at every workshop.

16.4 The lighting required by rule 16.3 shall be in accordance with Australian Standard 1680—1976 Code of Practice for Interior Lighting and the Visual Environment except where that Code is not applicable.

16.5 All general lighting shall be sufficient to secure the safe working of the mine and shall be so arranged as to minimise glare or eyestrain and to ensure that the external parts of any moving machinery are clearly visible whilst in operation.

16.6 There shall be provided in every main switch room, winding engine room or walkway, and elsewhere as may be necessary to safeguard any person, emergency lighting in accordance with Australian Standard 2293, Emergency Evacuation Lighting in Buildings.

PART 17—NOISE

17.1 (1) A person working in, on or about an underground coal mine shall not be permitted or allowed to enter or remain in any place where he is exposed to—

(a) a noise level in excess of 115dB(A) slow response;

(b) a Daily Noise Dose exceeding unity,

assessed in each case in accordance with Australian Standard 1269-1976 SAA Hearing Conservation Code, unless that person has been provided with and is wearing personal hearing protection.

(2) Such personal hearing protection—

(a) shall be in accordance with Australian Standard 1270-1975 Hearing Protection Devices;

(b) shall be maintained in good order and condition.

(3) Where this rule prescribes that personal hearing protection shall be provided, a person working in, on or about the mine shall use in the circumstances so prescribed the personal hearing protection provided for him.

17.2 Where a person working in any place in, on or about an underground coal mine is regularly exposed to a Daily Noise Dose exceeding unity, assessed in accordance with Australian Standard 1269-1976 SAA Hearing Conservation Code, the inspector may, by requisition given to the manager of the mine, require the noise level in that place to be reduced.

PART 18—FENCING AND PROTECTION

18.1 All ash heaps, and all dangerous openings from the surface of an underground coal mine shall be kept securely fenced with fencing of substantial construction.

18.2 Every brace and pit bank shall be covered to protect workmen from the weather, or be provided with a shelter-house for the bracemen.

18.3 Every abandoned or disused shaft or tunnel shall be securely fenced or covered and the position of every cover shall be indicated on the surface by a cairn of stones or a post to the satisfaction of the inspector.

18.4 (1) The entrance to every shaft at the surface and brace shall be securely protected by a fence, gate, or covering; but this provision shall not forbid the temporary removal of such fence, gate, or covering if proper precautions are taken to prevent danger.

(2) The top of every shaft or other entrance to the mine and all entrances between the top and bottom of every shaft shall be securely protected by a fence, gate, or covering; but this provision shall not be taken to forbid the temporary removal of such fence, gate, or covering if proper precautions are taken to prevent danger.

(3) When a fence, gate, or covering has been temporarily removed as aforesaid, a strong horizontal bar shall be securely fixed across the unprotected entrance not less than 900 mm nor more than 1 metre from the floor at the entrance.

18.5 Every working shaft and division thereof shall be securely timbered or otherwise made secure.

18.6 Every excavation in a mine, whether at surface or underground, shall be securely protected and made safe for persons working therein.

18.7 Persons engaged in sinking operations and (where necessary) in other work in a shaft shall be protected from the danger of falling material by a properly constructed penthouse or covering, or other precautions shall be taken to secure safety.

PART 19—WORKING NEAR ACCUMULATION OF WATER OR GAS

19.1 (1) Where any place belowground or on the surface is likely to contain a dangerous accumulation of water, the working approaching that place shall not exceed 2·5 metres in width at any point within 36 metres of that place.

(2) The Chief Inspector may grant exemption from sub-rule (1) to enable any place to be driven to a width not exceeding 3·5 metres.

(3) In all such places there shall be provided at a sufficient distance, not less than 4·5 metres in advance, at least one bore hole located near the centre of the working, and sufficient flank bore holes on each side.

19.2 In any working approaching within 9 metres of a sealed area where the presence of flammable gas or noxious gas is likely, there shall be constantly kept not less than 4·5 metres in advance a bore hole near the centre of the working and sufficient flank bore holes on each side.

PART 20—SUPPORT OF ROOF AND SIDES

20.1 (1) The roof and sides of every passage, road and working place shall be made secure in accordance with the general system of support specified by the manager.

(2) A person shall not, unless appointed for the purpose of exploring or repairing, travel or work in any such passage, road, or working place which is not made so secure.

(3) A person shall not, unless with the permission of the manager, remove any coal from any passage, road or working place where such removal may adversely affect the safety of such passage, road or working place.

20.2 Where the support of the working place is done by the workmen normally employed therein, suitable support materials shall be provided at the working place, gate end, passby siding, or other similar place in the coal mine convenient to the workmen.

20.3 (1) Timber from which the bark has not been removed shall not be sent into any mine for any purpose, other than for use in cogs, chocks, or pigsties.

(2) The Chief Inspector may, where in his opinion the safety or health of workmen is involved, direct that timber in such cogs, chocks, or pigsties shall be barked.

PART 21—LADDERS AND TRAVELLING WAYS

21.1 A proper ladder or foot way shall be provided in every shaft, that is used for access to or egress from an underground coal mine unless machinery is provided for lowering or raising persons.

21.2 Where connections in addition to the main shaft have been made between different vertical levels, a ladder or other ready means of access between these levels shall be provided in at least one of such connections.

21.3 Ladders or other suitable means of ascent shall be provided in any vertical or inclined way or opening downwards from the underground workings in a coal mine, and in rises in the course of construction and while used as travelling-ways, to give access from the lower to the higher levels in the mine.

21.4 In sinking shafts or any vertical or inclined way or opening downwards from the underground workings in a coal mine, a chain ladder or other suitable ladder shall be provided so as to ensure a safe means of exit.

21.5 Every ladder shall be inclined at an angle of not more than 80 degrees from the horizontal, unless it is impractible to do so and the ladder may be used safely at a greater angle of inclination.

21.6 A ladder shall not be fixed in an overhanging position.

21.7 (1) In ladder-ways exceeding 18 metres in depth, and having an inclination of more than 70 degrees from the horizontal, platforms shall be provided as resting-places at convenient intervals.

(2) In vertical shafts such platforms shall not be more than 9 metres distant from one another.

21.8 Every ladder shall project at least 1 metre above the platform or top of the shaft, or a suitable handgrip shall be provided above such ladder.

21.9 (1) Every ladder shall be of sufficient strength, and be securely fastened to the timbering or wall of the excavation, and maintained in proper repair.

(2) The spaces between the rungs of a ladder shall not exceed 300 mm, and the rungs shall not be less than 150 mm distant from the wall of the excavation and, in the case of steel rungs, not less than 14 mm in diameter.

21.10 Where one portion of a vertical shaft is used for the ascent and descent of persons, and another portion of the same shaft is used for raising material, each portion shall be securely fenced off from the other.

PART 22—SIGNALLING STATIONS AND MANHOLES

22.1 (1) Every underground plane exceeding 36 metres in length, whether self-acting or worked by a haulage engine, shall be provided with—

(a) proper means of signalling between the stopping-places and the ends of the plane; and

(b) at intervals of not more than 18 metres, sufficient manholes for use as places of refuge.

(2) Every place of refuge shall be constantly kept clear and no person shall deposit anything in such place so as to restrict access thereto.

22.2 (1) In any place where sets or trains consisting of three or more conveyances are coupled or uncoupled there shall be a clear space of at least 600 mm between conveyances standing on any rails and the side of the road nearest to these rails.

(2) This rule does not apply where there are parallel lines of rails and there is a clear space of at least 760 mm between the conveyances standing on such parallel lines of rails.

(3) In measuring any clear space for the purposes of this rule props or other supports of the roof projecting beyond the side of the road shall be taken to form part of the side of the road.

22.3 A person shall not ride on a rope that is hauling a conveyance on any roadway unless the manager of the mine has first obtained the approval of the inspector.

PART 23—HEIGHT OF ROADWAYS

23.1 (1) A road on which men are required to work or travel shall be of a minimum height of 1·5 metres clear of timber erected to support the roof.

(2) The inspector may direct or allow this rule to be varied or modified in respect of the working of a particular coal mine.

PART 24—SECOND MEANS OF EGRESS

24.1 (1) Where the second means of egress from any district of an underground coal mine to the surface is not ordinarily used for travelling, the deputy in charge of the district shall inspect the part of such means of egress as is within his district at least once in each week and ascertain the condition thereof as to ventilation and general safety and sign a true report thereof in a report book to be kept at the mine for the purpose.

(2) A deputy, appointed by the manager for the purpose, shall inspect, at least once in each week, those parts of the second means of egress not required to be inspected by rule 24.1 (1) and ascertain the conditions thereof as to ventilation and general safety and sign a true report thereof in a report book to be kept at the mine for the purpose.

(3) At the end of the shift during which he has made his inspection of the second means of egress, the deputy shall announce to the workmen of his district that he will act as a guide to any workman who desires to travel the second means of egress in order to become familiar with it.

24.2 Guide boards, notice boards or fences shall be erected wherever necessary in the mine to ensure that the route of the second means of egress is indicated in a clear manner.

PART 25—MACHINERY (GENERAL)

25.1 Parts 25 to 43 (inclusive) of these rules shall apply to all machinery used in, on or about an underground coal mine including apparatus as defined by the Underground Coal Mines Electrical Rules of 1971 or any rules in amendment thereof or in substitution therefor: Provided that any provision of these rules that is inconsistent with any provision of the said Electrical Rules shall be and remain inoperative for as long as such provision of the said Electrical Rules remains in force under this Act.

25.2 Except where a requirement of approval by the Chief Inspector is expressly prescribed, an inspector may direct or allow any rule contained in Parts 25 to 43 (inclusive) or part thereof to be varied or modified in respect of the working of a particular coal mine.

