

MINE HEALTH & SAFETY ACT

CHAPTER	TITLE
2	Health and safety at mines
3	Health and safety representatives and committees
5	Inspectorate of Mine Health and Safety
7	Legal proceedings and offences
10	Miscellaneous and general provisions
23	Accidents and dangerous occurrences

REGULATIONS

CHAPTER 1

Definitions

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

“**Banksman**” means a person stationed at the shaft top, who shall be the holder of an onsetter’s certificate, appointed by the manager to supervise the loading and unloading of persons in the cage, skip, or other means of conveyance and to give the necessary signals.

“**Competent person**” means a person who-

- (a) (i) is qualified by his knowledge, training, skills, and experience to organize work and its performance;
 - (ii) is familiar with the provisions of the Act and the regulations which apply to the work to be performed; and
 - (iii) Has been trained to recognize any potential or actual danger to health or safety in the performance of the work; or
- (b) Has the appropriate certificate of competency where such certificate is required by these regulations ;(8.7.1988).

“**Material**” means whatever may be conveyed using a winding plant, elevator, or self-propelled mobile machine excluding persons, minerals, and explosives.

“**onsetter**” means a person who shall be the holder of an onsetter’s certificate, issued by the Principal Inspector of mines or who has been assessed competent against a skills program recognized by the Mining Qualifications Authority for this purpose, appointed by the Manager to be in charge of the cage, skip or other means of conveyance underground in which persons are being raised or lowered and to give the necessary signals;

“**Shaft**” means any tunnel having a cross-sectional dimension of 3, 7 meters or over and-

- (a) Inclining the horizontal of 15 degrees or over; or
- (b) Inclining the horizontal of less than 15 degrees but more than 10 degrees where the speed of traction may exceed two meters per second.

“**Steeply inclined**” in connection with shafts or other underground excavation means an inclination to the horizontal of more than 35 degrees.

“**winding plant**” means any hoist or other appliance used or intended to be used for the conveyance of persons, material, explosives or minerals by means of a cage, skip, or other means of conveyance in any shaft or winze where the control system of the driving machinery can normally be operated manually from the motor or engine room, but excluding any elevator, lifting machine, endless rope haulage and scraper winze installation; (24.12.1993)

“Winding engine driver” means a person who is the holder of a winding-engine driver’s certificate, issued by the Principal Inspector of mines or who has been assessed competent against a qualification recognized by the Mining Qualifications Authority for this purpose,

CHAPTER 3

GENERAL PROVISIONS

No unauthorized admittance

3.1.1 No unauthorized persons shall enter a mine or works or any shaft or place or building where machinery has been erected.

Posting of notice

3.1.2 Notice to the effect that no unauthorized person shall enter a mine or works or any shaft or place or building where machinery has been erected shall be posted up by the manager at all entrances to such places.

Posting of regulations

3.2 to make known the provisions of these regulations to all persons employed in and about a mine or works, an abstract, authorized by the Chief Inspector, of the portions of these regulations directly concerning the workmen, shall be posted up in suitable places at the mine or works, where it can be conveniently read, and a correct copy of these regulations or of such abstract shall be supplied at cost price to every employee, except to the illiterate persons contemplated in regulation 3.9, when engaged by the manager or his representative unless he is already in possession of the same. Every abstract posted up shall be in both official languages and in such other language as the Chief Inspector may prescribe.

Sunday Labor permission

3.3 Every permission or copy thereof granted by the Chief Inspector under section 9 of the Act shall be posted in a suitable place at the mine or works.

Notice for treatment of gassing.

3.5 One or more notices on which are legibly printed simple directions setting forth the approved procedure for the immediate treatment of cases of “gassing”, “heat-stroke”, “heat exhaustion”, “drowning”, and “electric shock”, shall be posted up in a conspicuous place in every change-house and accident emergency station.

Notices at generating stations.

3.6 Notices shall be exhibited at suitable places within every generating station and substation-

- (a) Prohibiting any unauthorized person from handling or interfering with electrical apparatus,
- (b) Giving directions as to the procedures in the case of fire, and
- (c) Giving directions as to the treatment of persons suffering from the effects of electric shock.

Notice at shaft-head.

3.7 A notice shall be kept posted up at each shaft head showing the times within which shifts are lowered or raised at such shaft head, as well as times of blasting in various sections of the mine. A clock showing the time to be observed on the mine shall be installed at each main entrance to the workings.

Renewals of notice

3.8.1 As often as any posted notice or copy thereof becomes defaced, obliterated, or destroyed it shall be renewed with all reasonable dispatch.

Interfering with notices

3.8.2 No unauthorized person shall remove or deface any of the above-mentioned notices or copies thereof.

Safety comes first.

Instruction of workmen in regulations

3.9 Where any workman is unable to read the regulations, the person in charge shall see that such workman is made acquainted with the regulations concerning him or appertaining to his occupation and duties.

Liability

3.10 No person shall be precluded by any agreement from doing or be liable under any contract in damages for doing, such acts as may be necessary to comply with the provisions of these regulations.

Responsibility for contravention

3.11 Any person through whose neglect, wrongful act, or omission a contravention of any regulation shall occur or who permits, incites, instigates, commands, or procures any person to contravene any regulations shall be deemed to be responsible or liability on the part of the manager or of any other person.

Disobedience

3.12 Any person who fails to obey any order given to him by or for the proper observance of the requirements of these regulations, or any order whatsoever given in the interests of safety or health, by any person lawfully authorized to give such order, shall be guilty of contravention of these regulations.

Deputing of work

3.13 No person shall depute any other person to do his work without the sanction of his official superior, nor shall any person, without such sanction, cease to supervise persons under his charge.

Safety precautions to be damaged or removed.

3.14 No person shall-

(a) interfere with or render ineffective anything which has been provided for the protection, safety, or health of persons; or

(b) alter, remove, or in any way interfere with or render ineffective or disregard any arrangement provided for the purpose referred to in paragraph (a) unless duly authorized thereto in writing by the manager, my overseer, or engineer: Provided that in the case of a mine which is closed down, such authorization shall be obtained from Principal Inspector of Mines.

CHAPTER 4

WORKMEN

Complaint Book

4.4.1 At each shaft head or change house the manager shall provide a record book in which persons may enter any complaint in connection with safety or health which they wish to bring to his notice. Such record book shall be inspected and initialed daily by the mine overseer and at least once a month by the manager.

Persons in a state of intoxication

4.7.1 No person in a state of intoxication or in any other condition which may render or likely to render him incapable of taking care of himself or persons under his charge shall be allowed to enter the workings of a mine or be in the proximity of any working place or near any machinery on surface of a mine or at works, and any person who may have entered the working of a mine or who is found in the proximity of any workings or near any machinery on surface of a mine or at any works in a state of intoxication may be arrested immediately by the manager or some person duly appointed by him and immediately handed over to the police, and shall be deemed to be guilty of any offense under these regulations.

Possession of intoxicating liquor

4.7.2 No intoxicating liquor shall be taken by any person into the workings of any mine or to any place of work on the surface of a mine or at a work unless with the special permission of the manager, and no workman shall have intoxicating liquor in his possession while at work or at any place of work.

CHAPTER 7

PROTECTION IN WORKINGS

Hard hats

7.7.1 No person shall enter or remain in, or cause or permit any other person to enter or remain in, the underground workings of a mine unless he or such other person wears a hard hat in good condition and of a type approved by the Director-General.

CHAPTER 8

RESPONSIBILITY IN WORKINGS

Gassing to be reported.

8.11 The ganger or miner shall report without delay any case of gassing, however slight, to the manager, mine overseer, or shift boss, who shall ensure that the employee concerned receives prompt medical attention.

CHAPTER 10

VENTILATION, GASES AND DUST

Stoppage of fan – Withdrawal of workmen

10.13.3 In the event of a main fan stopping for any reason and thereby endangering the safety of persons in the workings, the manager shall ensure that –

- a) Immediate steps are taken to withdraw all persons from such workings to a place of safety,
- b) as soon as such persons have reached a place of safety all electrical power supplied to the workings ventilated by such fan is switched off, and
- c) after the main fan has been restarted, no electrical power to the workings shall be switched on, and no persons other than those engaged in making the necessary examinations shall enter such workings until safe conditions have been restored.

CHAPTER 11

PRECAUTIONS AGAINST FIRE

Fire prevention.

11.3 At any mine and any works-

11.3.1 No person shall place, throw or leave, or cause or permit to be placed, thrown or left, any naked light or flame or any burning lighting torch, match, cigarette, tobacco, paper, or other material on or near any combustible material or inflammable substance where this may cause danger from fire or explosion.

11.3.3 No inflammable or explosive material shall be stored or kept near a place where any transformer, switchgear, or other electrical apparatus or heating apparatus is installed; 11.3.4 No welding, flame-cutting, or flame-heating shall take place.

11.3.6 No person shall smoke or carry an open light in any cage, skip or other conveyance in any shaft or winch or any elevator car in a hatchway.

Electrical apparatus – places to be non-flammable.

11.11 At every mine and every work any enclosure containing electric motors, switchgear or other electrical apparatus, excluding telephones, bells, and incandescent lamps, shall as far as possible be built and fitted with non-inflammable materials.

CHAPTER 15

LIGHTING, SAFETY LAMPS AND CONTRABAND

Lights to be carried.

15.1 No person shall work or travel or cause or permit any other person to work or travel in any un-illuminated part of a mine or works unless he or such other person carries a light.

Stationary lights

15.2 Adequate stationary lights shall be provided-

15.2.1 During working hours at all established stations, landing and loading places, and other similar places in vertical and inclined shafts, winzes, and places where winding is being carried on.

15.2.2 At night at all places on the surface where work is being carried out. For this regulation and regulation

15.3.2 “night” shall mean that period from half-an-hour after sunset to half-an-hour before sunrise.

Machinery to be illuminated.

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

Contraband

15.9.1 At every fiery mine, except as provided by regulations 15.10.1 and 15.10.9, no person shall take into the workings of the mine, or have in his possession in the workings, any device for the intentional creation of any arc, spark or flame or any match or appliance of any kind for striking a light and no person shall smoke in the workings or take into the workings or have in his possession in the workings any pipe, cigar, cigarette, tobacco other than chewing tobacco and snuff, or any contrivance or material for smoking: Provided that this prohibition shall not apply to the relighting device within any approved flame safety lamp.

CHAPTER 16

THE CONVEYANCE OF PERSONS IN SHAFTS

No conveyance of persons without permission

16.1 No person shall ride or cause or permit somebody to ride in or on a conveyance operated by a winding plant unless it is allowed by the permit issued in terms of section 33 (1) of the Act.

Winding plant to have a permit.

16.2.1 The manager of a mine shall not use a winding plant nor permit a winding plant to be used unless he has a prescribed permit issued by a Principal Inspector of Mines.

Application for use

16.2.2 Every application for the use of a winding plant shall be made to the Principal Inspector of Mines on the form obtained from him.

Inspector to issue a permit.

16.2.3 The Principal Inspector of Mines may grant a permit to use such winding plant, subject to conditions as he may specify.

Where permit to be kept

16.2.5 The permit shall be kept at the mine office and a legible copy thereof shall be displayed in a suitable glazed frame in the engine room.

Regulations applicable

16.2.7 The Regional Director may direct that any regulation contained in Chapter 17 of these regulations shall apply to any automatic or semi-automatic winding plant by giving written notice to that effect to the manager, with specific references to the regulation concerned where after such regulation shall apply to such winding plant.

Periodic tests

16.3 The Regional mining engineer (mining equipment), may carry out specific or periodic tests or inspections of any winding plant.

DESIGN OF WINDING ENGINE

Mass of person

16.4 In calculating the total mass of persons for regulation 16.6 and regulation 16.30 to 16.40 inclusive, 75 kilograms shall be allowed for each person.

Starting, stopping, and lifting power of winding engine

16.5 The winding engine shall be of such that-

16.5.1 when running at various speeds with light or heavy loads it can be readily slowed and stopped and after being stopped it can be restarted immediately in either direction, or

Lifting power of the engine

16.5.2 It can lift from the bottom to the top of the shaft or winze the maximum unbalanced load on one drum. This provision shall not apply where other means exist, enabling persons employed below to reach the top of the shaft or winze.

16.6.1 Each winding drum and winding sheave shall be provided with an adequate brake or brakes which shall be kept in proper working order.

