



WORLD CLASS MINERALS AND ENERGY SECTORS THROUGH SUSTAINABLE DEVELOPMENT

DEPARTMENT OF MINERALS AND ENERGY

ENGINEERS RESPONSIBILITY-WINDERS



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Department:
Minerals and Energy
REPUBLIC OF SOUTH AFRICA

INTRODUCTION

Basics of regulations

The Mine Health and Safety Act 1996

Responsibilities are laid down for:

- Employers
- Employees
- Manufactures

Employers can appoint managers for the day to day running of the mine



Basics of Act and regulations

The Regulations Minerals Act Regulation are still applicable

Revised regulations will be soon available and these will be developed in the legislative review process:
Stake holders will assist in drawing up the regulations

The responsibilities of engineers has not been withdrawn and are still enforceable





2.13.4.1 An engineer or **competent** person **appointed** in terms of regulation 2.13.2 shall-

(a) subject to regulation 2.13.12, be responsible for the safe installation and the proper operation, running and maintenance of all machinery;

(b) be responsible for the safe erection and proper maintenance of all buildings, structures and tanks;

(c) take all reasonable measures to ensure that-

(i) all safety appliances, mechanisms and guards are maintained in good condition;

(ii) the provisions of the regulations relating to machinery are fully complied with; and

(iii) the working of any apparatus or machine, the using of which may constitute a danger to any person, is stopped.



Mine Health and Safety Act

Section 84 Unless specifically authorised by the employer, no person-

(a) Other than an Inspector acting in terms of section 50, may remove personal protective equipment from the mine, or cause that equipment to be removed;

(b) Other than an inspector acting in terms of section 50, may remove anything that is provided in the interest of health and Safety, or cause that equipment to be removed; or

(c) May alter, damage, misused, render ineffective with anything that is provided in the interest of health and safety, or cause that equipment to be altered, damaged, misused, rendered ineffective or interfered with



Appointments

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, 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, loading platforms and loading boxes.

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-



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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 drum, the connections referred to in regulation 16.18, the conveyances and the main members by which they are suspended and any safety catches attached thereto, the pulley wheels or 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 Mines and Works Act if the winding plant makes less than 50 trips during such day; and

16.74.2 at least once in each week the signalling arrangements and the safety devices used in connection therewith.



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 a place selected by the person making the examination who shall note any reduction in the circumference of the rope, any variation in the length 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 the 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 An engineer or **competent** person **appointed** in terms of regulation 2.13.2, as the case may be, shall examine carefully-
[Reg. 16.75 amended by GN 160 of 1 February 1991.]

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;
[Reg 15.75.1 amended by GN R2703 of 11 December 1981.]

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;



16.75.5 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.

WHAT MUST AN ENGINEER DO?

RECORD BOOKS

1. **Machinery record book**: Records of the inspections conducted and the results thereof
- 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 scrutinized 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 test reports: Copies of the rope test results for each rope in the shaft for each coil number. These results should be submitted to the regional office

Rope record book: Records of the inspections conducted by the engineer.

16.23.2 Any winding rope, balance rope or guide rope which has previously been in use may not be re-used unless the engineer is in possession of the documented history of the working life of the rope.

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 the following particulars for each winding rope, balance rope or tail rope used on each winding plant:

(a) Name of manufacturer-

Date of manufacture;

Coil number;

Length in metres;

Mass per metre in kilograms;



— Diameter in millimetres; or
Width and thickness in millimetres;
Construction of rope-
type and length of lay;
number of strands;
class of heart;
type of lubricant;
Construction of strands-
number of wires;
diameter of wires in millimetres;
class of core;
class of steel in wires;
tensile strength of steel in megapascals;
Breaking force in kilonewtons;
Rope test certificate number and place of test;



(b) Whether used for winding or balance purposes-

Name and type of shaft;

Name of compartment;

Winding plant certificate number;

Date put on;

(c) Dates of recapping, shortening or turning end for end-

Dates of testing and the breaking force obtained at each test

Date taken off;

Dates of annealing or renewing connections; and

16.79.3 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.



7. Drivers' log book: Copies of the daily log books to be kept for each winder.

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 Driver's Log Book provided in terms of regulation 16.81.

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 in 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.



8. **Shaft examination log book**: Copies of the examinations records for each compartment in the shaft to be kept.