25.3 All machinery including any anchoring and fixing appliances thereof, shall be of good construction, suitable material, adequate strength, free from patent defect and shall be properly installed and maintained.

25.4 Where any machinery or any part or arrangement thereof is so defective that it is likely to cause danger to any person, that machinery shall be taken out of use immediately and shall not be used again until the necessary alterations or repairs have been effected.

PART 26—GUARDING OF MACHINERY

26.1 (1) All dangerous parts of any machinery shall be securely guarded with a guard of substantial construction.

(2) In so far as the safety of a dangerous part of any machinery to which this rule applies cannot by reason of the nature of the operation be secured by means of a fixed guard, the requirements of this rule shall be taken to have been complied with if a device is provided which automatically prevents the operator from coming into contact with that part.

26.2 Every guard provided in pursuance of the provisions of rule 26.1 shall be kept in position at all times while the machinery or part thereby safeguarded is in motion or in use, except when such machinery or part is necessarily exposed for examination and for any lubrication or adjustment shown by such examination to be necessary.

PART 27—COMPRESSORS AND PRESSURE VESSELS

27.1 (1) All machinery being apparatus which contains or produces air, gas or steam at a pressure greater than atmospheric pressure shall be so constructed, installed, maintained and used as to minimise any risk from fire, bursting explosion or collapse or the production of noxious gas.

(2) Every vessel containing air, gas or steam at a pressure greater than atmospheric pressure shall be—

(a) clearly marked with the safe working pressure to which it may be subjected;

(b) fitted with a pressure gauge;

(c) fitted with a safety valve to prevent the pressure from exceeding the safe working pressure; and

(d) fitted with a suitable appliance to facilitate draining.

(3) An inspector may, for the purpose of securing safety, by requisition given to the manager of the mine, require a device to be provided for preventing the surface temperature of such machinery from rising above 120°C.

27.2 Systematic examinations shall be made regularly of all machinery which contains or produces air, gas or steam at a pressure greater than atmospheric pressure.

PART 28—CRANES AND LIFTING APPLIANCES

28.1 (1) The safe working load shall be clearly marked on a crane or other lifting device.

(2) Where a jib crane is so constructed that the safe working load may vary, there shall be attached thereto an automatic indicator of safe working loads or a table indicating the safe working load at corresponding inclinations of the jib or corresponding radii of the load.

28.2 A person shall not load a crane or lifting device beyond the safe working load marked thereon except for the purpose of testing.

28.3 Where it is possible for a crane to handle loads over the heads of persons, or the crane can travel over the ground where persons can cross, the crane shall be provided with an audible warning device which can be operated by the driver.

PART 29—PROHIBITED ITEMS

29.1 An alloy shall not be used in an underground coal mine if it contains more than—

(a) a total of 15 per cent by mass of aluminium, magnesium and titanium; or

(b) a total of 6 per cent by mass of magnesium and titanium,

provided that the Chief Inspector may approve the use of alloys containing higher percentages than those specified herein, if satisfactory precautions have been taken by way of shrouding or coating to prevent a frictional ignition hazard.

29.2 Pressure pack containers shall not be taken below ground unless the container and its contents have been approved.

PART 30—PROHIBITED PRACTICES

30.1 A person shall not—

(a) operate any machinery unless he is authorised by the manager and holds such qualifications as may be required under this Act to operate such machinery;

(b) without proper authority, use, interfere with or remove any machinery;

(c) clean, oil or grease any machinery which is in motion unless provision is made for the operation to be performed safely;

(d) direct the operation of any machinery if such operation is likely to cause danger to any person;

(e) when placed in charge of machinery, absent himself or cease to have effective control during the time such machinery is being used, unless relieved by an authorised person.

PART 31—WINDING

31.1 Where winding apparatus is used for carrying persons through any shaft in an underground coal mine—

(a) the winding engine shall be completely separated by a substantial partition from any other winding engine and from other machinery which may be in use at the same time;

(b) there shall be provided on the drum or sheave such flanges or other devices as will prevent the rope from slipping off.

31.2 Where winding apparatus comprises a drumshaft not less than 250 mm in diameter, that drumshaft shall be bored longitudinally at the centre.

31.3 (1) Every winding engine shall be provided with one or more brakes on the drum or drumshaft being brakes that are capable at all times of bringing the winder to rest safely and of preventing drum movement under balanced loading conditions when—

(a) in respect of any winder other than a friction winder, the maximum torque of the engine is applied in either direction;

(b) in respect of any friction winder, two and a half times the maximum static torque that is applied to the winder by loads that are normally wound is applied in either direction.

(2) Winder brakes shall be designed and installed so that the brakes are automatically applied in the event of any system pressure failure.

31.4 (1) A device shall be provided to indicate to the winder driver the position of each conveyance in the shaft.

(2) A rope speed indicator shall be provided on all manually controlled winding engines when the speed of winding can exceed 4 metres per second.

31.5 Where winding apparatus is ordinarily used for carrying persons through a shaft, there shall be provided:—

(a) In respect of winding apparatus other than a friction winder—

(i) an automatic device to prevent overwinding and so constructed as to prevent the descending conveyance from being landed at the lowest entrance or bottom of the shaft at a speed exceeding 2 metres per second; and

(ii) an automatic device for detaching each ascending conveyance or counterweight from the rope and holding it stationary in the event of overwinding. Any detaching hook provided in pursuance of this sub-rule shall conform to Australian Standard 2133—1978 Mine Detaching Hooks.

(b) In respect of a friction winder—an automatic device to prevent overwinding and so constructed as to prevent the descending conveyance from being landed at the lowest entrance of the shaft at a speed exceeding 3·5 metres per second.

31.6 Means of egress shall be provided to enable persons to leave any overwound conveyance readily and safely.

31.7 In every shaft exceeding 60 metres in depth provided with winding apparatus, guides shall be provided for each conveyance and counterweight.

PART 32—WINDING ROPES

32.1 A spliced rope shall not be used as a winding rope or as a balance rope.

32.2 (1) Except as approved by the Chief Inspector, a winding rope shall not be used in an underground coal mine for a period longer than—

(a) 3 years and 6 months from the date of installation in any machine other than a friction winder;

(b) 2 years from the date of installation in any friction winder.

(2) Upon the expiration of the prescribed or approved period of use, the rope shall be removed from the machine forthwith.

32.3 (1) A winding rope shall not be used at a mine unless a certificate has been supplied by the manufacturer specifying the date of manufacture, diameter of the rope, breaking force, mass, length, construction and the class of steel used.

A copy of the certificate shall be forwarded to an inspector when a new rope is installed.

(2) The strength of a sample of the new rope shall also be determined at an approved testing station and the results forwarded to an inspector forthwith.

32.4 The mass on a rope shall not exceed the figure which is obtained by dividing the mass equivalent to the minimum breaking force of the rope (as determined by tensile testing to failure) by the factors listed below:—

	Factor
Winding ropes other than friction winding ropes ..	8
Shaft guide ropes and rubbing ropes	5
Balance ropes	6

32.5 A capped rope shall not be used at any time unless the capping has been made by an authorised person within a period of 6 months immediately prior to the rope being used and the capping is of an approved type which has a static factor of safety not less than that of the rope.

32.6 (1) A minimum length of 2 metres shall be cut off the end of the rope during recapping operations and a sample sent to an approved testing station for mechanical testing in accordance with Australian Standard 1426-1973 Steel Wire Ropes for Winding and Haulage Purposes in Mines. A copy of the certificate of such test shall be forwarded to an inspector not later than 1 month after the sample was cut off.

(2) This rule does not apply to ropes used in connection with friction winders.

32.7 If the breaking force of a rope as determined at an approved testing station is less than 90 per centum of the breaking force of the rope when new, the rope shall be withdrawn from use forthwith.

PART 33—SUSPENSION GEAR

33.1 The material from which suspension gear is manufactured and any heat treatment to which it is to be subjected at any time, shall be as approved by the Chief Inspector.

33.2 (1) Every load bearing component of suspension gear shall be subjected to a proof load equal to twice the maximum static load which it may be required to carry without showing any permanent set, and a certificate of test from an approved testing station shall be submitted to the Chief Inspector.

(2) After proof loading the component shall be thoroughly examined by a competent person and shall not be put into service if any flaw or defect is evident.

(3) All components shall be legibly and permanently stamped on a non-vital part, or otherwise marked with the safe working load and also a mark or symbol to provide identification with the certificate of test.

33.3 All components of the attachments between winding ropes, balance ropes and the conveyance or counterweight shall, when new, have a static factor of safety of not less than 10: Provided that any screwed suspension member in tension shall have a factor of safety of not less than 15.

33.4 Unless otherwise approved, no item of suspension gear shall remain in service for a period exceeding 12 years.

33.5 (1) A competent person shall carefully examine—

(a) at intervals not exceeding 6 months, all detaching hooks by dismantling and thoroughly cleaning and oiling them;

(b) at intervals not exceeding 12 months, every other item of suspension gear, taking particular note of measured wear, scoring and corrosion. Appropriate crack detection techniques shall be used.

(2) The results of examinations made under this rule shall be entered in a report book to be kept at the mine for the purpose.