16.6.2 For drum type of winding engines where the rope is securely attached to the winding drum the brake or brakes, without the assistance of any counterbalancing effect of any load supported by the other drum, shall be capable of holding without slipping a load on the rope at the drum equivalent to the combined mass of-

- (a) The conveyance and its attachments,
- (b) The maximum permitted mass of mineral, or double the maximum permitted mass of persons, or the maximum permitted mass of material together with double the maximum permitted mass of persons when both material and persons are conveyed simultaneously, whichever is the greatest, and

(c) The mass of rope between the sheaves and the conveyance, when the conveyance is at a point in the shaft that produces the maximum static torque on the brakes.

16.6.3 For a friction drive or sheave type winding engine where the rope or ropes are not securely attached to the winding drum or winding sheaves, the brake or brakes shall be capable of holding without slipping the maximum static out-of-balance load which occurs when one of the conveyances, or where a counterpoise has used the conveyance -

- (a) Is loaded with the permitted mass of minerals; or
- (b) Is loaded with double the permitted mass of persons; or
- (c) Is loaded with double the permitted mass of material together with double the mass of the permitted number of persons with both material and persons conveyed simultaneously; or
- (d) Is removed from its bridle.

Flanges or horns

16.6.4 Every winding drum shall have flanges or horns, and if conical or spiral, such other appliances to prevent the rope from slipping off or coiling unevenly.

Minimum turns of rope on the drum

16.6.5 Except for friction drive or sheave type of winding engines, there shall not be less than 3 turns of rope upon the drum when the cage, skip or other means of conveyance is at the lowest point in the shaft or winze from which hoisting is affected and the end of the rope where applicable shall be fastened securely round the arm or the shaft of the drum.

Slip where friction driven.

16.6.6 For friction drive or sheave type of winding engines where no part of the rope is securely attached to the winding drum or sheave, there shall be no dangerous slipping of the rope on such drum or sheave under any possible working conditions.

Operating levers

16.6.7 Every winding drum at the driver's right-hand side shall have overlay rope; where only one drum is used it shall have overlay rope.

16.6.8 The reversing lever of every steam or air-operated winding engine and the control lever of every electrically operated winding engine shall follow the overlay rope in the direction of movement.

16.6.9 Where a hand-operated brake lever is provided on any winding engine it shall be pulled towards the driver to apply the brakes.

16.6.10 The relief and throttle valve levers of every steam or air-operated winding engine shall be in a central position.

Locking devices

16.6.11 The operating mechanism of the clutch of every winding drum shall be provided with a locking arrangement which shall be used to prevent inadvertent withdrawal of the clutch. If the clutch is not visible from the driver's operating position, means shall be provided to always indicate to the driver the extent to which the clutch is engaged or disengaged.

16.6.12 It shall be impossible to unclutched any winding drum unless the brake or brakes of such drum are fully applied and it shall be impossible to release the brake or brakes of such drum until the clutch is fully engaged and securely locked.

16.6.13 All bolts and other fittings of winding drums, brakes, and clutches shall be rendered secure using suitable locking devices.

Depth indicator

16.7 In addition to any marks on the rope, every winding engine shall be provided with reliable depth indicators conveniently situated, which will at all times show clearly and accurately to the winding engine driver at his operating position the position of the cage, skip or other means of conveyance and where a reduction in winding

speed is necessary. The pointer of the dial indicator on the driver's right-hand side shall move in a clockwise direction when lowering and the pointer of a post and spiral indicator shall move up or down as the conveyance moves up or down. On every winding engine where the rope is driven by friction, every single drum winding engine, and every winding engine having 2 drums permanently fixed on one shaft, only one indicator needs to be provided.

Warning devices

16.8 Where the length of wind below the uppermost landing place for persons exceeds 100 meters, adequate provision shall be made whereby the winding engine driver is warned of the arrival of the ascending cage, skip, or other means of conveyance at a point in the shaft, the distance of which from the uppermost landing place for persons is not less than the equivalent of 3 revolutions of drum or sheave of winding engine: Provided that in the case of a single drum winder a similar device shall be fitted to warn the winding engine driver of the approach of the descending conveyance to the lowest landing place for persons.

Over-wind prevention devices and over-speed prevention devices

16.9 Every winding engine shall be fitted with at least one effective automatic overwind prevention device, as well as an effective automatic over-speed prevention device.

Speed indicator and tachograph.

16.10 Any winding engine with a permitted speed of over five meters per second shall be fitted with a speed indicator and a tachograph, which shall be used and maintained in efficient working order. The speed indicator shall be so situated that the winding speed can be easily always read by the winding engine driver from his operating position.

Construction of winding plant conveyances

Construction of winding plant conveyances, cages

16.11 Every cage used for the regular conveyance of persons shall be of substantial construction and shall be provided with a proper roof or cover and doors. The cage shall be enclosed in such a manner as to prevent any portion of the body of any person therein from accidentally encountering the timbering or other equipment in the shaft or winze or the sides of the shaft or winze. The doors shall be securely attached to the cage and so arranged that they cannot be opened accidentally outwards. Provision shall be made for adequate ventilation through the cage.

Other conveyances

16.12 Every skip or kibble, used for the regular conveyance of persons in a vertical or steeply inclined shaft or winze shall be provided with a substantial roof or cover that will safeguard the occupants.

Roof or cover

16.13 Every conveyance used for examining, repairing, or doing other work in a vertical or steeply inclined shaft or winze shall be provided with a substantial roof or cover and shall be sufficiently enclosed to protect any person from accidentally falling out.

Examination platform

16.14 Where the roof or cover of a cage, skip, or any other means of conveyance is used as a platform for persons engaged in examining, repairing, or doing other work in a vertical or steeply inclined shaft or winze, the persons so engaged shall be protected by a hood or cover immediately above them. Such a hood or cover shall be removed as soon as work is completed.

Trailers

16.15 No trailer-

- (a) Shall be used in a shaft or winze where persons are regularly conveyed.
- (b) Shall be attached to a conveyance when such conveyance is used for transportation of persons; and
- (c) Shall be used for the regular transport of persons; unless it is allowed by the permit referred to in section 33. (1) of the Act: Provided that the purpose of this regulation, "trailer" shall mean any conveyance operated by a winding engine and which is attached to but not forming an integral part of the permanent conveyance, and of which the lateral movement is restrained by means of guide shoes or wheels running in or on guides or tracks.

CONNECTION TO WINDING PLANT CONVEYANCES

Adequate strength

16.16 No rope, bar, link, chain, or other connection shall be used for winding purposes unless it is of good quality and manufacture, free from any visible defect, and of adequate calculated strength.

Accidental disconnection

16.17 The connection between –

- (a) Any winding rope and the cage, skip, bucket, kibble, other means of conveyance or counterpoise.
- (b) Any balance or tail rope and the conveyance or counterpoise, and
- (c) Any connecting rope and the conveyance and any trailer or other attached conveyance, shall be such that no accidental disconnection can take place.

Annealing

16.18 At intervals of not more than 6 months the connections between –

- (a) Any winding rope and the conveyance or counterpoise,
- (b) The conveyance and any trailer or other attached conveyance, and
- (c) Any balance rope or tail rope and the conveyance or counterpoise shall be annealed or given other proper heat treatment or shall be discarded and replaced. With connections of a class of steel approved by the Chief Inspector, the interval for heat treatment may be extended with the written permission of the Chief Inspector.

Record of heat treatment

16.19 A proper record shall be kept of the heat treatment and working life of the connections referred to in regulation 16.18 and an engineer shall add to the record the report on the method and procedure followed in such treatment and his comments on the results. All such connections and their component parts shall be marked clearly for the purpose of identification.

WINDING ROPES

Suitability

16.20.1 Any winding rope must be manufactured by a manufacturer accredited in terms of ISO 9001: “Quality Systems-Mode for assurance in design, development, production, installation, and servicing.”

16.20.2 The diameter and construction of the winding rope must be suited to the diameter of the sheaves and drums forming part of the winding plant.

Joined rope

16.21 A rope that has been joined or reinforced in any manner may not be used as part of a winding plant without the written permission of the Principal Inspector of Mines.

Use of old rope

16.23.1 Any winding rope, balance rope, or guide rope that has been previously in use may not be re-used unless the breaking strength of a specimen cut from the end of such rope has been determined by a destructive test at an approved testing station to comply with these regulations.

16.23.2 Any winding rope, balance rope, or guide rope that has been previously been used may not be re-used unless the engineer has a documented history of the working life of the rope.

Spare rope

16.24 For every winding plant in use there must be in reserve and ready for use at all times a spare winding rope that complies with these regulations. One such spare rope may be kept in reserve for more than one winding plant if that rope is suitable for use on such other winding plants.

Test of new rope

16.25 No winding rope, balance rope, or guide rope may be installed unless the manager has a certificate not older than two years confirming that the breaking strength, as determined by a destructive test at an approved rope testing station, complies with these regulations.

Examination of attachments and test run

16.27.1 Any newly installed winding rope, balance rope, or guide rope and the rope connections of any such rope, must be carefully examined by the engineer and may not be used for the raising or lowering of persons until the conveyance loaded with the maximum permitted mass has been run two complete test trips between the highest and lowest stopping places ordinarily in use.

16.27.2 The Engineer, in addition to recording the results in terms of regulation 16.79, must record and sign the results of the examination in terms of regulation 16.27.1 immediately in the Drivers Log Book provided in terms of regulation 16.81.

Particulars of rope to inspector

16.28.1 When any winding rope, balance rope, or guide rope is installed, the particulars specified in paragraphs (a) and (b) of regulation 16.79.2 must be submitted to the Principal Inspector of Mines.

16.28.2 When any winding rope in use is replaced, the reason for discard, the life in terms of winding cycles, the time in use, and such other particulars regarding that winding rope as the Principal Inspector of Mines may require must be submitted to the Principal Inspector of Mines.

Definitions

16.30.1

- (i) "Approved rope testing station" means a testing station approved by the Chief Inspector of Mines for the destructive testing of ropes used in a winding plant;
- (ii) "Attached load" means everything suspended from or attached to the winding rope and includes the portion of any balance rope half of any tail carriage and one-half of any sheave which contributes to load at the termination of the winding rope;
- (iii) "Attachments" include everything suspended from or attached to the conveyance other than the winding rope and includes any balance rope;
- (iv) "Balance rope" includes the tail rope, balance rope, or balance chain.
- (v) "Effective length of rope" means the length of winding rope between the center of the sheave or drum in the headgear and the lowest working point of the conveyance;
- (vi) "Initial breaking strength" means the breaking strength of the rope determined by the destructive testing of a sample immediately after the manufacture of the rope;
- (vii) "Nominal rope diameter" means the rope diameter specified by the manufacturer;
- (viii) "Suspended load" means the sum of the load and the mass of the effective length of rope;
- (ix) "Winding cycle" means a full or partial return trip starting with the conveyance at the bank level and ending with the same conveyance returning to the bank level.

16.30.2 In determining, by the provisions of regulations 16.32.1 to 16.40.2 inclusive, the minimum allowable breaking strength of any rope used in a winding plant, the weight in Newton's of any mass carried by such rope must be obtained by multiplying this mass in kilograms by a factor of 9.81

Multiple ropes

16.32.1 Where a conveyance is suspended by two or more winding ropes, such ropes must be of equal nominal rope diameter and approximate strength.

16.32.2 Arrangements must be made to equalize the tension in the ropes referred to in regulation 16.32.1

16.32.3 In calculating rope selection factors for purposes of regulation 16.32.1, each winding rope must be assumed to carry an equal share of the attached load.

16.33 The condition of a winding rope or balance rope must be assessed in according with the South African Bureau of Standards Code of Practice for the Condition Assessment of Steel Wire Ropes on Mine Winders, SABS 0293, as amended and the rope may not be used if the condition thus assessed at that point in the rope has reached the discard criteria.

A winding rope, balance rope, or tail rope shall not be used if the breaking force at any point in the rope is less than nine-tenths of the initial breaking force.

Exemption from regulation 16.34.1 may be granted until SABS 0294 has been approved.

16.34.1 Where the winding system operating in a vertical shaft and not using a balance rope is such that it allows for the periodic testing of the winding rope as required by regulation 16.41.1.1 the winding rope must have a breaking strength at installation of not less than-

- (a) Eight times the attached load; and
- (b) Four and a half times the suspended load.