16.80 The manager shall provide for each shaft or winze where persons are regularly conveyed a book to be termed the Shaft Log Book in which shall be entered-

16.80.1 the name of each person ***appointed*** under regulation 16.73 to perform the duties mentioned therein together with the particulars of the duties of each such person;



16.82 The entries in the Driver's Log Book shall be scrutinized and countersigned daily by the persons **appointed** to carry out the duties specified in regulation 16.74. The duplicate shall be scrutinized 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.

8. **Shaft examination log book**: Copies of the examinations records for each compartment in the shaft to be kept.

16.80 The manager shall provide for each shaft or winze where persons are regularly conveyed a book to be termed the Shaft Log Book in which shall be entered-

16.80.1 the name of each person **appointed** under regulation 16.73 to perform the duties mentioned therein together with the particulars of the duties of each such person;



16.80.2 a true report of every examination referred to in regulation 16.73. The report shall be recorded and signed without delay by the person making such examination and the reports shall be scrutinized and countersigned by the manager or mine overseer and 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.

9. Bell examination records: Records of the bell examinations records for each compartment in the shaft.

10. Dynamic test results: Records of the dynamic test result/reports.



What an Engineer should note:

- Type of winder AC/DC
- Type of control.
- Are there any bridges on the safety circuit? If Yes, detailed reasons for that must be furnished.

Testing of overwind records: The Engineers' daily check results must be kept.

Signalling system recorder: Record of signal system recording system

Type of braking system

Emergency procedures in case of winder failure: Have a detailed procedure
The engineer's annual examination must be recorded.



Headgear

Sheave profile: copies of all the sheave profiles must be available.

Sheave bearing: Records indicating when and by whom the bearings were last checked/inspected.

Spectral plate location: Is the plate correctly installed for the type of detaching hook used? If not, reasons for that must be furnished.

Condition of Headgear guides.

Type of guide coupling devices.

Alignment of Guides.

Distance between guides & Allowable tolerance.

Condition of Tipping path.

Type of conveyance.

Condition of Bins.

Headgear final trip: Method of operation.

If the conveyance is caught in the jack Catches is there a system and procedure of removing the occupancy from the cage?

Copy of the evacuation procedure must be available.



Banks and Stations

Shaft protection device(s) installed close to shaft.

Check of design.

Method of locking the device.

Type of bell system used.

Required notices available and legible.

Procedures must be available for trackbound equipment to enter station



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Shaft

Is shaft a down or up-cast shaft?

Wet & Acidic.

Guide alignment & Tolerance.

Shaft steelwork : Condition.

Is there a method of assuring Integrity of the steelwork?

What are these methods?

Services

Condition of pipes in the shaft.

Is there method of assuring Integrity of the pipes?

What are these methods?

Is there a method of assuring Integrity of the support steelwork against the shaft?

What are these methods.

Condition of Electrical cables.

Is there method of assuring Integrity of the cables?

What are these methods

Is there method of assuring Integrity of the support for the cables against the shaft or steelwork.

What are these methods.



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Handling of fissure water: What methods used and the methods of cleaning the system to ensure correct operation

Emergency procedure in case of complete shaft failure: Has a procedure been developed?

Shaft bottom layout: What is the shaft bottom layout and address the following: Shaft bottom de-watering, loading box access, spillage removal, corrosion and corrosion prevention monitoring systems.

Location and condition of all second outlets and escape ways.



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Ropes

Which methods are used for the lubrication of ropes?

Which method of application is used?

Wear condition: Method used.

Provide Results of Engineers' monthly rope examination /
examination reports available

Conveyances

Condition of each conveyance

Provide details of method of assuring integrity and condition of
the conveyance

Attachments condition:

Provide copies of the last 2 examination records/results of the
attachments

Condition of Wheels.

Condition of skid plates.

If trailers are used: Factors of safety used

Slack rope devices:

Type used.

Is there a procedure to be followed if device fails?.



Incline shafts

Is it a Down or up-cast shaft?

Wet/Acidic?

Rail alignment & Tolerance.

Condition of sills.

Condition of shaft related to fissure water.

Is the shaft provided with derailing device in case of runaway conveyances?

How do these devices operate?

How are these devices checked for correct operation.

Is the Marshall device operational.

Is the testing and functioning procedure available for Marshall device?

Condition of drop rails at each station.

Shaft steelwork :

Condition & Method of assuring Integrity of the steelwork:



Shaft bottom layout:

provide a sketch of the shaft bottom layout and address the following: Shaft bottom de- watering, loading box access, spillage removal, corrosion and corrosion prevention monitoring systems.

Is the shaft provided with a shaft bottom crash beam? If not, how are the personnel at shaft bottom protected.

Provide details of location and condition of all second outlets and escape ways.