PART 34—MAINTENANCE AND TESTING OF WINDING APPARATUS

34.1 (1) A winding apparatus shall be examined and tested by a competent person as follows:—

(a) At least once in every working day, all winding ropes shall be carefully examined;

(b) At least once in every working day, all cages, conveyances and all ancillary winding apparatus including brakes, depth and speed indicators, automatic contrivances, headgear pulleys and all external parts of the winding equipment upon which safety may depend, shall be carefully examined;

(c) At intervals not exceeding 2 years, all brake components essential for safety, drumshafts and headgear pully shafts shall be non-destructively tested;

(d) At intervals not exceeding 1 week, the shaft, and all guides, balance ropes and signalling arrangements shall be carefully examined;

(e) At intervals not exceeding 1 month, all winding ropes and attachments shall be carefully examined and, for this purpose, all ropes shall be cleaned and examined at intervals not exceeding 50 metres and at all places particularly liable to deterioration;

(f) At intervals not exceeding 12 months, the winding engine shall be carefully examined to determine the condition of all internal components on which safety depends.

(2) The automatic devices required by rule 31.5 shall be tested by a competent person:—

(a) At intervals not exceeding 7 days, by raising each cage, skip or counterweight so that it passes the point at which the device comes into operation above the highest landing;

(b) At intervals not exceeding 3 months, by attempting to land each conveyance when descending at a speed in excess of 2 metres per second. For the purpose of these tests, the automatic device may be adjusted to establish an artificial landing.

(3) A full report of each examination or test required by this rule shall be recorded in a report book to be kept at the mine for the purpose. Any defects discovered shall be reported forthwith to the manager of the mine.

PART 35—KEPS

35.1 Keps shall not be installed in a shaft except with the written permission of the Chief Inspector and any cage landing platform provided at the bottom of a shaft shall be of resilient construction.

35.2 The shaft sump shall be kept clear of water, debris or any other material liable to come in contact with balance ropes or guide tension weights.

PART 36—CAGES AND SKIPS

36.1 (1) A cage or skip shall be designed and constructed in accordance with the following requirements:—

(a) Each man riding compartment shall have a clear internal height of 2 metres;

(b) A multiple decked cage shall be equipped with access facilities to enable persons to gain access to the deck above;

(c) Each cage shall be fitted with catches or other devices to prevent vehicles from falling out;

(d) Each cage used for winding persons shall be covered in completely at the top and closed in at two sides so as to prevent persons or articles from protruding from the sides;

(e) Each cage shall be provided with suitable gates, and the design of a gate shall be such that the gate cannot project beyond the end of the cage;

(f) The load bearing component of any cage, skip or counterweight shall be designed with a factor of safety of not less than 7.

(2) A notice shall be conspicuously posted at all man riding levels in a shaft stating the maximum number of persons permitted to ride on any deck of a cage or skip.

PART 37—SIGNALLING

37.1 An approved system of signalling shall be provided at every shaft in which persons are wound.

37.2 The following code of signals shall be used for communication with the driver of a manually controlled winding engine:—

Signals	Shall Signify
1.	" Stop " when in motion
1.	Hoist
2.	Lower
3.	Communicate
4.	Men-on
10.	Accident

37.3 A copy of the code of signals shall be posted in view of the engine driver, and shall also be displayed at the shaft top, shaft bottom and any intermediate level, and at such other places as may be directed by an inspector to secure the safe operation of the winding engine.

PART 38—ADDITIONAL REQUIREMENTS FOR SHAFT SINKING

38.1 The system and apparatus used for sinking a shaft or staple pit shall be approved by the Chief Inspector.

38.2 (1) Where a shaft or staple pit is in the course of being sunk, the manager of the mine shall ensure that a scheme for the systematic examination of all equipment used for sinking is in force in the mine.

(2) Such scheme shall include a thorough examination at intervals not exceeding 24 hours of all gear by which any scaffold, platform or other thing is suspended in the shaft or staple pit.

PART 39—ADDITIONAL REQUIREMENTS FOR FRICTION WINDING

39.1 A friction winder shall not be used in any shaft in a coal mine except where—

(a) the winder is designed and constructed to ensure that the ratio of rope tensions, angle of rope lap on the driving sheave and the co-efficient of friction of the lining material of the driving sheave grooves are such as to prevent rope slip under maximum designed conditions of acceleration, retardation and out of balance loading; and

(b) the diameter of the driving sheave grooves, when measured at the bottom of the rope grooves, is not less than 90 times the diameter of the winding rope. The diameter of any deflecting sheave shall be not less than 0·9 times the diameter of the corresponding driving sheaves.

39.2 (1) There shall be provided in the head frame and in that part of the shaft below the lowest entrance for the time being in use, apparatus that is designed and installed so that the conveyance or counterweight will be arrested safely in the event of an overwind of the friction winder.

(2) There shall be provided in the headframe or tower of the shaft, safety devices that are designed and installed so that a conveyance or counterweight, which has been brought to rest by the apparatus required by sub-rule (1) will be prevented from falling down the shaft.

(3) There shall be provided in the shaft, headframe or tower, devices that are designed and installed so that the power is cut off from a friction winder, and the winding sheave is brought to rest by automatic application of the brakes before any cage, skip, counterweight or rope attachment reaches any permanent obstruction to its passage in the shaft.

(4) Unless otherwise approved:—

(a) In raising or lowering persons, the maximum winding speed shall not exceed 16 metres per second;

(b) In raising or lowering material, the maximum winding speed shall not exceed 18 metres per second;

(c) In raising or lowering heavy machinery, which would result in a lower factor of safety of the rope or ropes than that provided when raising or lowering normal material loads, the winding speed shall not exceed 3 metres per second.

39.3 The brakes provided on a friction winder shall be designed and installed so that—

(a) when automatically applied, the braking torque produced is not excessive and thus likely to cause the winding rope to slip on the driving sheave;

(b) in the case of a manually controlled winder, the brakes are capable of being applied by the winder operator irrespective of the action of any safety device that may act to apply the brakes;

(c) the brakes are automatically applied when the power to the winder fails;

(d) the brakes are automatically applied before the brake linings become worn sufficiently to affect safe operation.

39.4 (1) Every friction winder shall be provided with a device which automatically synchronises the depth indicator and the automatic safety devices with the position of the cage or skip in the shaft.

(2) Such synchronising adjustment shall be designed to take place only while the brakes are applied and the winder is stationary.

39.5 (1) A friction winder shall not be used for the carriage of persons unless the winder is designed and installed so that it is incapable of motion when any shaft, cage or skip door in connection with the winder is not securely closed.

(2) Provision may be made to open shaft doors when a friction winder is being used for the carriage of materials, provided that the conveyance is within 9 metres of a landing and the friction winder is equipped with an approved control system.

(3) Where a friction winder may be controlled by more than one method, the device for selecting a particular control method shall be available for use only by persons authorised by the manager.

(4) Where a friction winder is controlled by push-buttons from within a cage, a stop-button shall be provided which, when operated, will cause the winder to stop.

39.6 (1) Where a friction winder is installed in the headframe or tower of a shaft, the installation shall be designed, and provided with any necessary equipment, to prevent any flammable liquid from entering the shaft.

(2) Where a friction winder is not under direct supervision, suitable automatically operated fire extinguishers shall be provided to extinguish automatically any fire which may break out in the winder room.

39.7 (1) Every friction winding rope shall, when new, have a static factor of safety of not less than the following:—

(a) When used for man-winding with a cage suspended by one rope 8;

(b) When used for man-winding with a cage suspended by 2 or more ropes 7;

(c) When used for winding materials or minerals .. .. 6.

(2) A rope shall not be used as a balance rope for a period in excess of 3 years.

(3) Rope dressing which may increase the risk of the rope slipping on the sheave shall not be used.

(4) Galvanised ropes or other approved types of ropes shall be used in shafts.

(5) A rope which has been recapped shall not be used unless on the last occasion on which it was recapped, the capping was moved a distance of not less than 150 mm along the rope towards the other end.

(6) Winding ropes shall be attached to the conveyance or counterweight by apparatus which load the ropes as uniformly as practicable.

(7) Where the rope attachments are connected directly to the conveyance or counterweight, devices shall be provided for length adjustment and for indicating rope tensions.

PART 40—ROPE HAULAGE

40.1 (1) Flanges or other devices shall be provided on the drum or sheave of every haulage engine to prevent the rope from slipping off the drum or sheave.

(2) Every machine used for rope haulage belowground shall be provided with one or more brakes on the drum or drumshaft. Such brakes shall at all times be capable of bringing the drum to rest safely and capable of preventing drum movement under balanced loading conditions when the maximum torque of the engine is applied in either direction.

(3) Haulage brakes shall be designed and installed so that the brakes are automatically applied in the event of system pressure failure.

(4) (a) A device shall be provided to indicate to the haulage driver the position of each train of vehicles in the roadway.

(b) A rope speed indicator shall be provided on all manually controlled haulage engines when haulage speed can exceed 2 metres per second.

(5) Unless otherwise approved, the haulage speed shall not exceed 4 metres per second when raising or lowering persons.

(6) A rope haulage apparatus that is ordinarily used for the transport of persons shall be provided with an automatic device to prevent overtravel and overspeed, and such device shall be designed to be capable of being tested without necessarily creating an actual overspeed condition.

(7) All rail tracks used for rope haulage shall be designed and installed so as to ensure safe operation. Sheaves and rollers shall be inspected daily and properly lubricated.

(8) Every train by which persons are carried, and which is moved by mechanically operated rope haulage apparatus upon any length of road having a gradient exceeding 1 in 12, shall be provided with coupling devices that are capable of preventing any conveyance forming part of that train from becoming accidentally disconnected from other vehicles in the train.

(9) Where vehicles are used in a mine, safety devices shall be provided either in the mine or on the vehicles, or both in the mine and on the vehicles, to prevent vehicles from running away and causing injury to any person.

Every device provided in pursuance of this sub-rule shall be designed to assume automatically the position in which it operates to prevent vehicles from running away.