16.34.2 Despite the provisions of regulation 16.34.1 and 16.37, where a winding system operating in a vertical shaft and not using a balance rope-

(a) Allows for the periodic testing of the winding rope as required by regulation 16.41.1.1; and

(a) Complies with the South African Bureau of Standards Code of Practice for Performance, Operating, Testing, and Maintenance of Drum Winders relating to Rope Safety, SABS 0294, as amended, the winding rope must have a breaking strength at the installation of not less than $25000 / (4000 + L)$ times the suspended load where L is equal to the effective length of the winding rope in meters.

16.34.3 Where a winding plant operating in an Incline shaft allows for the testing of the winding rope as required by regulation 16.41.1.1, the winding rope must have a breaking strength not less than-

(a) Ten times the incline component of the attached load; and

(b) Five times the incline component of the suspended load.

16.40.1 The breaking strength of a guide rope used in a winding system must not be less than five times the combined weight of the rope and its tensioning weight.

16.40.2 Any rope which is used to raise or lower a stage in a shaft must have a breaking strength at the installation of not less than 4, 5 times the combined weight of the effective length of rope and its share of the attached load.

Cutting, recapping, and testing

16.41.1.1 A sample of every winding rope in use must be cut from the end attached to the conveyance or counterweight at intervals not exceeding six months unless the winding system does not allow shortening of the winding rope. The length of the sample must be as specified by an approved rope testing station.

16.41.1.2 Where winding ropes are connected to a compensating sheave on the conveyance or counterweight, that part of the ropes that is in contact with the sheave must be cut off and the ropes re-terminated at intervals not exceeding 3 months.

16.41.2 The manager must send the sample of the rope cut off in terms of 16.41.1.1 within two weeks to an approved rope testing station where the breaking strength and general condition must be determined.

16.41.3 The approved rope testing station must provide the manager with a certificate showing the results of the test performed in terms of regulation 16.41.2.

16.41.4 If the sample of the winding rope received at the approved testing station is in a condition not permitting a satisfactory test, the manager must upon request of the approved testing station provide a new sample.

Winding plant signaling arrangements

16.42.1 Unless exempted in writing by the Principal Inspector of Mines -
A system where persons are conveyed

16.42.1 every shaft in which winding is carried on, other than a shaft in the course of being sunk, shall be provided with some efficient signaling arrangement in respect of each winding plant for interchanging distinct and definite signals between -

(a) The winding engine driver and the bank, and

(b) The winding engine driver and every established point below the bank from which winding is carried on.

Where persons are regularly conveyed in such shaft and the signaling arrangements are operated by electricity, the provisions of regulation 16.43 shall be complied with;

System for shaft examination

16.42.2 every shaft where persons travel on or in the conveyance while carrying out any examination, repair, or other work shall be provided with some efficient means, approved by the Principal Inspector of Mines, whereby persons doing such examination or work can signal effectively from any depth in the shaft to the winding engine driver;

The system at inclined sinking shafts

16.42.3 Every inclined shaft in the course of being sunk shall be provided with some efficient signaling arrangements in respect of each winding plant for interchanging distinct and definite signals between -

- (a) The winding engine driver and the bank, and
- (b) The winding engine driver and every established intermediate landing station below the bank, and
- (c) The winding engine driver and a point not more than 40 meters from the bottom of the shaft. When this point is more than 15 meters from the bottom of the shaft, some efficient signaling arrangements shall also be provided and used for signaling from the bottom of the shaft to this point; and

The system at vertical sinking shafts

16.42.4 every vertical shaft in the course of being sunk shall be provided with 2 separate means for each winding plant whereby persons employed in the sinking process can signal effectively from the bottom of the shaft and from any depth in the shaft to the winding engine driver and there shall also be provided in respect of each winding plant efficient signalling arrangements for the interchanging distinct and define signals between the winding engine driver and the bank and between the winding engine driver and every established intermediate landing station below the bank.

Electric signaling system

16.43 At every shaft and winze, other than a shaft or winze in the course of being sunk, where persons are regularly conveyed and where the signaling arrangements are operated by electricity, the following provisions, except as is provided for regulation 16.44, shall be observed in respect of each winding plant used for the raising or lowering of persons:-

16.43.1 There shall be provided and maintained in good working order 2 separate, independent, and efficient signaling arrangements, hereinafter referred to as the locked-bell system and the call-bell system, which shall be used for transmitting signals.

Locked bell system

16.43.2 The locked-bell system shall be for the interchange of signals between -

- (a) The winding-engine driver and the bank, and
- (b) The winding engine driver and every established point below the bank from which winding is normally carried on, but it shall not enable the banks man to signal on this system to anyone but the winding engine driver.

16.43.3 The system shall be arranged so that the winding engine driver can easily distinguish between signals received from the bank and signals received from below the bank.

Locking of signal mechanism

16.43.4 The system shall further be arranged and maintained to prevent as far as possible signals from being given by unauthorized persons. The signal operating mechanism at the bank and all points below the bank shall be kept securely enclosed in a metal casing of substantial construction and shall be kept locked when not in actual use. The key shall be removed and when not required shall be removed and retained by the banksman, onsetter, or other authorised person: Provided that other locking arrangements may be used if approved by Principal Inspector of Mines.

Bell-brake interlocking device

16.43.5 There shall be in use a device that automatically prevents the conveyance or conveyances being raised or lowered after the winding engine driver has given a signal on the circuit of the locked-bell system provided for interchanging signals with the bank or on the circuit of the locked-bell system provided for interchanging signals with the established points below the bank from which winding is normally carried on until he has received a signal on each of the circuits on which he gave a signal.

Call-bell system

16.43.6 The call-bell system shall enable signals to be transmitted -

- (a) To the winding engine driver from the bank, and
- (b) To the winding engine driver from every established point below the bank from which winding is normally carried on, and shall also enable signals to be interchanged between the bank and every established point below the bank from which winding is normally carried on, but it shall not enable the winding engine driver to transmit signals on this system.

Accessibility of call-bell

16.43.7 The signal operating mechanism of the call-bell system shall be accessible to any person to transmit the signals “10 followed by a station signal” and “one long ring” referred to in regulation 16.45, but it shall not be used for any other purpose: Provided that the banksman or onsetter or any other person duly authorized by the manager may use the system to indicate the station at which the conveyance is required and subject to the approval of the regional director to transmit special signals.

Tone of bells

16.43.8 The tone of the bells of the call-bell system shall be such as to be easily distinguishable from that of the bells of the locked-bell system.

Telephone in place of call-bell

16.43.9 In a shaft or winze where efficient telephonic intercommunication is provided between the bank and every established landing station for persons below the bank, it shall be necessary to provide only one call-bell system in respect of all the windings plants serving such shafts or winze.

Other systems - approval

16.44 Signalling arrangements other than those required by regulation 16.43 may be used with the written approval of the Principal Inspector of Mines.

Code of signals

16.45 The following code of signals shall be used and strictly observed where a winding plant is operated at a shaft or winze where persons are regularly allowed to ride:

CODE OF SIGNALS

KNOCKS OR RINGS MEANING

- 1 - Raise when the engine at rest
- 1 - Stop when engine in motion
- 2 - Lower
- 3 - Persons about to travel
- 3 - In reply: persons may continue to travel or may enter the cage or other means conveyance to travel
- 3 - From engine driver: when cage or other means of conveyance containing persons is brought to rest at a station: Persons may leave the cage or conveyance
- 2 pause 2 - From engine driver: The driver wishes to start the winding engine at his discretion.
- 2 pause 2 - To engine driver: The driver may start the winding engine at his discretion
- 2 pause 2 pause 2 - From engine driver: Persons must leave the conveyance
- 2 pause 2 pause 2 - In reply: No persons in the conveyance
- 2 pause 2 pause 2 pause 2 - Cancel repeat signal
- 3 pause 3 pause 3 - Person giving signals about to travel
- 3 pause 3 - In reply: Acknowledgement by a driver that person signaling is about to travel
- 4 pause 1 - Raise slowly
- 4 pause 2 - Lower slowly
- 4 pause 4 - To engine driver: Mark signal
- 4 pause 4 - In reply: Acknowledgement by engine driver of “mark” signal
- 4 pause 4 pause 4 - To driver: Clutching signal
- 4 pause 4 pause 4 - In reply: Clutching operations completed
- 5 pause 5 - To driver: Explosives about to be placed in the conveyance
- 5 pause 5 - In reply: Explosives may be placed in the conveyance
- 5 pause 5 - From driver when conveyance containing explosives is brought to rest at a station: Explosives may be removed from the conveyance
- 5 pause 5 pause 5 - To driver: No explosives in the conveyance
- 5 pause 5 pause 5 - In reply: Acknowledgement by driver that there are no explosives in the conveyance
- 6 pause 6 - To driver: Winding compartments served by the engine is locked
- 6 pause 6 - In reply: Acknowledgement by the driver of “compartments locked” signal
- 6 pause 6 followed by station signal - To driver: Winding compartments served by the engine locked below station designated

6 pause 6 followed by station signal - In reply: Acknowledgement by the driver of
 “compartments locked below station designated”
 6 pause 6 pause 6 - To driver: Compartments served by engine re-opened
 6 pause 6 pause 6 - In reply: Acknowledgement by the driver of “compartments served by
 engine re-opened” signal
 6 pause 6 pause 6 pause 6 - To driver: Shaft examination and repairs about to take place
 6 pause 6 pause 6 pause 6 - In reply: Acknowledgement by driver “shaft examination and
 repairs” signal
 7 - To driver: Persons about to have access to the conveyance for a purpose other than
 travelling or the loading or unloading of minerals in trucks or of material
 7 - In reply: Persons may have access to the conveyance for a purpose other than traveling
 or the loading or unloading of minerals in trucks or of material
 7 pause 7 - To driver: conveyance is clear for all persons who have had access to it for a
 purpose other than traveling or the loading or unloading of minerals in trucks or of material
 7 pause 7 - In reply: Acknowledgement by the driver of “persons clear” signal
 15 - Electrician testing bells
 15 - In reply: Acknowledgement of “bell testing” signal
 15 pause 2 pause 2 - Electrician has completed the test
 10 followed by station signal - Accident to person: Station where the conveyance is required
 1 long ring - Accident to shaft: Winding operations are to be suspended immediately in all compartments of
 the shaft

**In any purely mechanical signaling system “continued ringing” shall replace “one long ring” for the
 “accident to shaft” signal**

WHEN RAISING OR LOWERING MINERALS IN TRUCKS OR MATERIAL

8 - To driver: raising or lowering of minerals in trucks or of material about to commence
 8 - In reply: Acknowledgement by a driver that raising or lowering of minerals in trucks or of
 material is about to commence
 1 - From driver: Persons may have access to conveyance for the purpose of loading or
 unloading minerals in trucks or material
 8 pause 8 - To driver: Raising or lowering of mineral in trucks or of material completed
 8 pause 8 - In reply: Acknowledgement by a driver that raising or lowering of mineral in
 trucks or of material is completed

Special signals

16.46 In addition to the foregoing signals, special signals may be used provided they have been approved in
 writing by the Principal Inspector of Mines.

Offense

16.47 Any person acting in conflict with the code of signals referred to in regulation 16.45 or of any of the
 special signals used on a mine shall be guilty of an offense.

Access to conveyance

16.48 No person shall enter or have access to or be permitted to enter or have access to a cage or other
 conveyance for any purpose whatsoever or shall continue to travel in a cage or other conveyance or shall leave
 or be permitted to leave a cage or other conveyance unless and until the appropriate signals required in terms of
 regulation 16.45 have been exchanged, or if a signal cannot be given on the bell system, some other appropriate
 and distinct signals has been received from the winding engine driver.

Code to be posted up

16.49.1 The code of signals referred to in regulation 16.45 or an abridged form thereof approved by the Director
 General, as well as the special signals that may be in use on a mine, shall be displayed suitably in the form of
 distinctly legible notices in letters and figures not less than ten millimeters in height. The decision whether such
 notices are suitably displayed and distinctly legible shall rest with the Regional Director. Such notices shall be
 posted up in the winding engine room, at the bank, and at all shaft or winze stations for the time being in use.

16.49.2 Where only some of the signals in the aforementioned code are used it shall be necessary to display
 only that portion of the code which is used.

REQUIREMENTS IN SHAFTS AND WINZES

Guides in vertical shafts

16.50 Every vertical shaft and every vertical winze exceeding 30 meters in depth and used for winding purposes shall be provided with guides for skips, cages, or other conveyances unless exempted in writing by the Principal Inspector of Mines.