40.2 (1) A haulage rope shall not be used in a mine unless a certificate has been supplied by the manufacturer specifying the date of manufacture, diameter of the rope, breaking force, the mass, length and construction of the rope and the class of steel used.

A copy of the certificate shall be forwarded to an inspector when a new rope is installed.

(2) The strength of a sample of the new rope shall also be determined at an approved testing station and the results forwarded to an inspector forthwith.

(3) (a) A spliced rope shall not be used other than in an endless rope haulage system.

(b) A knotted rope shall not be used in any rope haulage apparatus.

(4) The minimum breaking force of a haulage rope shall not be less than 8 times the maximum force to which it is to be subjected when in use in the haulage apparatus.

(5) A capped rope shall not be used at any time unless the capping has been made by an authorised person within a period of 6 months immediately prior to the rope being used, and the capping is of an approved type which has a static factor of safety not less than that of the rope.

(6) A minimum length of 2 metres shall be cut off the end of the rope during recapping operations and a sample sent to an approved testing station for mechanical testing in accordance with Australian Standard 1426–1973 Steel Wire Ropes for Mines. A copy of the certificate of such test shall be forwarded to an inspector no later than 1 month after the sample was cut off.

If the minimum breaking force of the rope as determined at an approved testing station is less than 90 per cent of the breaking force of the rope, when new, it shall be withdrawn from service forthwith.

(7) A rope with a form of capping in which the wires at the end of the rope are bent back on the rope itself to form a cone shall not be used in any haulage system for the carriage of persons unless—

(a) wedges formed by lapping with soft iron wire are placed between the rope and the wires which are bent back; and

(b) the length of the tapered portion of the socket of the capping is not less than 8 times the diameter of the rope.

40.3 (1) A rope haulage apparatus shall be examined and tested by a competent person as follows:—

(a) At least once in every working day, all haulage ropes shall be carefully examined;

(b) At least once in every working day, an examination shall be made of all permanently attached vehicles and ancillary apparatus including brakes and all external parts of the haulage equipment on which safety may depend;

(c) At intervals not exceeding 1 month, a thorough examination shall be made of all equipment upon which safety may

depend including haulage ropes and for this purpose, all ropes shall be cleaned and examined at intervals not exceeding 50 metres and also at places particularly liable to deterioration; and

(d) At intervals not exceeding 12 months, the haulage engine shall be thoroughly examined to determine the condition of all internal components on which safety depends.

(2) On every occasion when repairs are being effected to the clutch or brakes of a haulage engine, the conveyance shall be removed, or secured by means other than the rope, while the repairs are in progress.

(3) After any stoppage exceeding 8 hours and after any stoppage for repairs which might affect safe running, a haulage engine shall not be used again for raising or lowering persons (other than the operator) until the carriage or other means of conveyance has completed at least 1 return journey in the working portion of the roadway.

(4) The manager or other competent person shall test—

(a) every overtravel protection at least once on each working day by hauling the conveyance past the point at which the overtravel protection comes into operation;

(b) every overspeed protection at least once per month to ensure that the overspeed protection is functioning correctly.

(5) A full report of each examination or test required by this rule shall be recorded in a report book to be kept at the mine for the purpose. Any defects discovered shall be reported forthwith to the manager of the mine.

40.4 (1) The manager of a mine shall make local transport rules for the purposes of securing the safe operation in the mine of the rope haulage and associated vehicles.

(2) Such local transport rules shall specify—

(a) a standard height and width in respect of each length of road in the mine in which rope-hauled vehicles run;

(b) the maximum loads (by reference to mass, dimensions, number, or other criterion) that may be carried in vehicles and the maximum number of vehicles that may be coupled together to comprise a train or set;

(c) the maximum speeds at which vehicles may be run in any length of road in the mine; and

(d) the conditions of use and any other rules necessary to secure safe operation of the rope haulage and associated vehicles.

(3) The maximum number of persons allowed to ride at one time on a conveyance shall be fixed by the manager, and shall be kept posted up at each stopping place.

(4) A person shall not ride in a conveyance compartment containing equipment or materials, but this provision shall not apply to any person carrying instruments or tools required for the performance of his duties.

(5) An approved system of signalling shall be provided in each roadway where persons are transported by means of rope haulage under manual control.

(6) Where a rope haulage apparatus is manually controlled, the following code of signals shall be used:—

Signals	Shall Signify
1.	" Stop " when in motion
1.	Hoist
2.	Lower
3.	Communicate
4.	Men-on
10.	Accident

Additional signals may be arranged by the manager.

(7) The code of signals shall be posted in view of the engine driver, and shall also be prominently displayed at each signalling point and at such other places as may be directed by an inspector.

PART 41—INTERNAL COMBUSTION ENGINES

41.1 (1) An internal combustion engine shall not be used belowground in an underground coal mine unless the engine is of an approved type.

(2) The manager shall notify the inspector of his intention to introduce any new or reconditioned internal combustion engine into a coal mine. Such notice shall contain a full description of the internal combustion engine to be so introduced and a statement that it complies in all respects with these rules.

41.2 (1) An internal combustion engine shall not be used belowground in an underground coal mine unless the engine is fitted with—

(a) an air filter and flame arrestor on the air intake; and

(b) an exhaust gas conditioner and flame arrestor on the exhaust outlet.

(2) Such fittings shall be cleaned and examined regularly to ensure safe and efficient operation at all times.

41.3 A diesel engine shall not be used belowground in an underground coal mine if—

(a) the external surface temperature of the engine or the exhaust system exceeds 120°C;

(b) the exhaust gas temperature at the point of discharge to the atmosphere exceeds 70°C.

41.4 (1) Every diesel engine shall be fitted with:—

(a) A device to automatically switch off the engine before the temperature of the engine cooling water reaches 100°C;

(b) A device to automatically switch off the engine before the fluid level in the exhaust gas conditioner falls below the normal operation level;

(c) A device to automatically switch off the engine in the event of a reduction in oil pressure below normal minimum oil operating pressure.

(2) Such devices shall be cleaned and examined regularly to ensure safe and efficient operation at all times.

41.5 (1) The Manager shall, by systematic sampling of the exhaust gas, ensure that no diesel engine is operated below-ground if the undiluted and unconditioned exhaust gas is found to contain any noxious gas in excess of the percentage by volume in the following table:—

TABLE

Gas	Percentage by Volume	Equivalent in Parts per Million
Carbon Monoxide (CO)	0·15%	1 500
Oxides of Nitrogen (Expressed as NO_2)	0·10%	1 000
Aldehydes (Expressed as HCHO)	0·005%	50

(2) Analysis of undiluted exhaust gases shall be carried out by a competent person at intervals not exceeding 4 weeks.

(3) The results of all analyses required under this rule shall be recorded in a report book to be kept at the mine for that purpose.

PART 42—LOCOMOTIVES

42.1 For the purposes of this Part, a locomotive means a self-propelled vehicle mounted on rails installed in an underground coal mine.

42.2 A locomotive shall not be used unless it is provided with a braking system which—

(a) is capable of bringing the locomotive to rest safely under conditions of maximum load, speed and gradient;

(b) is applied to all driving wheels;

(c) can be operated readily by the driver and is applied automatically if the driver vacates the driving position; and

(d) is constructed of non-flammable material.

42.3 Every locomotive shall be provided with—

(a) a suitable cab or canopy to protect the driver and, if the locomotive is used for the transport of persons, a suitable cab or canopy to protect the passengers;

(b) a headlight with an effective range of at least 60 metres;

(c) an audible warning device; and

(d) a red warning light which is visible for a distance of 60 metres and secured either—

(i) at the rear of the locomotive; or

(ii) at the rear of the last vehicle of any train being hauled by a locomotive.

42.4 Where provision is made for a locomotive to be operated from either end, the locomotive shall be designed so that it is not capable of operation from both ends simultaneously.

42.5 Where more than one vehicle is used to form a train for man-riding, the train shall be provided with a braking system which is applied automatically if any vehicle becomes detached from the train. Provision shall also be made to enable the train brakes to be applied from any vehicle forming part of a man-riding train.

42.6 A locomotive shall not be used in any length of road otherwise than on a set of rails—

(a) which is ballasted and, where necessary, drained;

(b) which has rails of cross sectional area appropriate to the sleeper spacing and the axle loading of the locomotive;

(c) which has every rail joint secured by suitable fishplates with at least 4 bolts; and

(d) which is constructed so that every curve is sufficiently gradual to enable any locomotive which runs thereon to do so in safety and, where necessary, has a raised outer rail or check rail or both.

42.7 A locomotive shall not be used in any length of road that has a gradient exceeding 1 in 15.

42.8 (1) The manager of a mine shall make local transport rules for the purpose of securing the safe operation in the mine of locomotives and trains.

(2) Such local transport rules shall specify—

(a) a standard height and width in respect of each length of road in the mine in which locomotives run;

(b) the maximum loads (by reference to mass, dimensions, number, or other criterion) that may be carried in vehicles and the maximum number of vehicles that may be coupled together to comprise a train or set;

(c) the maximum speeds at which locomotives and vehicles may run in any length of road in the mine; and

(d) the conditions of use and any other precautions necessary to secure safe operation of locomotives and trains.

42.9 (1) Each roadway in which a locomotive runs shall be inspected by a competent person at least once in each working day to ascertain—

(a) the state of the track and its freedom from obstructions; and

(b) the state of the roadway in relation to the specified standard height and width referred to in sub-rule 42.8 (2).

(2) The results of all such inspections shall be recorded in a report book to be kept for that purpose at the mine.

42.10 (1) A person shall not operate any locomotive in an underground coal mine unless he has been appointed by the manager of the mine to drive the locomotive or to carry out the maintenance, repair or testing of that locomotive.

(2) Except with the permission of the manager a person shall not be on any locomotive in a moving train unless—

(a) he is the appointed driver of the locomotive;

(b) he is riding in a passenger vehicle;

(c) he is engaged in shunting operations;

(d) he is engaged in maintaining, repairing or testing the locomotive; or

(e) he is learning to drive a locomotive and he is under instruction from and accompanied by an appointed driver.

42.11 A vehicle containing any material of a length exceeding the length of the carrying vehicle shall not be coupled directly to the locomotive.

42.12 A person shall not use a locomotive for moving any vehicle other than by hauling from in front except during shunting operations.

42.13 An authorised person shall examine each locomotive at least once during each working day and if any defect likely to affect the safe working is detected, he shall suspend operations until the defect is remedied.

42.14 The exhaust conditioner of a locomotive shall be drained, flushed and refilled to the required level at least once during each working day.

42.15 The braking system of a locomotive shall be examined and tested by a competent person at least once during each working week. This test shall include application of the brakes when the locomotive is in motion by direct mechanical action and by any other means of application provided.

42.16 (1) When not in use, a locomotive shall be kept in a garage or other suitable place designated by the manager of the mine.

(2) An underground garage for locomotives shall—

(a) be provided with at least 2 means of egress;

(b) be ventilated by a through current of intake air sufficient to dilute and render harmless all exhaust gases emitted by any engine running therein;

(c) be constructed of fire-resistant material;

(d) not have any fuel oil stored therein;

(e) have a floor of smooth concrete;

(f) have an inspection pit or other suitable means for making inspections from below the locomotive; and

(g) be provided with not less than 2 fire extinguishers of a type in accordance with Australian Standards 1840-1976 to 1848-1976 relating to portable fire extinguishers and rated at not less than 20 B:C in accordance with Australian Standard 1850-1981 Portable fire extinguishers—Classification, rating and fire testing.

PART 43—VEHICLES OTHER THAN LOCOMOTIVES

43.1 For the purposes of this Part, a vehicle means a self propelled vehicle used for the transport of persons, mineral or material and which does not run on a fixed rail track, but such term does not include a vehicle normally used on the public highway.

43.2 Every vehicle shall be provided with a braking system which can be readily operated by the driver and the brakes shall be capable of stopping the vehicle safely when carrying or hauling its maximum permissible load and descending the maximum gradient for which it is designed. Additionally, every vehicle shall be provided with a parking brake.

43.3 A fuel tank fitted to any vehicle shall be designed and installed so as to minimise damage from collision.

43.4 Every vehicle shall be provided with an audible warning device and a fire extinguisher of a type in accordance with Australian Standards 1840-1976 to 1848-1976 relating to portable fire extinguishers and rated at not less than 20 B:C in accordance with Australian Standard 1850-1981 Portable fire extinguishers—classification, rating and fire testing.

43.5 Every vehicle other than a shuttle car shall be provided with a structure to protect the driver in event of a vehicle overturning and to protect the driver from falling objects.

43.6 Every load carrying vehicle other than a shuttle car shall be clearly marked with the safe working load.

43.7 Except with the prior permission of the manager, a person other than the driver shall not be transported in a vehicle other than a vehicle approved for man-riding.

43.8 (1) A vehicle shall not be operated by an unauthorised person.

(2) A vehicle shall not be left unattended while it is in motion or the engine is running.

43.9 Before commencing to operate a vehicle on any shift, the driver shall satisfy himself that the brakes, steering, lights and all safety features of the vehicle are functioning properly.

43.10 (1) All pneumatic tyres shall be kept inflated to the correct pressure and regularly examined for wear and cuts.

(2) A tyre shall be deflated before repairs are commenced on it and protection devices shall be provided to prevent wheel locking rims from creating a hazard during inflation.

43.11 (1) The manager of the mine shall make local transport rules for the purposes of securing the safe operation of vehicles in the mine.

(2) Such local transport rules shall specify—

(a) a standard height and width in respect of each length of road in which vehicles run;

(b) the maximum loads (by reference to mass, dimensions, number or other criterion) that may be carried in vehicles;

(c) the maximum speeds at which vehicles may run in any length of road in the mine;

(d) procedures to be adopted for movement of vehicles in the event of breakdown; and

(e) the conditions of use and any other precautions necessary to secure safe operation of vehicles.

43.12 (1) The brakes of every vehicle shall be examined and tested by a competent person at intervals not exceeding 1 week.

(2) Testing shall include application of the brakes under specific conditions of speed, load and gradient on a firm surface to establish stopping distance.

(3) Such measured stopping distances shall be recorded in a report book to be kept at the mine for that purpose.

PART 44—EXPLOSIVES AND STORAGE

44.1 An explosive shall not be used in or about any underground coal mine unless such explosive is of an approved type.

44.2 An inspector may, by requisition given to the manager of the mine, require the use of any explosive to be discontinued if the inspector is of the opinion that such explosive is defective or dangerous.

44.3 Explosives shall be stored as follows:—

(a) Explosives shall be stored only on the surface of the mine in magazines constructed in accordance with Australian Standard 2188—1979 Magazines for the Storage of Explosives or other approved design:

Provided that any magazine in use at a mine prior to the coming into force of these Rules may, with the approval of the Chief Inspector, continue to be used;

(b) Explosives shall be stored in such quantities as will comply with the distances prescribed by Australian Standard 2187—Part 1—1979 Storage and Land Transport of Explosives;

(c) Every magazine shall be protected by one or more lightning conductors complying with the requirements of the Australian Standard 1768—1975 Manual on Lightning Protection;

(d) Every magazine shall be in the charge of the manager, or other authorised person who shall have in his possession the keys of the magazine. The names of all such persons shall be recorded by the manager in the record book;

(e) The manager or other person in charge of the magazine shall be responsible for the safe storage of explosives within the magazine and for the keeping of records of stocks contained therein and for all receipts and issues of explosives;

(f) Detonators shall be stored apart from other explosives in a separate approved magazine;

(g) Explosives consisting of—

(i) a mixture of ammonium nitrate with carbonaceous or organic substance; or

(ii) a mixture formed by mixing ammonium nitrate to which has been added inert substance with carbonaceous or organic substance,

in either case with or without water, shall be stored apart from other explosives in a separate approved magazine;

(h) Detonating fuse shall be stored in an approved magazine and may be stored with other high explosives but shall be separated from these explosives within the magazine. Detonating fuse shall not be stored with detonators;

(i) The area around a magazine shall be kept clear of unnecessary vegetation and combustible material for a distance of not less than ten (10) metres;

(j) The floor of a magazine shall be kept clean and free of grit or rubbish. Empty packages, wrappings and containers shall be removed from the magazine as soon as practicable;

(k) When it is necessary to repair a magazine, the explosives shall be completely removed and the magazine cleaned before any repairs are carried out;

(l) Explosives shall be stored so that they may be issued in correct rotation according to date of manufacture. Explosives shall not be stored on the end or side of the container. Stacks of explosives shall not be more than two (2) metres high, placed not less than 150 mm above the floor and 300 mm from the walls or roof of a magazine so that every stack is ventilated and may be readily examined and handled.

44.4 No person in or within 10 metres of a magazine shall smoke or have in his possession any apparatus of any kind for producing a naked flame or a spark, including any match or cigarette lighting device.

44.5 Any loss or suspected theft of explosives shall be reported immediately by the manager to the officer in charge of the nearest Police Station and to an inspector.

44.6 A person intoxicated or under the influence of a drug shall not enter or remain in any magazine and intoxicating liquor shall not be taken into a magazine.

44.7 A person intoxicated or under the influence of a drug—

(a) shall not handle any explosive at a mine;

(b) shall not drive or be on any vehicle carrying explosives or ammonium nitrate.

PART 45—USE OF EXPLOSIVES

45.1 Tools used for charging, cleaning and testing of holes shall be of wood or an approved non-metallic material or non-ferrous metal and of suitable length. The prong fitting of any break detector shall be made of hard brass, or other approved material of similar rigidity and durability.

45.2 Every electrical firing apparatus for use belowground shall be of an approved type and shall be fitted with a 4 millisecond cut-off.

Exploders operated from the surface shall comply with Australian Standard 2187—Part 2—1979 Use of Explosives or be of an approved type.

45.3 (1) Every cable used for firing shots shall be of adequate conductance, effectively insulated and shall be constructed to an approved standard.

(2) A cable used for shot firing shall be of sufficient length to allow the shotfirer to retire to a position of safety when firing the charges.

(3) A cable shall not be used for multi-shot firing belowground unless the cable is free from joints and repairs other than joints and repairs which have been properly made and either vulcanised or moulded.

45.4 Only tools, cables, testing and electrical shotfiring equipment provided by the owner, agent or manager shall be used belowground.

45.5 (1) Testing instruments and electrical firing apparatus shall be tested by a competent person in accordance with an approved testing programme. The results of all tests shall be recorded in a report book to be kept at the mine for that purpose.

(2) The calibration of the circuit tester shall be marked at the maximum resistance of circuits which may be attempted to be fired with the firing apparatus being used.

PART 46—SHOTFIRERS

46.1 (1) A person shall not be qualified to be appointed as a shotfirer unless he holds a deputy's certificate or a higher certificate granted under this Act.

(2) The manager of the mine may appoint qualified persons as shotfirers.

46.2 The names of all shotfirers shall be recorded by the manager in the record book together with the name of the district of the mine to which each is assigned.

46.3 (1) A person shall not be appointed as an assistant shotfirer unless he has attained the age of eighteen years. The manager shall, before making any such appointment, ensure that the appointee has been instructed in the safe handling of explosives. The names of all assistant shotfirers shall be recorded by the manager in the record book.