Provision for crossing shaft

16.51 At any place in a shaft where it is necessary for workmen to pass from one side to the other, provision shall be made for them to do so without entering or crossing a compartment in which winding is taking place; such passage shall be securely fenced off from moving parts of machinery and from any conveyance.

Entering winding compartments

16.52 No person shall enter or cross a compartment of a shaft or of a headgear in which winding is taking place, except for the purpose of entering, leaving, or having access to a cage, skip, or other conveyance or for the purpose of conducting an examination, effecting repairs or doing other necessary work in such compartment.

Winding during repairs

16.53 No winding operations shall be carried on in a shaft or a headgear while persons are engaged in effecting repairs, conducting an examination, or doing other work in such shaft or headgear, except -

16.53.1 Where such winding operations are necessary for the purpose of effecting the repairs, conducting the examination or doing the other work, or

16.53.2 Where the persons engaged in effecting the repairs, conducting the examination, or doing the other work are adequately protected from the conveyances and other winding equipment used in such winding operations as well as from falling stones and falling material.

Repairs in shaft

16.54 No person shall effect repairs, conduct an examination, or to do other work in a shaft or a headgear while winding operations are being carried on in such shaft or headgear, except -

16.54.1 Where such person is adequately protected from the conveyances and other winding equipment as well as from falling stones and falling material or

16.54.2 Where the winding operations are necessary for such person to affect the repairs, conduct the examination, or to do the other work.

Driver to be specially warned

16.55 The person in immediate charge of any repairs or examination in a winding compartment of a shaft or winze or a headgear or in immediate charge of any work in connection with maintenance or installation of equipment in a winding compartment of a shaft or winze or a headgear shall warn the driver of the winding engine operating the conveyance in such compartment that such repairs, examination or work are about to be undertaken and where practicable shall enter forthwith, in the presence of the driver on duty at the time, such warning in the driver's logbook provided in terms of regulation 16.81. Such entry shall be countersigned by the driver and by any driver relieving him. Where it is not practicable for the person in charge of such repairs, examination, or work to enter such warning, the entry shall be made by the driver on duty. Except where the provisions of regulations 16.53.2 and 16.54.1 are complied with, the driver of every other winding engine operating conveyance in the shaft winze or headgear shall be warned in a similar manner.

16.56 For the purpose of regulations 16.53, 16.54 and 16.55 work in a shaft shall not include work at the bottom of a shaft in the course of being sunk.

Spring keps or jack catches

16.57 Where winding is carried on in a shaft or winze there shall be fitted above the bank spring keps or jack catches or some other effective contrivance to support any conveyance detached from the winding rope as a result of an overwind.

Detaching hooks

16.58 For a winding system in a vertical shaft or winze where the end of the winding rope is fastened to the drum of winding engine, there shall be fitted detaching hooks from the winding rope any conveyance

overwound in the headgear and to support it. Such detaching hooks shall be additional to the devices required in terms of regulation 16.57: Provided that detaching hooks need not be fitted to ropes of any winding plant used in a vertical shaft or winze in the course of being sunk.

Retarding device

16.59 For a winding system in a vertical shaft or winze where the winding rope is not fastened to the drum or sheave of the winding engine -

16.59.1 The over-run space in the headgear above the highest established stopping place shall be provided with rigged guides or other appliances arranged so that an overwound conveyance is retarded to minimise the risk of the conveyance coming into contact with the rope sheave or the buffer stops in the headgear, and

16.59.2 The over-run space at the bottom of the shaft below the lowest established stopping place shall be provided with rigid guides or other appliances arranged so that an overwound conveyance is retarded and arrested before it can come into contact with any fixed obstacle.

Over-run clearance

16.60 The headgear shall be carried sufficiently high to allow a clearance of at least 7,5 meters in which the conveyance can travel above or beyond the highest place for persons before it comes into contact with any fixed obstacle excluding any retarding appliance provided in terms of regulation 16.59.

16.61. The shaft or winze shall be carried sufficiently deep to allow an overrun space of at least 7,5 meters in which the conveyance can travel below or beyond the lowest landing place for persons before it comes into contact with any fixed obstacle excluding any retarding appliance provided in terms of regulation 16.59: Provided that such over-run space need not be provided in a shaft or winze in the course of being sunk or in a shaft or winze not exceeding 300 meters in depth or length below the bank where the winding system does not include the use of a winze balance rope or tail rope.

16.61.1 The employer must, for every station level-

- (a) identify and clearly demarcate an area surrounding the shaft station;
- (b) show the shaft station, indicating the location of all safety devices on the shaft station, on a plan; and
- (c) Prominently and conspicuously display a copy of such plan at every station.

16.61.2.1 The employer must install a device or combination of devices that prevent inadvertent access of vehicles to the shaft as close as practicable to all entrances to the shaft.

16.61.2.2 The devices or combination of devices referred to in 16.61.2.1 must be –

- (a) fail-safe or lockable;
- (b) equipped with mechanisms that prevent their unauthorised operation;
- (c) operated only under the direct supervision of a competent person appointed by the engineer or by the person appointed in terms of regulation 2.13.2; and
- (d) Operated only if a conveyance is being used for the loading or unloading of persons, equipment, materials or explosives at the entrance to the shaft.

16.61.2.3 The employer must install a device or combination of devices which ensure, or the employer must ensure that the access configuration to the shaft station is such that the speed of any self-propelled mobile machine or combination of vehicles entering the shaft station is limited to ensure that the kinetic energy of such machine or any combination of vehicles reaching any entrance to the shaft station is not greater than the energy absorption capacity of the device or combination of devices referred to in regulation 16.61.2.1

16.61.2.4 The employer must ensure that procedures are in place, or that the device or combination of devices referred to in regulation 16.61.2.1 are equipped with mechanisms, that prevent the unauthorised operation or removal of such devices or combination of devices.

16.61.2.5 The Engineer or person appointed in terms of regulation 2.13.2; must approve any access configuration for purposes of regulation 16.61.2.3 and must with regard to the device or combination of devices used for the purpose of regulation 16.61.2.1 and 16.61.2.3

- (a) approve the design of every device; and
- (b) ensure that every such device is installed and maintained in good working order,

16.61.3 No self-propelled mobile machine may be parked on the shaft station.

16.61.4 A self-propelled mobile machine may only enter the shaft station under power if it is under the direct supervision of a competent person appointed in terms of regulation 2.13.2.

LOADING OF WINDING PLANT CONVEYANCES

Simultaneous winding of men and mineral

16.62 No person shall travel in a conveyance operated by a winding engine if such conveyance is loaded or partially loaded with mineral, and no person shall travel in a conveyance operated by a winding engine that is being used simultaneously for the winding of mineral: Provided that, if authorised by the manager or mine overseer, persons engaged in sinking operations in a vertical shaft or winze may decent such shaft or winze in a conveyance operated by a winding engine that is being used simultaneously for the raising of mineral.

Travelling with material

16.63 Subject to the provisions of regulations 16.64 and 16.65, no person shall travel -

- (a) With material or explosives in a conveyance operated by a winding engine; and
- (b) In a conveyance operated by a winding engine that is being used simultaneously for the winding of material or explosives

List of permitted material

16.64 Subject to the provisions of regulation 16.65 -

- (a) The Manager, Engineer or Mine overseer may grant permission in writing for persons to travel with material if such material is not likely to endanger persons traveling in the conveyance; and
- (b) The Manager shall -
 - (i) Cause a list to be kept of the material which is regularly conveyed in the shaft or winze for which permission has been granted in terms of paragraph (c);
 - (ii) Ensure that all persons authorized to give signals for the raising and lowering of persons are conversant with the material mentioned in the list; and
 - (iii) Make a copy of the list readily available to all persons concerned.

Persons authorized to travel with material

16.65 The Manager, Engineer or Mine overseer may authorized the following persons to travel in a shaft or winze with material or explosives prohibited in terms of regulation 16.63 if such traveling is necessary for the efficient carrying out of their duties:-

16.65.1 Onsetter and their gangs;

16.65.3 Persons engaged in sinking operations or in conducting an examination, effecting repairs or doing other work in the shaft or winze.

16.65.4 Persons required ensuring the safe passage through the shaft or winze of material, which cannot be conveyed inside a conveyance.

Loading of explosives

16.66 No persons shall place explosives in or remove them from a conveyance operated by a winding engine except under the immediate supervision of the banksman or onsetter or a competent person authorized thereto by the manager or mine overseer.

Riding outside conveyance

16.67 No person shall ride in any shaft or winze on the roof, top, side, bow, rim, bridle or frame of or in any position outside a conveyance operated by a winding engine, except that persons engaged in examining or repairing that shaft or winze or doing other work in the shaft or winze may ride on the roof of such conveyance or on a special platform if authorized to do so by the manager or mine overseer and if riding on the roof of such conveyance or on the special platform is necessary for the efficient carrying out of such examination, repairs or other work.

No travelling in attached conveyance

16.68 Persons shall not, except when permitted in writing by the regional director be raised or lowered, in a conveyance attached to the normal conveyance.

Conveyance to be steadied

16.69 No bucket or other means of conveyance that can sway shall be allowed to leave the top or bottom of the shaft or winze unless the workman in charge thereof has steadied it or caused it to be steadied.

Overfilling of conveyance

16.70 No bucket or other means of conveyance shall be filled with loose rock or ground above the level of the brim.

Fastening projecting material

16.71 Tools or other material which project above the top of the cage, skip, bucket, kibble or other means of conveyance and which are raised or lowered in a shaft or winze shall be fastened securely and placed in such a manner that the operation of any arresting device is not affected.

TRAIL RUN OF WINDING PLANT

16.72 When winding in any compartment or compartments of a shaft, winze or headgear has been stopped for repairs or blasting operations or when it has been stopped for any other purpose for a period exceeding one hour in duration or when a conveyance has been changed, the winding engine serving such compartment or compartments shall not be used for the raising or lowering of persons until the cage, skip or other means of conveyance has been run at least one complete trip up and down such compartment or compartments: Provided that this regulation shall not apply to the use of the winding engine for the raising or lowering of persons conducting an examination or effecting repairs: and provided further that where such stoppage is confined to a portion of any compartment or compartments, the requirements of this regulation shall apply only to such portions.

EXAMINATION OF WINDING PLANT AND SHAFT

Appointment of persons to examine shafts

16.73. The manager or subordinate manager and an engineer or competent person appointed in terms of regulation, 2.13.2, as the case may be, shall, in respect of his area of responsibility, appoint in writing competent persons whose duty it shall be to examine carefully, to an extent to be clearly defined in their respective letters of appointment, at least once in each week, and at intervals not exceeding 10 days, the guides or rails and the shaft compartments and equipment, including the doors, gates and barriers and ancillary equipment at stations, landing platforms and loading boxes.

Appointment of persons to examine winding equipment

16.74 An engineer or competent person appointed in terms of regulation 2.13.2, as the case may be shall appoint in writing some competent person or persons whose duty it shall be to examine carefully -

16.74.1 at least once in each day, the winding ropes, the balance ropes or tail ropes, the connection of the winding ropes to the drums, the connection referred to regulation 16.18, the conveyance and the main members by which they are suspended and any safety catches attached thereto, the pulley wheels and sheaves, the brakes, the depth indicators, the safety devices and all external parts of the winding equipment upon the proper working of which the safety of persons depends: Provided that these examinations will not be necessary on any day mentioned in section 9.(1) of the Act, if the winding plant makes less than 50 trips during such day, and

16.74.2 At least once in each week the signaling arrangements and safety devices used in connection therewith.

Examination by Engineer of winding equipment and ropes

16.75 An Engineer or competent person appointed in terms of regulation 2.13.2 as the case may be shall examine carefully -

16.75.1 At least once in each week, and at intervals not exceeding 10 days, the overspeed and overwind prevention devices and the external parts of the winding engine;

16.75.2 At least once in each year the winding engine as to the condition of the internal mechanical parts and, as far as reasonably practicable, the internal electrical parts;

16.75.3 At least once in each calendar month at intervals not exceeding 45 days the structure of the winding rope and the balance rope or tail rope, with a view to ascertaining the amount of deterioration thereof. For the purpose of this examination the rope shall be cleaned at places selected by the person making the examination who shall note any reduction in the circumference of the rope, any variation in the length of lay of the rope, the

superficial condition of the wires as to wear, corrosion, fractures and brittleness, and all other data necessary for ascertaining the amount, extent, and distribution of the deterioration of rope. If the examination discloses features such as undue or rapid wear or fractures of the wires, which, although not constituting sufficient reason for condemning the rope, call for more than usual attention, the examination required under this paragraph shall be made more frequently;

16.75.4 At least once in each calendar month at intervals not exceeding 45 days the connections between the winding rope and the drum, the connections referred to in regulation 16.18 and the sheave wheel or wheels;

16.75.5 After every accident or occurrence referred to in regulation 25.6(a) and before winding operations are resumed, all portions of the winding equipment affected by such accident or occurrence on which the safety of persons depends.