(2) Every assistant shotfirer shall be assigned to a shotfirer and shall be under his personal direction and supervision.

46.4 The manager of the mine may authorise a person who has attained the age of 18 years to be a trainee shotfirer and to be trained in the practical use of explosives and to fire charges under the direct supervision of a shotfirer. No more than one trainee shall be assigned

to a shotfirer at any one time. The work assigned to the shotfirer and trainee shall not be more than normally undertaken by the shotfirer. The name of the trainee and of the supervisory shotfirer shall be recorded by the manager in the record book.

PART 47—DETONATORS

47.1 Unless otherwise approved, only electric low tension non-incendive detonators with copper leads shall be used in an underground coal mine. Where multi-shotfiring is carried out millisecond delay electric detonators with copper leads of sufficient length to allow for connection in the circuit without make-up wires shall be used.

47.2 Detonators shall be marked on the tubes by either a colour code or numbers. A record of such markings shall be kept by the manager of the mine or the magazine attendant so that detonators issued to individual shotfirers may be identified.

47.3 A shotfirer shall exercise due care and attention in the use and custody of all detonators issued to him and shall return any unused detonators to the magazine at the surface on the completion of his shift. He shall transport detonators in an approved type of container and shall not leave such container in an unattended position if it contains any detonators. Provided that he may leave a container, in which detonators are enclosed, remote from a face which he is engaged in charging.

PART 48—TRANSPORT OF EXPLOSIVES

48.1 Where the method of working an underground coal mine requires the use of large quantities of explosives, the manager shall submit to an inspector a scheme for transport and storage which shall have regard to the following requirements—

(a) explosives shall be packed in secure containers at the magazine;

(b) the explosives shall be conveyed into the mine to one or more reserve stations belowground and shall be kept at such stations until required for use in locked steel boxes lined with wood or approved non-conductive material. The boxes shall be painted red and clearly marked with the word "explosives" in white letters;

(c) the weight of explosives kept at a reserve station shall not exceed 100kg or a quantity equivalent to the normal daily usage, whichever is the lesser;

(d) the explosives storage shall be kept apart from any detonators by a distance of not less than ten (10) metres;

(e) the keys of the locks on the steel boxes shall be in the charge of the shotfirer on duty in that district of the mine, and he shall pass them to the relieving shotfirer or to the magazine attendant when returning to the surface at the end of his shift; and

(f) a fire fighting hydrant with hose shall be provided on the intake side of any reserve station in such a position that it is possible to direct water onto the station in case of fire.

48.2 The inspector may require the manager of the mine to amend the scheme for the transport and storage of explosives if he is of the opinion that the scheme does not conform to the requirements of Rule 48.1.

PART 49—CHARGING AND FIRING EXPLOSIVES

49.1 (1) Before explosives are taken into an underground coal mine in which explosives have not previously been used, the manager of the mine shall have tests conducted to determine the presence of stray electrical currents at the site where shotfiring is to be undertaken.

Further tests shall be conducted at twelve monthly intervals during the time the use of explosives continues.

(2) Such tests shall be conducted in accordance with Australian Standard 2187–Part 2–1979 Use of Explosives, with the span between the test electrodes being equal to twice the length of the detonator leads to be used.

(3) An inspector may direct or allow the requirements of this rule to be varied or modified in respect of the working of a particular coal mine.

49.2 A person other than a shotfirer shall not—

(a) prepare and make a primer cartridge or insert the same into a hole;

(b) connect the leadwires of detonators to form a circuit in a round of charges;

(c) connect the firing cable to the leadwires of a detonator or to the leadwires of a round of charges;

(d) connect the firing cable to the electrical shotfiring apparatus;

(e) initiate a charge or a round of charges;

(f) treat or recover any misfired charge:

provided that an authorised trainee shotfirer may, under the supervision of a shotfirer, carry out any of the above acts.

49.3 Cartridges of explosives shall not be loaded into a shot hole unless there is a clearance over the diameter of the cartridge sufficient to allow the explosives to be positioned without undue force.

49.4 (1) The paper wrapping shall not be removed from any cartridge of explosives.

(2) A cartridge shall not be cut except at the direction of the manager and for the purpose of achieving the correct charge weight. In such cases the manager of the mine shall direct the precautions to be taken with the cutting of cartridges.

49.5 A hole shall not be charged unless it has been thoroughly cleaned out and tested with an approved break detector and found to be free of breaks exceeding 3 millimetres in width along or across it: provided that it shall not be necessary to test for breaks in those shotholes drilled in stone which are not in any part closer than ten (10) metres from a coal seam.

49.6 The charge in any shothole shall not exceed the approved maximum charge limit for the explosive being used.

49.7 A shothole shall be charged with cartridges of the one type and diameter only.

49.8 Every charge of explosive shall be placed in a shothole and contained by an adequate length of stemming.

49.9 (1) Before any hole or round of holes is charged, the shotfirer shall examine the place where the holes are to be charged for the presence of flammable gas by means of a locked flame safety lamp.

(2) A hole shall not be charged if flammable gas is found to be accumulated at or near to the place so as to render it unsafe to fire a shot. After charging a hole or round of holes, the shotfirer shall make a further examination for flammable gas and shall only fire the charges if the place is found to be safe for shotfiring.

(3) The requirements of this rule apply in addition to the provisions of Part 7 of these rules.

49.10 When charging a hole the shotfirer shall place the primer cartridge at the back of the hole with the detonator facing out towards the collar.

49.11 The place where a charge of explosives is to be fired and all contiguous accessible places within a radius of 20 metres therefrom shall be treated with limestone or other approved dust or thoroughly watered in all parts where combustible dust may be lodged before the charge of explosives is fired.

49.12 Unless otherwise approved, where multi-shotfiring is practised, the overall firing time of a round shall not exceed 100 milli-seconds.

49.13 The circuit of a round of charges and the firing cable shall be tested by the shotfirer before the charges are fired. Such test shall only be carried out if—

(a) all persons in the vicinity of the charges have been withdrawn to a place of safety in intake air;

(b) approaches to the charges are guarded by persons placed at such approaches by the shotfirer or fenced off with a notice exhibiting the words "danger shotfiring"; and

(c) the test is conducted from the shotfiring position which shall be in intake air and not in a direct line with any charged hole.

49.14 No attempt shall be made to fire a round of charges where tests have shown the circuit not to be continuous or to be of too high a resistance for the exploder.

49.15 A charge or round of charges shall not be fired until the shotfirer has ensured that all persons in the vicinity have been withdrawn to a place of safety in intake air and the shotfirer has given warning by shouting the word "fire".

49.16 Where a place may be holed or broken through by the firing of a charge or round of charges, the shotfirer shall ensure that due warning is given to persons in the vicinity and that proper precautions are taken to prevent any person being endangered when the charge or charges are fired.

49.17 A person placed to guard an approach to charges shall not leave the place where he has been posted until personally directed to do so by the shotfirer.

49.18 The shotfirer shall keep in his possession the key or handle of any electrical shotfiring apparatus assigned for his use and shall only place it in the apparatus immediately prior to firing the charges connected thereto.

49.19 After firing a charge or round of charges the shotfirer shall, after waiting for a period of ten minutes, or such additional time as it takes to clear the place of blasting fumes, whichever is the longer, carry out an inspection of the working place where the charges were fired and ascertain that it is safe to resume work thereat.

PART 50—TREATMENT OF MISFIRED CHARGES

50.1 (1) The manager of an underground coal mine shall, before permitting shotfiring, prepare and issue to all shotfirers directions containing detailed procedures for dealing with misfired charges.

(2) The inspector may require the manager of the mine to amend the procedures if he is of the opinion that they are deficient in any respect.

50.2 A person other than a shotfirer, or a trainee shotfirer under the supervision of a shotfirer, shall not deal with a misfired charge.

50.3 A shotfirer shall not leave the mine until all misfires in his section have been attended in accordance with the manager's directions or he has directly communicated with the shotfirer and deputy on the following shift and made them fully aware of all the circumstances relating to such misfires.

50.4 The shotfirer shall ensure that any damaged or unexploded explosives or detonators which have been recovered from a misfire or any other cause are returned to the magazine as soon as possible.

50.5 (1) As soon as practicable after any damaged or unexploded explosives or detonators are recovered, the manager of the mine shall arrange for their destruction by a competent person unless the manager considers it necessary to have tests done on any of them.

(2) A record shall be kept at the magazine giving the details of the damaged explosives, the location where they have been destroyed and the date of destruction.

PART 51—RECORDS OF EXPLOSIVES USED

51.1 (1) A report book shall be kept at each deputies station in districts where shotfiring takes place and every shotfirer shall, at the completion of his shift, record therein the following information—

(a) total number of shots fired;

(b) total number of rounds fired;

(c) total weight of explosives used;

(d) the location of any misfired charges, their position and delay number if in a round, and the action taken to treat the misfired charges; and

(e) details of any defective shotfiring equipment and of any requirements for shotfiring for the next shift.

(2) The shotfirer shall deliver a copy of the report to the under-manager at the surface.

51.2 The report shall be signed by the shotfirer and initialled by the under-manager or in his absence by the manager of the mine.

PART 52—HEALTH AND SANITATION

52.1 Adequate provision shall be made in every underground coal mine for cleanliness, sanitation, and the prevention of dust.

52.2 (1) Adequate bath house and change house accommodation shall be provided near to the principal entrance to the mine to enable the persons employed in or about the mine to change and dry their clothes therein and to wash themselves.

(2) All such accommodation shall be as approved by the Chief Inspector.

(3) The change house shall not be in the engine room or boiler house. The drying of clothes upon the boiler shall not be permitted.

52.3 Plans and specifications of all bath houses and change houses shall be submitted to the Chief Inspector before the commencement of construction. No extensions of or structural addition to an existing bath house or change house shall be made unless the plans and specifications thereof have been approved by the Chief Inspector.

52.4 The accommodation and facilities for taking baths shall be provided in a building of sufficient dimension, effectively lighted and ventilated. Such building or accommodation shall be kept in good repair, and shall be heated to a reasonable temperature whilst it is in use.

52.5 (1) The bath house building shall be constructed of suitable material and shall have a floor of impervious material that is graded and drained to allow water to be carried away from the building.

(2) The building shall also be so constructed as to permit the interior to be easily cleansed, and to prevent accumulations of dirt.

52.6 The floor space in every change room, exclusive of any floor space in the portion thereof in which showers are installed, shall not be less than 1 square metre for each person employed underground in the largest shift at the mine.

52.7 The bath houses and change houses shall be supplied with an ample supply of hot and cold wholesome water, and a sufficient number of showers and washing basins so that employees are not delayed unreasonably.

52.8 Showers and washing basins shall be provided at the rate of not less than one shower for every 5 persons and one basin for every 20 persons in the largest shift employed underground at the mine.

52.9 The water supply for the showers and basins shall be arranged so that the temperature can be regulated by the person using the shower or basin.

52.10 No water shall be supplied for baths or for washing which is likely to present a health risk or which for any reason whatsoever is unsuitable for the purpose.

52.11 (1) The floors of the bath houses and change houses, the cabinets, and the inside walls up to a height of 2 metres shall be thoroughly cleansed once every day. The whole building shall be thoroughly cleansed at least once in every period of 10 days or more often if necessary to ensure that it is maintained in a clean and sanitary condition.

(2) If the accommodation is used by more than one shift of persons during the day, the cabinets shall be cleansed at such intervals during the day as the inspector may require.

52.12 No open coal or coke fire shall be allowed in the interior of any bath house or change house.

52.13 (1) A responsible adult person or persons appointed by the manager shall once at least in every day on which workmen are employed at the mine inspect all the bath houses and change houses.

(2) The person or persons so appointed shall without delay make a full and accurate report in a book kept at the mine stating the result of such inspection and specifying the measures taken to remedy any defect disclosed during the inspection.

52.14 Suitable drainage shall be provided at every change room for the refuse water, and the floors of all baths shall be so constructed that the used water will be properly drained and that the water from the different baths shall not be allowed to enter the floor of the adjoining ones.

52.15 The Chief Inspector may, on receiving a written application from the manager of the mine, grant exemption from any of the requirements of the foregoing rules of this Part.

52.16 The manager of the mine shall make local rules to be observed by the persons using the bath houses and change houses with respect to keeping such bath houses and change houses in a clean and sanitary condition and also with regard to conduct therein.

Such rules shall be exhibited in a conspicuous position therein.

52.17 (1) Where persons are ordinarily employed underground in a coal mine, there shall be provided at the surface and in the principal districts of the mine stretchers, with sufficient splints, bandages, blankets, adhesive plaster, boric vaseline, cotton wool, and tincture of iodine or other suitable antiseptic solution, ready for immediate use in the event of an accident.

(2) An inspector may direct or allow the requirements of this rule to be varied or modified in respect of the working of a particular coal mine.

52.18 The manager of the mine shall ensure that the first aid requisites provided pursuant to rule 52.17 are—

(a) inspected by a competent person at least once in every month; and

(b) properly maintained and kept ready for use.

52.19 The manager of the mine shall ensure that at least one person employed underground during each production shift is the holder of a current first aid certificate and is available to render first aid in the event of an accident.

52.20 (1) A sufficient number of suitable sanitary conveniences shall be provided both above and below ground in convenient places for the use of the persons employed in, on or about an underground coal mine.

(2) The sanitary conveniences shall be kept in a clean and sanitary condition.

(3) The sanitary conveniences shall be ventilated by a current of air passing directly into a return airway.

(4) The sanitary conveniences shall be furnished with suitable deodorants. The removal of the contents shall be effected as often as may be necessary, and unless the units are of a self cleansing type not less frequently than once every 2 days.

52.21 (1) A suitable dining room or other place for taking meals shall be set aside at the surface of the mine and in each ventilating district.

(2) All such places shall be kept in a clean and sanitary condition.

(3) At every such place an impervious receptacle shall be provided in which all waste food, paper, and other rubbish shall be placed.

(4) The contents of the receptacle shall be sent to the surface, and the receptacle shall be thoroughly cleansed at least once in every 3 days.

PART 53—PROTECTIVE EQUIPMENT

53.1 Every person who is employed belowground in an underground coal mine shall be provided with—

(a) a safety helmet in accordance with Australian Standard 1801–1981 Industrial Safety Helmets; and

(b) safety footwear in accordance with Australian Standard 2210–1980 Safety Footwear.

53.2 Every person who is employed in any place on the surface of a mine—

(a) where there is a likelihood of a person being struck on the head, shall be provided with a safety helmet in accordance with Australian Standard 1801–1981 Industrial Safety Helmets;

(b) where there is a likelihood of injury to the feet, shall be provided with safety footwear in accordance with Australian Standard 2210–1980 Safety Footwear.

53.3 Every person who is employed in any place, whether on the surface or belowground, where there is a likelihood of injury to the eyes shall be provided with eye protection in accordance with Australian Standard 1336–1982 Recommended Practices for Eye Protection in the Industrial Environment.

53.4 The manager of the mine shall—

(a) define the areas where the protective equipment referred to in rules 53.2 and 53.3 is to be worn; and

(b) ensure that all such areas are clearly indicated by suitable signs that are kept exhibited at all times.

53.5 The inspector shall, if he is of the opinion that it is necessary to secure the safety of the workmen, by requisition given to the manager of the mine require further places to be included in the defined areas referred to in rule 53.4.

53.6 Where these rules prescribe that protective equipment shall be provided, a person working in, on or about the mine shall use in the circumstances so prescribed the protective equipment provided for him.

PART 54—MINE PLANS

54.1 (1) The plans to be kept pursuant to section 86 of this Act shall include—

(a) A plan of all tenements situated on the coal mine, showing the position thereon of all shafts, open cuts, and openings from the surface to underground workings; such plan shall show a surveyed connection to some measured portion on the surface of the mine together with the azimuth adopted; and

(b) A general plan of all underground workings to a scale not less than 1 : 2500 showing the levels superimposed one upon another, and if the lower levels cannot be so shown clearly, owing to those at higher levels being superimposed, there shall also be furnished such plans of each level or of successive groups of levels as are sufficient to clearly show the workings in each level.

(2) The inspector may, by requisition given to the manager of the mine, require longitudinal sections and sufficient cross sections to the same scale as the general plan of the underground workings if he considers these to be necessary to clearly show the seams and workings of the mine.

54.2 The following requirements shall apply to all mine plans:—

(a) All faults, dykes, and other dislocations of the seam and all creeks, rivers, swamps, lakes, canals, irrigation channels, limits of any tidal and known flood waters and sea shore shall be shown. The reduced level of the beds shall be marked at 3 metres (vertical) intervals. In the case of beds being highly pervious to water, the depth to and the reduced level of such beds shall be shown before mining is allowed within 36 metres horizontally;

(b) Floor levels shall be shown at intervals not exceeding 90 metres (on the plane of the seam) of all main tunnels and throughout all accessible workings;

(c) All levels shall be correlated to the Australian Height Datum or a level approved by the Chief Inspector;

(d) All underground levels shall be indicated in red and all surface levels in blue;

(e) All mine plans shall be gridded off in 500 metre squares to scale;

(f) The boundary lines of all mining tenements shall be indicated in brown or burnt sienna and the distinguishing number clearly shown;

(g) The boundary pillar shall be indicated in red; where owing to the tenement extending beyond the limits of the plan, the margin of the plan shall be marked "Lease extends beyond limits of plan";

(h) The registered name of the mine, the county and parish in which it is situated, and the scale, shall be clearly stated on the plan;

(i) All survey stations shall be clearly marked and numbered;

(j) All stone drives shall be indicated in yellow or brown.

PART 55—WELDING

55.1 In this Part, unless the contrary intention appears—

"heating or cutting device" or "device" means a blow lamp, flame torch, grinding equipment, cutting disc, soldering iron, electrically operated portable hand tool, electrically operated welding or cutting apparatus, oxy-acetylene operated welding or cutting apparatus, or other heating or cutting device;

"approved underground workshop" means a workshop located belowground in a coal mine and in respect of which the Chief Inspector has approved—

(a) the location of the workshop;

(b) the equipment, apparatus and facilities to be used or provided therein; and

(c) the nature and extent of the repairs and other operations that are to be carried out therein.

55.2 (1) The Chief Inspector shall not give his approval in respect of an underground workshop unless—

(a) the workshop is constructed of non-flammable material and in such a manner as to prevent any flame or arc making contact with coal or other carbonaceous material in the roof, floor or sides of the roadway in which the workshop is situated;

(b) firefighting facilities are provided in accordance with rule 55.3;

(c) provision is made for an air flow of at least 10 cubic metres per second to pass through the workshop direct to the nearest return airway by the shortest practicable route;

(d) a telephone that is connected to the mine telephone system is installed adjacent to the firefighting facilities and on the intake air side of the workshop; and

(e) the Chief Inspector is satisfied having regard to the working of the particular mine that the workshop may be used safely and competently.

(2) (a) Where a workshop is to be provided belowground in a coal mine, the manager of the mine shall make application in writing to the Chief Inspector after consultation with the inspector who inspects the mine concerned.