16.75.6 By dynamically testing the automatic overwind and overspeed prevention devices at least once in every six months, at intervals not exceeding 200 days.

16.76 In case the of connections referred to in regulation 16.18 being of a class of steel approved by the Chief Inspector, such connections and their component parts shall be dismantled, cleaned and then examined by an engineer or competent person appointed in terms of regulation 2.13.2, as the case may be.

Duty when defect discovered

16.77 On any examination required in terms of regulations 16.73, 16.74, 16.75 and 16.76 there is discovered any weakness or defect which may endanger the safety of persons, and such weakness or defect cannot be remedied immediately, the person making the discovery shall report such weakness or defect to the manager without delay. Until such weakness or defect is remedied the winding plant shall not be used except in so far as may be necessary to remedy such weakness or defect.

WINDING PLANT RECORD AND LOG BOOKS

Machinery record book

16.78 The Manager shall provide for each winding plant a book to be termed the Machinery Record Book in which shall be entered -

16.78.1 The name of each person appointed under regulation 16.74 to perform the duties called for in the said regulation together with the particulars of the duties of each such person; and

16.78.2 A true report of every examination referred to in regulations 16.74, 16.75 and 16.76. These reports shall be recorded and signed without delay by the person making such examination. The reports made by the persons appointed in terms of regulation 16.74 shall be scrutinised and countersigned by an engineer or competent person appointed in terms of regulation 2.13.2, as the case may be at least once in each week.

Rope record book

16.79 The Manager shall provide a book to be termed the Rope Record Book in which shall be entered

16.79.1 The name of each person appointed under regulation 16.27;

16.79.2 A true report of every test or examination referred to in regulation 16.27. These reports shall be recorded and signed without delay by the person making such test or examination.

Drivers log book

16.81 The Manager shall provide in respect of each winding engine, other than an automatic winding engine, a book to be termed the Driver's Log Book, which shall be kept in the winding engine room and which shall be recorded in duplicate:

16.81.1 A true report of the condition of the winding engine, including the brakes, clutches, reversing gear, depth indicators and all other fittings. Such report shall be made and signed by the winding engine driver for each period of charge, the time and duration of which shall be recorded;

16.81.2 A true report of the condition of the signalling arrangements together with a record of any signals received by the winding engine driver, which he has questioned. Such report shall be made and signed by the winding engine driver for each period of charge;

16.81.3 Any special instructions involving the safety of persons given to the winding engine driver and the time such instructions were given. Such entry shall be signed by the person giving the instruction and shall be countersigned by the winding engine driver; and

16.81.4 Any warning given in terms of regulation 16.55 and the time such warning was given.

16.81.5 The contents of the conveyances and the last signals received by the winding engine driver when his relief is about to take over, and such report shall be countersigned by the winding engine driver by whom he is relieved.

16.82 The entries in the Driver's Log book shall be scrutinised and countersigned daily by the persons appointed to carry out the duties specified in regulation 16.74. The duplicate shall be scrutinised and countersigned within 24 hours by an engineer or competent person appointed in terms of regulation 2.13.2, as the case may be, and shall be retained by him for at least 30 days.

WINDING ENGINE DRIVERS

Winding engine drivers to have certificate

16.83.1 Nobody shall drive or be caused or permitted to drive a winding plant, for which a prescribed permit has been issued unless he is a certificated winding engine driver: Provided that a learner winding engine driver may drive such a winding plant under the direct supervision of a certificated winding engine driver while no persons are being conveyed;

16.83.2 For the purpose of regulation 16.83.1 "drive" shall mean any action requiring skill whereby the control levers of the winding plant are manipulated in such a way that the winding engine moves in direct relation to the movement of levers.

Record of certificate to be kept

16.84 Upon engaging a winding engine driver, who is required in terms of regulation 16.83 to be the holder of a certificate, the manager shall record or cause to be recorded the number and type of such certificate: Provided that if such winding engine driver has not driven a winding engine for the preceding two years or more, the manager shall not engage him, but shall refer the matter to the regional director who may require such Winding Engine Driver to undergo a medical examination and a proficiency examination.

Driver not to be distracted

16.85 No person shall speak to or in any way distract the attention of the person operating a winding engine while it is in motion, except a person in authority, and then only in cases of necessity or emergency.

16.86 The driver of a winding engine: - **(Duties)**

When driver may start engine

16.86.1 Shall not start his engine before he has received a distinct and proper signal to do so, unless he has been instructed in writing to do so by the manager, the mine overseer or an engineer or competent person, appointed in terms of regulation 2.13.2, as the case may be, or unless he has received the "clear signal" 2 pause 2, or unless he has sole control of the cage, skip or other means of conveyance:

Action on signal

16.86.2 Shall not act on any signal if he has been unable to do so within one minute after receiving it but shall request a repeat signal: Provided that after having received the "clear signal" he may move the winding engine at any time during his shift at his discretion, but when a period of more than five minutes has lapsed after he has received such "clear signal" he shall move the conveyance slowly.

Control of speed

16.86.3 Shall not run such engine at a greater speed than that fixed by the regional director;

Avoidance of shocks

16.86.4 Shall, except in case of emergency, avoid shocks in starting, in running and in stopping the said engine;

Prevention of overwinds

16.86.5 Shall apply correctly every device and means at his disposal to prevent the conveyance over-running-

- (a) The signalled destination, or
- (b) When the destination is not signalled, the highest or lowest landing place when persons are being conveyed and the highest or lowest established stopping place when persons are not being conveyed, to an extent which may endanger the safety of persons or may cause damage to the winding equipment;

Moving in wrong direction

16.86.6 Shall apply correctly every device and means at his disposal to prevent the conveyance moving in a direction opposite to that signalled;

Pause before starting

16.86.7 Shall not start his engine until the expiry of at least 10 seconds after receiving a signal to raise or lower persons: Provided that this requirement shall not apply when blasting is about to take place in a shaft or winze in the course of being sunk;

Response to call-bell signal

16.86.8 Shall not act in response to any signal on the call-bell system other than the one long ring referred to regulation 16.45;

Unclutching of drum

16.86.9 Shall not unclutch a drum of his engine until he has assured himself immediately beforehand by testing the brake of the drum against sufficient power of the engine that the brake is in proper condition to hold the load suspended from the said drum;

Lowering on unclutched drum prohibited

16.86.10 Shall when a drum of his engine is unclutched, use the brake only for the purpose of maintaining such drum stationary. Lowering from an unclutched drum shall not be permitted;

Testing of friction clutch

16.86.11 Shall when such engine is fitted with a friction clutch, test the holding power of the clutch after engaging the clutch and before releasing the brake of the corresponding drum. For a steam engine or an air engine the test shall be made against the full power of the engine, and for an electric engine against the normal starting current, while the brake of the other drum is kept off.

When clutching prohibited

16.86.12 Shall not perform clutching operations while persons are in either of the conveyances operated by his engine;

16.86.13 Shall not, unless he intends operating the winding engine on single drum during shaft examination, shaft repairs or shaft sinking operation, give the signal that clutching operations are completed until he has engaged the clutch and securely locked it (and where applicable has carried out the test prescribed in regulation 16.86.11;)

Duration of shift

16.86.14 Shall not work nor shall be caused or permitted to work a longer shift on the winding engine than 10 hours, except where permission has been obtained from the Principal Inspector of Mines and under such conditions as he may direct.

Conveying of persons

16.86.15. Shall take all reasonable measures to safeguard persons being conveyed and to avoid any unnecessary delays in conveying such persons.

BANKSMAN AND ONSETTERS

Interference with signalling arrangement

16.87 No unauthorised person shall give any signal other than an accident signal, or shall in any manner whatsoever interfere with the signalling arrangements provided for winding operations.

Appointment of onsetter

16.88 No person shall be permitted to carry out the duties of a banksman or onsetter unless he is the holder of an onsetter's certificate issued in accordance with these regulations. Every appointment of a banksman or onsetter shall be made in writing by the manager.

Who may give signals

16.89.1 No person, other than the banksman or onsetter on duty, shall give or shall be caused or permitted to give any signals for the raising or lowering of persons provided that -

(a) When the banksman or onsetter is not available, a competent person to whom the manager has given written permission to do so may give signals for the conveyance of himself and any person travelling with him,

(b) The ganger or miner in charge at the bottom of a shaft or winze in the course of being sunk or a person acting under his immediate supervision may give a signal to raise persons, and

(c) Any person duly authorised in writing by the manager or mine overseer may give signals for the conveyance of persons between the main mineral loading station at the bottom of a vertical or inclined shaft and the lowest landing stations for persons.

The Principal Inspector of Mines shall be furnished on demand with a list of persons to whom permission has been granted in terms of paragraph (a) above and may order its revision.

16.89.2 No person other than the banksman or onsetter on duty shall give any signals for the raising or lowering of material or mineral unless duly authorised by the manager or mine overseer. Where the winding plant is also used for the conveyance of persons, such authorization shall be in writing.

Onsetter to have knowledge of shaft operations

16.90 No person shall be appointed as a banksman or onsetter, nor shall any person be authorised to give signals, unless such person has sufficient knowledge of the shaft operations and of the signals to be given in connection with such operations.

Special duties of onsetter (DUTIES)

16.91 The banksman, onsetter or other person authorized to give signals for winding operations-

16.91.1 Shall not, after the winding engine driver has signalled that persons may enter the conveyance for the purpose of travelling or that persons in the conveyance may continue to travel, give any signal on the signalling arrangements for that winding compartment until all persons are properly placed in the conveyance and the doors or gates of the conveyance and the gates or barriers at the bank, station or landing platform are properly shut: Provided that when the banksman, onsetter or other persons authorised to give signals intends to travel, such doors, gates or barriers as will prevent his entrance to the conveyance may be left open until he has given the signal to raise or lower and has entered the conveyance:

16.91.2 Shall not, when the conveyance containing persons is brought to rest in the proper position at the bank, station or landing platform and the winding engine driver has signalled that persons may leave the conveyance, give any signal on the signalling arrangements for that winding compartment until all persons who are to leave the conveyance are out and clear of it. The provisions of regulations 16.91.1 and 16.91.2 shall not be taken to prohibit the giving of the "accident to shaft" signal;

16.91.3 Shall ensure that the roof, cover or hood, required to be provided in terms of regulations 16.11 to 16.14 inclusive, is properly in position before persons are raised or lowered in or on such conveyance;

16.91.4 Shall take all reasonable measures to prevent persons from having unauthorised access to the conveyance and to the winding compartments;

16.91.5 Shall not allow any person to travel in a conveyance operated by a winding engine if such conveyance contains mineral and, except as is provided for in regulation 16.62, shall not allow any person to travel in a conveyance operated by a winding engine that is being used simultaneously for the winding of mineral;

16.91.6 Shall not, except as is provided for in regulations 16.63 and 16.65, allow any person to travel in a conveyance operated by a winding engine that is being used simultaneously for the winding of material;

16.91.7 Shall not except as provided for in regulation 16.67, allow any person to ride on the roof, top, side, bow, rim, bridle or frame of or in any position outside a conveyance operated by a winding engine;

16.91.8 Shall acquaint himself with the maximum number of persons authorised by the regional director to travel at any one time in the cage and on each deck of the cage, or in the skip or other means of conveyance and shall not allow the maximum to be exceeded;

16.91.9 Shall not allow any unauthorised persons to give signals on the signalling arrangements used in connection with winding operations;

16.91.10 Shall not give the "clear signal" 2 pause 2 or any signal to raise or lower the conveyance unless all persons at the bank, station, landing platform, loading box or other place where he is in charge, are in a position in which they will not be endangered by the movement of such conveyance or any other conveyance operated by the same winding engine;

16.91.11 Shall not give a signal to clutch unless all persons are out of and clear of the conveyance or conveyances operated by the winding engine;

16.91.12 Shall not cause or permit any person to enter or have access to the conveyance or conveyances until he has received a signal from the winding engine driver that clutching operations are completed; and

16.91.13 Shall take all reasonable measures to safeguard against accident to all persons at the place where he is in charge, whether such persons are under his direct supervision or not.

NOTICES REQUIRED AT WINDING PLANTS

16.92 Where a winding plant is used the following shall be kept posted up:-

16.92.1 At each winding engine -

- (a) A copy of the permit issued in terms of section 33 (1) of the Act; and
- (b) The code of signals and any special signals.

16.92.2 At each bank, station or landing platform -

- (a) A notice showing clearly the maximum number of persons permitted to ride in each conveyance, or a notice prohibiting the conveyance or persons where it is not allowed in terms of the permit issued under section 33 (1) of the Act;
- (b) The code of signals and any special signal.

REQUIREMENTS AT SHAFTS BEING SUNK

16.93 The provisions of regulations 16.8, 16.9, 16.24, 16.60 and 16.72 shall not apply to a platform winder used at any shaft or winze in the course of being sunk but, in addition to the already existing regulations, the following provisions shall apply to any winding plant used at any shaft in the course of being sunk:

Speed through stage

16.93.1 The Winding Engine Driver shall control the speed of the winding engine in such manner as to ensure that when any bucket or other means of conveyance is approaching or passing through the stage, or the covering provided in accordance with the requirements of regulation 16.93.4, it does so slowly and safely and that the crosshead is picked up or released, as the case may be, without shock.

Stopping above shaft bottom

16.93.2 The bucket or other means of conveyance shall not be lowered directly to the bottom of the shaft if men are there present but shall be stopped by the winding engine driver at least five metres above the bottom and shall not be lowered further until the signal has been given by one of the sinkers

Guides in vertical shafts

16.93.3.1 In a vertical shaft where sets are used to support the guides, guides for conveyances shall extend down to the lowest set which shall not be more than 15 metres from the bottom and when winding is being done to the bottom the crosshead shall travel to the lowest set but one. In a vertical shaft where the guides are not

supported by sets, the guides for conveyances shall extend down to 30 metres or less from the bottom, and when winding is being done to the bottom the crosshead shall travel to as near the end of the guides as is practicable.

16.93.3.2 Every vertical shaft or winze where a crosshead is used to guide the bucket or other means of conveyance, shall be equipped with -

- (a) An effective device so arranged as to prevent the bucket or other means of conveyance from being lowered below the shaft bank if it is unaccompanied by the crosshead; and
- (b) An effective device which will prevent the bucket or other means of conveyance and the crosshead from separating unintentionally anywhere in the shaft or winze, or which will automatically warn the winding engine driver should such separation take place.

Protective cover

16.93.4 No person shall work or be caused or permitted to work at the bottom of the shaft unless protected by an adequate covering extending over the whole area of such shaft, sufficient space only being left therein for the passage of any bucket, skip or other means of conveyance. In a vertical shaft such covering shall be situated not more than 25 metres from the bottom. In an inclined shaft such covering shall be situated not more than 30 metres from the bottom.

16.93.4.1 In a shaft or winze being sunk or equipped, clutching may be performed with a sinking platform winder with such persons on the sinking platform necessary to ensure that the operations are carried out safely.

Access to conveyance

16.93.5 No person shall enter the conveyance at the bottom of the shaft until such conveyance has been raised and lowered or until some other distinct signals has been received from the winding engine driver.

Signal when blasting

16.93.6 The person in charge of blasting operations shall notify the winding engine driver by a special signal, namely 5 knocks or rings, when blasting is about to take place, and, except in the case of firing by electricity, the driver shall reply by raising and lowering the conveyance approximately two metre.

SMALL WINDING PLANTS

Permit not required

16.94 The prescribed permit shall not be required for a winding plant that is driven by an engine or motor developing not more than 250 kilowatt, provided that such winding plant -

- (a) Is not used for the raising or lowering of persons or other than persons engaged in repairing or examining a shaft; and
- (b) Does not operate in any portion of a shaft or winze in any manner likely to interfere with the conveyance operated in that shaft served by a winding plant for which a prescribed permit has been granted.

Regulations not applicable

16.95.1 A winding plant, the permit of which does not allow the conveyance of persons shall not be subject to the provisions of regulations 16.5.1, 16.5.2, 16.7, 16.9 to 16.15 inclusive, 16.18, 16.19, 16.24 to 16.29 inclusive, 16.41.1, 16.41.2, 16.49.1, 16.58 to 16.61 inclusive, 16.74, 16.75 and 16.81: Provided that the manager, or subordinate manager appointed in terms of regulation 2.6.1 shall appoint in writing any competent person to carry out the duties and examinations prescribed in regulation 16.74 and provided further that the engineer, or person appointed on terms of regulation 2.13.2 shall appoint in writing any competent person to examine at least once in each week the items specified in regulation 16.74.1.

16.95.2 Notwithstanding the provisions of regulations 16.78 and 16.79 a record book or card index system may be provided in place of the machinery record book.

16.95.3 Notwithstanding the provisions of regulation 16.95.1, a winding rope may not be used for a winding plant contemplated in regulation 16.94 unless-

- (a) Its breaking strength, determined by a test on a sample as prescribed in regulation 16.25, is at least 10 times the attached load; and
- (b) That part of the winding rope attached to the conveyance or counterweight is cut off and re-terminated at intervals not exceeding six months.

Competency of driver

16.96 The Engineer, or person appointed in terms of regulation 2.13.2 shall satisfy himself that any person who is not a certificated winding engine driver and who shall drive a winding plant not permitted for the conveyance of persons, is competent to do so.

18.3.1 No person shall travel in or on any self-propelled mobile machine vehicle attached to a haulage rope or vehicle operated by machinery in or on a haulage way, unless such travelling has been authorised by the Manager, Mine overseer, Engineer or competent person appointed in terms of regulation 2.13.2.

CHAPTER 20

MACHINERY: SPECIAL SAFETY MEASURES

20.1.1 The operation of or attendance on machinery shall be in charge of a competent shiftsman, but unskilled persons working under his direction may be employed on such operation or attendance provided that shiftsman exercises effective control.

Continual supervision: Limitation of hours

20.1.2 No person having charge of any machinery which, for the safety of life or limb, requires constant supervision shall for any reason whatever absent himself or cease to have continual supervision of such machinery during the periods for which he is in charge unless he be replaced by a competent person, nor shall any person in charge of such machinery be ceased or allowed to work more than ten hours during any continuous period of 24 hours; Provided that this limit may be exceeded where ordered by the manager or other person in authority in cases of emergency or where written permission thereto has been granted by the regional director.

Danger to be reported

20.2 No employee, unless his duty absolutely necessitates it, shall trespass within the guards or fences erected under these regulations. In case he notices anything which might be dangerous to life or limb, or to the working of machinery, he shall as soon as possible inform the person in charge thereof.

Dangerous places to be fenced

20.3.1 Every dangerous place, such as an elevated platform, pit or trap hole, shall be fenced off so as effectively to safeguard any person authorised to work there or be in the vicinity.

20.3.2 No person shall without authority enter any place where machinery is erected.

Loose clothing

20.4 No person engaged in close proximity to moving machinery shall wear or be permitted to wear loose outer clothing.

Fencing

20.5 All exposed machinery which, when in motion, may be dangerous to any person shall be securely fenced off. Efficient guards shall be provided to such parts of any machinery as may be a source of danger to any person.

Repairing and oiling machinery in motion

20.6 The repairing, adjusting, testing, examining, cleaning or lubricating of machinery in motion shall not be undertaken by any person other than a competent person where there is a risk of personal injury, and then only when it is impracticable to stop machinery. Automatic devices for oiling machinery whilst in motion shall be provided whenever practicable.

Safety precautions

20.7.3 No person shall set a machine or machinery in motion unless he has taken all reasonable precautions to ensure that no other person can be injured by the setting in motion thereof.

Safety of persons

20.8 Every reasonable precaution shall be taken in connection with the use of machinery to ensure that the safety of every person employed on or about such machinery is not endangered.

Condition of safety appliances

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

Conditions of apparatus and machinery

20.9.2 The using of any apparatus or of any machinery which does not comply with the provisions of these regulations, or working of any apparatus or of any machinery the using of which appears in any way to be or to have become dangerous, shall immediately be stopped. Until such time as such apparatus or machinery complies with the requirements of these regulations, or such dangerous condition has been rectified, such apparatus or machinery shall not be used.

Safety measures during repairs

20.9.3.1 Subject to regulation 20.6 the person in immediate charge of any work on or repair to machinery shall ensure that the power supply to such machinery is switched off and locked out or disconnected in accordance with a code drawn up in writing by the engineer or competent person appointed in terms of regulation 2.13.2, and that the power supply remains disconnected or switched off until the work or repairs have been completed.

20.9.3.2 No person shall conduct maintenance or repair work, and no person shall cause or permit such work, and no person shall cause or permit such work to be done, until all reasonable precautions have been taken to ensure that the work can be done safely. A machine or any part of a machine which may fall on the person conducting such work or on any other person shall be adequately supported.

20.10. No apparatus, component or machinery made of a light metal shall be used in a hazardous area unless such apparatus, component or machinery is-

- (a) protected by means of a housing, sheath, cover or coating (Excluding paint); or
- (b) Contained, situated or used in such a manner that no dangerous condition can result therefore.

CHAPTER 21 ELECTRICITY

21.5.1 A switchboard shall have a clearance of not less than 1, 2 metres in the front of such switchboard for operating and maintenance purposes.

21.5.3 Any switchboard to which access is required from the back and which has no live conductors accessible from the back when the doors, covers or panels enclosing the back of such switchboard are in position shall have a clearance of at least 0,75 metres at the back and such space shall not be obstructed in any manner.

21.5.3.1 Any switchboard of which the back is accessible only through an opening in a wall or partition against which it is placed shall have a clearance at the back which shall be sufficient for the purpose of electrical insulation between conductors and the wall or partition;

21.5.3.2 The opening referred to in regulation 21.5.3.1 shall be kept closed and locked to prevent unauthorised entrance.

21.5.4 Any switchboard that has live conductors accessible only from the back and that has no doors, covers or panels enclosing the back shall have a clearance of at least 1,2 metres behind it and such space shall not be obstructed in any manner and access to this space shall-

- (a) As far as is practicable, be permitted only when the conductors at the back of such switchboard are dead or earthed; and
- (b) Only be through doors which shall be kept closed and locked to prevent unauthorised access.

21.6.1 No examination, adjustment, testing, repair or other work necessitating the dangerous approach to or the handling of electric apparatus shall be carried out unless such apparatus is dead: Provided that where the apparatus must be live for the purpose of examination, adjustment, testing, repair or other work it may be done by or under the direct supervision of a competent person.

21.6.2 No person other than a duly authorised competent person shall enter a place where electric apparatus is installed unless all live conductors therein are insulated adequately or otherwise protected effectively against inadvertent contact: Provided that an authorised competent person may in an emergency be assisted by a person acting under the immediate personal supervision of such authorized competent person.

21.6.3 Whenever work is to be carried out on electric apparatus which has been isolated from all sources of supply, effective precautions shall be taken by earthing or other means to discharge electrically such apparatus and any adjacent apparatus to prevent any conductor or apparatus from being made live accidentally inadvertently while any person is working thereon.

21.6.4 No metal ladder with metal reinforced stiles may be used for examination, repair or other work necessitating the dangerous approach to or work on electric apparatus.

21.7.1 Any accessible metallic portion of electric plant or apparatus which, though not normally forming part of an electrical circuit, may accidentally become live shall either be -
Protected by insulating material or shall be connected to earth by a conductor of adequate cross-sectional area so as to prevent danger to persons.

21.7.2 The cross-sectional area of any earthing conductor shall be calculated to be capable of withstanding the maximum possible earth fault current condition.

21.7.3 Where an earth fault gives rise to a condition dangerous to person, adequate electrical protection shall be provided.

CHAPTER 23

PRESSURE VESSEL, COMPRESSORS & REFRIGERATION PLANTS

Access and inspection openings

23.5.1 Every pressure vessel shall be provided with one or more suitable inspection openings, situated so that all internal surfaces and seams may be conveniently cleaned and inspected.

23.5.2 Every pressure vessel where the dimensions are such to permit of entry into the vessel, shall be provided with at least one manhole, which shall be not less than 400 millimetres by 300 millimetres for an elliptical hole and at least 400 millimetres in diameter for a circular hole: Provided that where there is no danger from internal corrosive action no manhole need be provided.