(b) Such application—

(i) shall include full particulars of the equipment, apparatus and facilities of the proposed workshop and the repairs and other operations to be carried out; and

(ii) shall be accompanied by a location plan drawn to a suitable scale.

55.3 (1) Adequate firefighting facilities shall be provided for every underground workshop.

(2) Such firefighting facilities shall be located within the workshop or in close proximity in intake air and shall be available for firefighting at all times whilst a heating or cutting device is being used and during the period of 1 hour after use of the device.

(3) Such firefighting facilities shall include—

(a) a water supply of minimum flow pressure of 480 kPa and minimum flow of 320 litres per minute with hydrant connected thereto;

(b) one fire hose of 30 metres in length and of 38 mm minimum internal diameter with a suitable nozzle and connection to the hydrant;

(c) 2 dry chemical fire extinguishers or other approved type, each of at least 9 kg capacity; and

(d) 500 kg of sand or limestone dust.

(4) Every underground workshop shall be kept free from flammable material at all times other than material necessarily present in the device or apparatus or equipment being repaired.

55.4 (1) A heating or cutting device shall not be used belowground in any place other than an approved underground workshop unless with the prior permission of the inspector and subject to any conditions that he may impose to secure safety.

(2) The inspector shall not permit the use of a heating or cutting device unless—

(a) the device is to be used in intake air in a place where it is permissible to fire a shot and an air flow of at least 10 cubic metres per second is to pass over that place; and

(b) the defective apparatus or equipment requires urgent repair and it cannot be transported to an approved underground workshop or to the surface of the mine and no other means are available to make the necessary repairs.

55.5 (1) A heating or cutting device shall not be taken to an approved underground workshop or to any other place belowground unless—

(a) the manager of the mine has by entry in the record book given his permission for the work requiring the use of the device to be carried out belowground; and

(b) subsequent to such permission of the manager being given—

(i) the device has been inspected by the competent person who is to be responsible to the manager for the carrying out of the proposed work and he has certified that the device is in a safe and serviceable condition; and

(ii) where the device incorporates any electrical apparatus, the device has been inspected by the mine electrician and he has certified that the device is in a safe and serviceable condition.

(2) A person referred to in paragraph (a) or (b) of sub-rule (1) who has inspected the device shall make an appropriate entry in the record book in respect of his inspection.

55.6 Where a heating or cutting device is used in an approved underground workshop, the following provisions shall apply—

(a) the device shall be used only by a person authorised in writing by the manager of the mine and only during the period of time specified in such authorisation or in a further authorisation given by the manager;

(b) a deputy or the holder of a higher certificate granted under this Act shall—

(i) before the device is used, inspect the underground workshop and all places within a radius of 20 metres of the workshop, to ensure by the use of a locked flame safety lamp and another device of an approved type that no flammable gas is present therein, and to ensure that in all other respects the workshop and all such places are safe from danger of fire;

(ii) carry out similar safety inspections at intervals of not more than 2 hours whilst the device remains in the workshop;

(iii) remain in the underground workshop for the period of 1 hour following the despatch of the device to the surface of the mine and ensure that there is no risk of fire; and

(c) the device shall be returned to the surface of the mine as soon as practicable after the completion of the work on which the device was used.

55.7 Where a heating or cutting device is used belowground in any place other than an approved underground workshop, the following provisions shall apply—

(a) the manager of the mine shall satisfy the inspector that the equipment requiring urgent repairs cannot be transported to an approved underground workshop or to the surface of the mine and that no other means are available to make the necessary repairs;

(b) the device shall be used in intake air in a place where it is permissible to fire a shot and where an air flow of at least 10 cubic metres per second will pass over that place;

(c) air flow shall be directed from the place where the device is being used by the shortest practicable route to the nearest return airway, and the place where the device is being used and all places within a radius of 20 metres shall be thoroughly stonedusted;

(d) a person not engaged directly in the use of the device or supervision of the work shall not be permitted to remain belowground whilst the device is in use;

(e) the device shall be used only by a person authorised by the manager of the mine and only during the period of time specified in such authorisation;

(f) a deputy or the holder of a higher certificate granted under this Act shall—

(i) before the device is used, inspect the place where the device is to be used and all places within a radius of 20 metres of that place, to ensure by the use of a locked flame safety lamp and another device of an approved type that no flammable gas is present therein, and to ensure that in all other respects all such places are safe from the danger of fire;

(ii) remain at the place where the device is being used and carry out similar safety inspections at intervals of not more than 1 hour whilst the device remains belowground;

(iii) remain at the place where the device was used for the period of 2 hours following the despatch of the device to the surface of the mine and ensure that there is no risk of fire;

(g) adequate firefighting facilities shall be provided in accordance with sub-rule 55.3 (3) and shall be located in close proximity to the place where the device is being used and shall be available for firefighting at all times whilst the device is being used and during the period of 2 hours after use of the device;

(h) a telephone that is connected to the mine telephone system shall be installed near the firefighting facilities and on the intake air side of that place; and

(i) the device shall be returned to the surface of the mine as soon as practicable after the completion of the work on which the device was used.

55.8 (1) A report in accordance with this rule shall be made in respect of every occasion that a heating or cutting device is used in an approved underground workshop or in any other place belowground.

(2) Where the device is used in an approved underground workshop, the manager of the mine shall record or cause to be recorded in the record book particulars of—

(a) the time the device was taken belowground;

(b) the work on which the device was used;

(c) the time the device was returned to the surface of the mine; and

(d) the inspections that were carried out to comply with rule 55.6.

(3) Where the device is used in any other place belowground, the manager of the mine shall record or cause to be recorded in the record book the particulars of—

(a) the permission given by the inspector for the use of the device and any conditions imposed by the inspector;

(b) the time the device was taken belowground;

(c) the work on which the device was used;

(d) the time the device was returned to the surface of the mine;

(e) the inspections that were carried out to comply with rule 55.7; and

(f) the condition of the place where the device was used and the precautions taken to prevent any subsequent fire or heating.

(4) The reports referred to in sub-rules (2) and (3) shall be made within 8 hours of the return of the device to the surface of the mine and a copy of every such report shall be forwarded to the inspector within 24 hours.

PART 56—PAYMENTS FOR ATTENDING INQUIRIES

56.1 (1) The persons who are selected by the warden pursuant to section 74 of this Act to sit with him at an inquiry into the nature and cause of an accident shall be paid expenses at the rates of payment prescribed for the time being for professional witnesses attending coronial inquiries held under the *Coroners Act* 1958–1980.

(2) The witnesses attending any such inquiry shall be paid expenses at the rates of payment prescribed for the time being for witnesses attending coronial inquiries held under the *Coroners Act* 1958–1980.

PART 57—SEARCHING AND CONTRABAND

57.1 (1) A person shall not—

(a) take below ground into an underground coal mine or have in his possession therein any contraband article; or

(b) smoke in an underground coal mine;

Provided that the provisions of paragraph (a) of this sub-rule shall not apply to—

(i) the relighting device within an approved flame safety lamp; or

(ii) any contraband article whose use below ground is permitted pursuant to Part 55 of the General Rules for Underground Coal Mines.

(2) A person who acts in contravention of this rule commits an offence against these Rules and shall not be allowed to remain underground in a mine.

Heading inserted by Rules pubd. Gaz. 3 December 1983, pp. 1470-72.
r. 57.1 inserted by Rules pubd. Gaz., 3 December 1983, pp. 1470-72.

57.2 The manager shall appoint in writing persons to be searchers for the purpose of ascertaining whether any person has in his possession any contraband article.

Inserted by Rules pubd. Gaz. 3 December 1983, pp. 1470-72.

57.3 Subject to these Rules, searches shall be made as and when directed by the manager:

Provided that—

(a) searches shall be made on a random basis as to—

(i) the shifts prior to or during which searches are carried out;

(ii) the number of persons searched on any occasion that searches are carried out;

(iii) the respective identities of the persons to be searched; and

(b) not less than 20 per cent. of the persons employed below ground in an underground coal mine shall be searched in accordance with these Rules on at least one occasion in the course of a month.

Notwithstanding the foregoing provisions of this Rule, any person employed or about to be employed on a shift may be searched in the event that the manager or a searcher appointed in accordance with Rule 57.2 has reasonable grounds for believing that the person has in his possession any contraband article.

Inserted by Rules pubd. Gaz. 3 December 1983, pp. 1470-72.

57.4 Every search made under these Rules shall be made in the manner following, that is to say—

(a) the search shall be made by a searcher appointed in accordance with rule 57.2;

(b) a person employed or about to be employed on a shift, shall be searched in the presence of not less than two other persons employed or about to be employed;

(c) before the searcher makes a search he shall give an opportunity to two persons employed or about to be employed on the shift to search him to ascertain if he has in his possession any contraband article;

(d) in making the search the searcher shall observe the proprieties and shall cause to the person being searched not more inconvenience than may be necessary for the purpose of making an efficient search;

(e) the searcher shall—

(i) feel for a contraband article by handling the clothing of the person being searched (including the insert of any pockets) and, if after so doing he has reason to believe or suspect that any such article is in the possession of that person, examine that clothing; and

(ii) examine any other article which that person has with him.

Inserted by Rules pubd. Gaz. 3 December 1983, pp. 1470-72.

57.5 A person—

(a) who refuses to submit to being searched in accordance with the provisions of these Rules; or

(b) who on being so searched is found to have in his possession any contraband article,

commits an offence against these Rules and shall not be allowed to enter the mine or if he is underground shall be sent from the mine.

Inserted by Rules pubd. Gaz. 3 December 1983, pp. 1470-72.