23.5.3 The Principal Inspector of Mines shall determine whether the number and size of the inspection openings are sufficient and he may require more inspection openings to be provided.

Pressure gauge

23.6.1 Every pressure vessel shall be provided with at least one reliable pressure gauge, the dial of which shall be graduated to show gauge pressure in terms of Pascal's and the maximum pressure which the gauge shall be capable of registering shall not be less than the hydraulic test pressure as defined in regulation 23. 12. 5 and not more than double the maximum safe working gauge pressure of the vessel: Provided that where 2 or more pressure vessels with the same maximum safe working gauge pressure are connected to a common supply main, one pressure gauge fitted directly to the main, situated so that its reading is easily visible from any of the pressure vessels, shall be sufficient.

23.6.2 The maximum safe working gauge pressure of the vessel shall be clearly marked with a red line on the dial of the pressure gauge.

Safety valve

23.7.1 Every pressure vessel shall be provided with at least one safety valve which shall be-

- (a) Kept locked, sealed or otherwise rendered inaccessible to any unauthorised person,
- (b) Set to open at or before reaching the maximum safe working gauge pressure,
- (c) Such as to prevent the pressure rising in excess of 10 per cent above the maximum safe working gauge pressure,
- (d) Attached to the pressure vessel and which shall be incapable of being shut off therefrom, except where 2 or more pressure vessels with the same maximum safe working gauge pressure are connected to a common supply main, one safety valve directly to the supply main, situated so that it is easily visible from any of the pressure vessels, shall be sufficient: Provided that where a pressure vessel is capable of being isolated from such common supply main, the Principal Inspector of Mines may require the fitting of a fusible plug or rupturing disc to such pressure vessel,
- (e) Constructed of metal approved by the Principal Inspector of Mines, provided that cast iron shall not be used if the maximum safe working gauge pressure of the pressure vessel is in excess of 1 mega Pascal, and
- (f) Arranged to discharge by means of a pipe any dangerous or toxic gas, vapour or liquid so as not to endanger the safety of persons.

23.7.2 Where the use of a safety valve in any particular process is impracticable, due to its inability to operate under all working conditions, the Principal Inspector of Mines may require or permit the use of a rupturing disc subject to such conditions as he may prescribe.

23.7.3 Where the maximum safe working gauge pressure of any steam receiver cannot be exceeded, the Principal Inspector of Mines may exempt in writing such receiver from being fitted with a safety valve.

Drain cock

23.8 Every pressure vessel in which liquid may collect shall be provided with a suitable drain at the lowest part of the vessel. The discharge shall be controlled by a cock or valve and shall be led to a safe place.

Inspection and test

23.12.1 The person appointed in terms of regulations 2.13.1, 2.13.2 or 2.13.3 shall ensure that every pressure vessel is inspected and tested in accordance with the provisions of this regulation.

23.12.2 Every pressure vessel, in which the product of the designed working gauge pressure in kilopascals and the capacity in cubic metres exceeds 10 but does not exceed 30, shall be inspected and tested before it is used for the first time.

23.12.3 Every pressure vessel in which the product of the designed working gauge pressure in kilopascals and the capacity in cubic metres exceeds 30, shall be-

(a) Inspected and tested before being commissioned after installation for the first time or any, subsequent time after having been out of commission for more than 2 years or after major repairs,

(b) Inspected at regular intervals of not more than one year, and

(c) Tested at regular intervals of not more than 2 years: provided that where any particular working condition exists the Principal Inspector of Mines may require more frequent inspections and tests to be carried out.

23.12.4 The inspection shall consist of an examination of the internal and external surfaces of the vessel and of all the fittings and appurtenances.

23.12.5 The test shall consist of a pressure test by water or, where the use of water is impracticable, by any other suitable liquid, to a pressure of 1, 3 times the maximum safe working gauge pressure of the vessel.

23.12.6 Where the construction a thorough inspection of all the internal surfaces, such as vessel jackets, the internal inspection may be substituted by a pressure test.

23.12.7 Where it is impracticable to use a liquid for the abovementioned test, the Principal Inspector of Mines may permit a test with a non-flammable gas to a pressure of 1, 1 times the maximum safe working pressure of the vessel: Provided the test is preceded by an internal inspection and any conditions and precautionary measures he may prescribe are complied with.

23.12.8 Notwithstanding anything to the contrary contained in this regulation, any cooking pot and similar jacket vessel, irrespective of capacity, shall be inspected and tested as prescribed by regulation 23.12.3.

Air compressors

23.14.1 The supply of air for any air compressor shall be drawn from the purest and coolest source available.

23.14.2 Every air compressor in which compression takes place in the presence of lubricating oil, shall be fitted with a fusible plug as close as practicable to the outlet valve or discharge port of every stage.

23.14.3 Every air compressor having a rating exceeding 0, 15 cubic metres of free air per second shall be fitted with a thermometer or pyrometer as close as practicable to the outlet valve or discharge port of every stage.

23.14.4 The highest temperature allowed shall be indicated by a red mark on the scale of the thermometer or pyrometer. The shifts man or person in charge of the air compressor shall ensure that this temperature is not exceeded and shall record in a book provided for the purpose the highest reading on the thermometer or pyrometer observed by him during the shift: Provided that where an automatic means exist for limiting the operating temperature to a safe value, no shifts man or other person need exercise continual supervision over the air compressor and no recording of the temperature need be done.

CHAPTER 29

SUSPENSION AND CANCELLATION OF CERTIFICATE OF COMPETENCY

Inspector may suspend or cancel certificates of engine drivers etc.

29.2.1 If at any time a winding engine driver, locomotive engine driver, stationary engine driver or boiler attendant, being the holder of a certificate issued in accordance with these regulations or heretofore issued under any law in force in any province of the Republic, is, in the opinion of any Principal Inspector of Mines guilty of misconduct or gross negligence in the execution of his duties, or suffer from any infirmity likely to be detrimental to the efficient discharge of his duties, such Principal Inspector of Mines may suspend such certificate or recommend the same to the Chief Inspector for cancellation or both.

Appeal to the chief inspector

29.2.2 The winding engine driver, locomotive engine driver, stationary engine driver or boiler attendant shall have the right to appeal from such decision to the Chief Inspector as in the manner hereafter provided.

Report and reference

29.2.3 The Chief Inspector of Mines shall immediately report such suspension or recommendation to the Chief Inspector who, on receipt of such appeal as aforesaid, may submit the matter for inquiry and report to the commission of examiners appointed under the said regulations.

Confirmation or otherwise by chief inspector

29.2.4 The Chief Inspector may confirm such suspension or cancel such certificate or take such other action as may seem to him desirable under the circumstances.

29.2.5 Any such suspension, if confirmed by the Chief Inspector, may be noted on the certificate.

Suspension or cancellation of certificates:- (Information only)

29.3 If the holder of a blasting certificate, an onsetter's certificate or a lamps man's certificate issued in accordance with these regulations is, in the opinion of any regional director guilty of misconduct or gross negligence in the execution of his duties, or suffers from any infirmity likely to be detrimental to the efficient discharge of his duties, such regional director may immediately suspend or cancel such certificate, in which case the holder of such certificate may appeal against such decision to the Chief Inspector in a manner hereinafter stipulated, and the Chief Inspector shall either personally or by deputy decide such appeal.

MINE HEALTH & SAFETY ACT

CHAPTER 2

HEALTH AND SAFETY AT MINES

Manager to provide health and safety training

10. (1) As far as reasonable practicable, every manager must –

- (a) Provide employees with any information, instruction, training or supervision that is necessary to enable them to perform their work safely and without risk to health; and
- (b) Ensure that every employee becomes familiar with work-related hazards and risks.

Manager to assess and respond to risk

11(1) every manager must-

- (a) Identify the hazards to health or safety to which employees may be exposed while they are at work;
- (b) Assess the risks to health or safety to which employees may be exposed while they are at work;
- (c) Record the significant hazards identified and risks assessed; and
- (d) Make those records available for inspection by employees.

(5) Every manager must-

- (a) Conduct an investigation into every-
 - (i) Accident that must be reported in terms of this act;
 - (ii) Serious illness; and
 - (iii) Health threatening occurrence;

Manager to establish system of medical surveillance

13.

- (2) (c) Consist of an initial medical examination and other medical examinations at appropriate intervals

Exit certificates

17. (1) If an employee was subject to, or was required to be subject to, medical surveillance in terms of this Act and such employee's employment at a mine is terminated for any reason, the employer must arrange an exit medical examination of the employee.

Employee's duties for health and safety

22. Every employee at a mine, while at that mine must-

- (a) Take reasonable care to protect their own health and safety;
- (b) Take reasonable care to protect the health and safety of others who may be affected by any act or omission of that employee;
- (c) Use and take proper care of protective clothing, and other health and safety facilities and equipment provided for the protection, health or safety of that employee and other employees;
- (d) Report promptly to their immediate supervisor any situation which the employee believes presents a risk to the safety of that employee or any other person, and with which the employee cannot properly deal;
- (e) Co-operate with any person to permit compliance with the duties and responsibilities placed on that person in terms of this Act; and
- (f) Comply with prescribed health and safety measures.

Employees, right to leave dangerous working place

23. (1) the employee has the right to leave any working place whenever -

- (a) Circumstances arise at that working place which, with reasonable justification, appear to that employee to pose a serious danger to the health or safety of that employee; or
- (b) The health and safety representatives responsible for that working place directs that employee to leave that working place.

(2)

(c) Participation, where necessary, by an inspector or technical advisor to assist in resolving any issue that may arise from the exercise of the right referred to in subsection (1);

CHAPTER 3**HEALTH & SAFETY REPRESENTATIVES, & COMMITTEES****Health and safety representatives and committees**

25. (1) Every mine with 20 or more employees must have a health and safety representative for each shift at each designated working place at the mine

(2) Every mine with 100 or more employees must have one or more health and safety committees.

(3) A health and safety representative or a member of a health and safety committee does not incur any civil liability only because of doing or failing to do something which a health and safety representative or a member of a health and safety committee may do or is required to do in terms of this Act.

Negotiations and consultations before appointment of representatives

26. (1) The owner of any mine where there must be a health and safety representative in terms of section 25 must meet, within the prescribed period, with the representative trade union of the mine to enter into negotiations to conclude a collective agreement concerning-

- (a) The designation of working places;
- (b) The number of full-time health and safety representatives;
- (c) The election or appointment of health and safety representatives;
- (d) The terms of office of health and safety representatives and the circumstances and the manner in which they may be removed from office;
- (e) The manner in which vacancies are to be filled;
- (f) The manner in which health and safety representatives must perform their functions in terms of this Act;
- (g) The procedures for the effective exercise of the right to withdraw from serious danger in terms of section 23;
- (h) Circumstances and the manner in which meetings referred to in sections 30 (1) (i) and 31(2) must be held;
- (i) The facilities and assistance that must be provided to a health and safety representative in terms of section 31 (3);
- (j) The training of health and safety representatives;
- (k) A procedure that provides for the conciliation and arbitration of disputes arising from the application or the interpretation of the collective agreement or any provisions of this Chapter;
- (l) Any prescribed matter; and

- (m) Any other matter which the parties believe will promote health and safety at the mine or mines concerned.
- (2) Before concluding a collective agreement referred to in subsection (1) with the representative trade union, the manager must consult on the matters referred to in that subsection with all other registered trade unions with members at that mine.
- (3) A collective agreement referred to in subsection (1) may include two or more owners as parties to the agreement.
- (4) To the extent that an agreement concluded in terms of subsection (1) deals with any matter regulated by this Chapter, the provisions of this Chapter do not apply.
- (5) The provisions applicable to collective agreements in terms of Labour Relations Act, read with the changes required by the context, apply to agreements concluded in terms of subsection (1).
- (6) If there is no representative trade union at the mine, the manager must within the prescribed period-
 - (a) Consult with the registered trade unions with members at the mine on the matters referred to in subsection (1); and
 - (b) Endeavour to reach agreement on the number of full-time health and safety representatives at the mine.
- (7) If there is no registered trade union with members at the mine, the manager must, within the prescribed period-
 - (a) Consult with the employees or elected representative of the employees on the matter referred to in subsection (1); and
 - (b) Endeavour to reach agreement on the number of full-time health and safety representatives at the mine.
- (8) A dispute exists if either-
 - (a) No collective agreement in terms of subsection (1) is concluded on the number of full-time health and safety representatives at the mine; or
 - (b) No agreement is reached in terms of either subsection (6) (b) or (7) (b).
- (9) When a dispute exists in terms of subsection (8), any party to the dispute may refer to the Commission.
- (10) When a dispute is referred to the Commission under subsection (9), the Commission must attempt to resolve it through conciliation.
- (11) If a dispute remains unresolved, any party to the dispute may request that it be resolved through arbitration, in which case the Commission, taking into account the guidelines in Schedule 1, must determine the number of full-time health and safety representatives.
- (12) Nothing in this section precludes the manager from consulting any employee who is not a member of a registered trade union or any representative of those employees concerning the matters referred to in subsection(1)

CHAPTER 5

INSPECTORATE OF MINE HEALTH AND SAFETY

Chief inspector

- 48. (1) the minister must appoint an officer, with suitable mining qualifications and appropriate experience in health and safety at the mines, to be Chief Inspector.
- (2) Subject to the control and direction of the Minister, the Chief Inspector must perform the functions entrusted to the Chief Inspector by this Act.
- (3) The Chief Inspector may perform any of the functions of an inspector.

Inspector's powers

- (50) (1) an inspector may for the purposes of monitoring or enforcing compliance with this Act-
 - (a) Enter any mine at any time without warrant or notice;
 - (b) Enter any other place after obtaining the necessary warrant in terms of this subsection (7); and
 - (c) Bring into and use at any mine, or at any place referred to in paragraph (b), vehicles, equipment and materials as necessary to perform any function in terms of this Act.
- (2) While the inspector is at any mine or place referred to in subsection (1), the inspector may, for the purposes of monitoring or enforcing compliance with this Act-
 - (a) Question any person on any matter to which this Act relates;
 - (b) Require any person who has control over, or custody of any document, including but not limited to a plan, book or record to produce that document to the inspector immediately or at any other time and place that the inspector requires;
 - (c) Require from any person referred to in paragraph (b) an explanation of any entry or non-entry in any document over which that person has custody or control;
 - (d) Examine any document produced in terms of paragraph (b) and make a copy of it or take an extract from it;
 - (e) Inspect-
 - (i) Any article, substance or machinery;

- (ii) Any work performed; or
 - (iii) Any condition;
 - (f) Inspect arrangements made by the manager for medical surveillance of employees;
 - (g) Seize any document, article, substance or machinery or any part or sample of it; and
 - (h) Perform any other prescribed function.
- (3) An inspector may instruct any owner, manager, employee or other person who perform an activity, regulated by this Act or any former owner, manager or employee or person who formerly performed an activity regulated by this Act, to appear before the inspector to be questioned on any matter to which this Act relates.
- (4) Before an inspection may seize any document under subsection (2)(g), the owner or manager of the mine may copy it.
- (5) An inspector may remove any article, substance or machinery or part or sample of it from any mine or place referred to in subsection (1) for examination or analysis.
- (6) When an inspector seizes or removes any item under this section, the inspector must issue a receipt for that item to the manager of the mine or place involved.
- (7) A magistrate may issue a warrant contemplated in subsection (1)(b) only on written application by an inspector setting out under oath or affirmation the need to enter a place other than a mine to monitor or enforce compliance with this Act.
- (8) For the purpose of this section, "mine" does not include any home, or residential quarters, situated at the mine.

Inspectors' power to deal with dangerous conditions

54. (1) If an inspector believes that any occurrence, practice or condition at a mine endangers or may endanger the health or safety of any person at the mine, the inspector may give any instruction necessary to protect the health or safety of persons at the mine, including but not limited to an instruction that-

- (a) Operations at the mine or part of the mine be halted;
- (b) The performance of any act or practice at the mine or part of the mine be suspended or halted, and may place conditions on the performance of that act or practice;
- (c) The Manager must take the steps set out in the inspection, within the specified period, to rectify the occurrence, practice or condition; or
- (d) All affected persons, other than those who are required to assist in taking steps referred to in paragraph (c) be moved to safety.

(2) An instruction under subsection (1) must be given to the manager or a person designated by the manager or, in their absence, the most senior employee available at the mine to whom the instruction can be issued.

(3) An inspector may issue an instruction under subsection (1) either orally or in writing. If it is issued orally, the inspector must confirm it in writing and give it to the person concerned at the earliest opportunity.

(4) If an instruction issued under subsection (1) is not issued to the manager, the inspector must give a copy of the instruction to the manager at the earliest opportunity.

(5) Any instruction issued under subsection (1) (a) must either be confirmed, varied or set aside by the Chief Inspector as soon as practicable.

(6) Any instruction issued under subsection (1) (a) is effective from the time fixed by the inspector and remains in force until set aside by the Chief Inspector or until the inspector's instruction have been complied with.

(7) Before giving any instruction under subsection (1) (a) the inspector must allow the manager or the manager's representative and the representatives of employees a reasonable opportunity to make representations.

(8) For the purposes of subsection (7), the representatives of the employees are-

- (a) Representatives designated in accordance with a collective agreement concluded in terms of section 26;
- (b) if paragraph (a) does not apply full-time health and safety representatives responsible for the mine or part of the mine which will be affected by the instruction;
- (c) If paragraph (a) and (b) do not apply, the health and safety representatives responsible for the working places which will be affected by the instruction; or
- (d) If paragraphs (a), (b) and (c) do not apply, the employees who will be affected by the instruction or an employee or employees nominated or elected by them.

(9) If an inspector has reason to believe that the delay caused by allowing representations could endanger the health or safety of any person, the inspector is not required to allow representations before issuing an instruction under subsection (1) (a).

(10) Before giving any instruction under subsection (1)(b) to (d), the inspector must allow such opportunity to make representations as may be prescribed.

Inspectors' power to order compliance

55. (1) If an inspector believes that an owner or manager has failed to comply with the provisions of this Act, the inspector may instruct that owner or manager in writing to take any steps that the inspector-

- (a) Considers necessary to comply with the provision; and
- (b) Specifies in the instruction.

(2) When issuing an instruction under subsection (1), an inspector must specify the period within which the prescribed steps must be taken. A period specified in an instruction may be extended by an inspector at any time by giving notice in writing to the person concerned.

Instructions to be posted at mine

56. The manager of a mine must-

- (a) Promptly supply a copy of any instruction of an inspector to-
 - (i) The health and safety representative representing the employees affected by the instruction; and
 - (ii) The health and safety committee responsible for those employees; and
- (b) Promptly publicize the instruction by-
 - (i) Prominently and conspicuously displaying copies of the instruction to the employees whose interests may be affected; and
 - (ii) Causing its contents to be communicated orally to those employees.

Reports on investigations

64. (1) after completing an investigation, an inspector must prepare a written report of the findings, recommendations and any remedial steps.

(2) The inspector-

- (a) Must submit a copy of the report referred to in subsection (1) to the Chief Inspector,
- (b) Must supply a copy of the report to the manager and to the health and safety representative, health and safety committee, registered trade union or employee that requested the investigation; and
- (c) May instruct the manager of the mine concerned to prominently and conspicuously display a report or portion of it for employees to read.

CHAPTER 7

LEGAL PROCEEDINGS & OFFENCES

No discrimination against employees who exercise rights

83. (1) No person may discriminate against any employee for -

- (a) Exercising a right in terms of this Act or in terms of a collective agreement contemplated in this Act.
- (b) Doing anything that the employee is entitled to do in terms of this Act or in terms of a collective agreement contemplated in this Act.
- (c) Refusing to do anything that the employee is entitled to refuse to do in terms of this Act or in terms of a collective agreement contemplated in this Act.
- (d) Refusing to do anything that the employee is prohibited from doing in terms of this Act or in terms of a collective agreement contemplated in this Act; and
- (e) Standing for election, or performing any function, as a health and safety representative or a member of a health and safety committee.

(2) For purposes of this section -

(a) "Discriminate" means to dismiss an employee or to engage in any other conduct which has the effect of prejudicing or disadvantaging the employer which prejudices or disadvantages the employee relative to other employees; and

(b) "Employee" includes any applicant for employment who has previously been employed at a mine.

Juvenile employment underground prohibited

85. (1) No person may cause or permit an employee under the age of 18 years to work underground at a mine.

(2) No employee under the age of 18 may work underground at a mine.

(3) Despite subsections (1) and (2) an employee under the age of 18 years but over the age of 16 years may work underground as a part of vocational education or training.

Permits for use of equipment

1. No person shall use any winding plant, elevator, chair lift or boiler at any mine or works unless a prescribed permit for the use thereof has been issued by the Regional Inspector concerned after it has been inspected and tested by a Regional Inspector of Machinery and found suitable for use: Provided that such Regional Inspector of Machinery may, after he has inspected, tested and found such winding plant, elevator, chair lift or boiler suitable for use, grant temporary permission for its use.

2. The operation of any winding plant, elevator, chair lift or boiler at a mine or works may be suspended by a Regional Inspector of Machinery subject to such conditions and instructions as he may deem necessary in the interest of safety, and may on the recommendation of such Regional Inspector of Machinery, by written notice cancel or amend any permit issued in terms of subsection (1).

CHAPTER 10

MISCELLANEOUS AND GENERAL PROVISIONS

Place of an accident to be left undisturbed

10.1 (1) When an accident causes the immediate death of an employee, the place where the accident occurred must not, without the consent of the Principal Inspector of Mines, be disturbed or altered before such place has been inspected by an Inspector or any person authorized under section 49(4) by the Chief Inspector of Mines.

(2) Regulation 10.1(1) does not apply if:

(a) Such disturbance or alteration is unavoidable to prevent further accidents, to remove fatalities and injured employees or to rescue employees from danger, or

(b) The discontinuance of work at such place would seriously impede the working of the mine.

(3) Despite regulation 10.1(1), work may be resumed at the place where the accident occurred if such inspector or other person authorised by the Chief Inspector of Mines fails to inspect the place within three days after notice of the accident has been given.

Right to attend inspection in loco

10.2 Any employee having material interest in an accident referred to in paragraph 10.1(1) As well as that employee's representative may attend any inspection in loco conducted by an inspector but such attendance is at their own risk.

In case such employee, is by reason of death or the severity of his/her injuries, unable to appoint any representative to attend the inspection in loco, the relatives or in their absence the fellow employees, of such employee may appoint a representative.

CHAPTER 23

ACCIDENTS AND DANGEROUS OCCURRENCES

ACCIDENTS TO BE REPORTED

23.1 The employer must report to the Principal Inspector of Mines in the manner prescribed in this chapter at the mine that results in:

(a) The death of an employee;

(b) An injury, to an employee, likely to be fatal;

(c) Unconsciousness, incapacitation from heat stroke or heat exhaustion, oxygen deficiency, the inhalation of fumes or poisonous gas, or electric shock or electric burn accidents of or by any employee and which is not reportable in terms of paragraph (d)

(d) An injury which either incapacitates the injured employee from performing that employee's normal or similar occupation for a period totaling 14 days or more, or which causes the injured employee to suffer the loss of a joint or a part of a joint or sustain a permanent disability.

DANGEROUS OCCURRENCES TO BE REPORTED

23.4 The employer must report to the Principal Inspector of Mines in the manner prescribed in this Chapter any of the following dangerous occurrences at the mine-

(h)WINDING PLANTS

(i) Running out of control winding engine; winding drum or conveyance;

(ii) Fracture or failure of any essential part of a winding engine, fracture or failure of any safety device used in connection with the winding equipment;

(iii) Fracture, failure or serious distortion of winding rope, fracture, failure or serious distortion of any connection between the winding rope and the drum, or between the conveyance and any other load suspended from or attached to such rope; fracture, failure or serious distortion of any connection between conveyances or between a conveyance and any suspended or attached load, fracture of guide rope or its connections, fracture of balance or tail rope or its connections.

(iv) Fracture, or failure of winding or balance sheave; fracture or failure of any essential part of the headgear or sheave support;

- (v) Jamming or accidental overturning of conveyance; conveyance or its load fouling shaft equipment; jamming of crosshead;
- (vi) Derailing of conveyance;
- (vii) Conveyance, bridle, frame, or crosshead accidentally leaving guides;
- (viii) Fracture or failure of the braking system or any critical part thereof;
- (ix) Failure to activate when required of any safety catches and/or arresting devices or activation of any safety catches and/or devices when not required;
- (x) Failures to activate when required of any over-wind prevention device or activation of such device when not required;
- (xi) Any over-winding or over-run of the conveyance to an extent which may have endangered persons or may have caused damage to the winding equipment;
- (xii) Failure of depth indicator.