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# **PROPOSED DRAFT\***

## **COAL MINE REGULATIONS 2006**

**(\*IT IS STILL PENDING IN PARLIAMENT TO GET PASSED)**

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A line of yellow coal haul trucks parked in a mine yard. The trucks are arranged in a row, receding into the distance. The background is a bright, hazy sky. The trucks have large tires and a prominent front grille. The number '49' is visible on the side of the first truck.

# THE COAL MINES REGULATIONS, 2006

## CHAPTER – I : Preliminary

### 1. Short title, extent and application-

- (1) These regulations may be called the Coal Mines Regulations, 2006.
- (2) They extend to the whole of India.
- (3) They shall apply to every coal mine.

### 2. Definitions– In these regulations, unless there is anything repugnant in the subject or context-

- (1) “abandoned workings” mean such workings as have been abandoned with no intention of working in future.
- (2) “Abandoned Mine Methane” means a natural gas recovered from abandoned mines or part thereof and can be used as fuel to generate energy.
- (3) “Act” means the Mines Act, 1952;
- (4) “Assistant Manager” means a person possessing a Manager’s Certificate appointed in writing by the owner, agent or manager to assist the manager in the control, management and direction of the mine or part thereof, and who takes rank immediately below the manager;
- (5) “approved safety lamp” and “approved electric torch” mean respectively, a safety lamp or an electric torch, manufactured by such firm and of such type as the Chief Inspector may from time to time specify by notification in the Official Gazette;
- (6) “Auxiliary fan” means a forcing fan or an exhausting fan used belowground wholly or mainly for ventilating one or more faces forming part of a ventilating district;
- (7) “Banksman” means a person appointed to superintend the lowering and raising of persons, tools and materials and to transmit signals at the top of a shaft or incline;
- (8) “Booster fan” means a mechanical ventilator used belowground for boosting the whole current of air passing along the intake or return airway of a mine or ventilating district;
- (9) “Coal” includes anthracite, bituminous coal, lignite, peat and any other form of carbonaceous matter sold or marketed as coal;
- (10) “Coal Bed Methane” means a natural gas trapped in a coal seam or adjacent strata and can be utilized as a fuel to generate energy;
- (11) “Coal Mine Methane” means a natural gas recovered from an operating mine or part thereof and can be utilized as a fuel to generate energy;
- (12) “Committee” means a committee appointed under section 12 of the Act;
- (13) “Competent person” in relation to any work or any machinery, plant or equipment means a person who has attained the age of <sup>1</sup>[20] years and who has been duly appointed in writing by manager as a person competent to supervise or perform that work, or to supervise the operation of that machinery, plant or equipment, and who is responsible for the duties assigned to him, and includes a shotfirer;

- (14) "discontinued workings" means such workings in a mine as have been discontinued for some reasons and are inaccessible or rendered inaccessible but are likely to be worked again.
- (15) "District Magistrate" in relation to any mine, means the District Magistrate or the Deputy Commissioner, as the case may be, who is vested with the executive powers of maintaining law and order in the revenue district in which the mine situated:
- Provided that in the case of a mine, which is situated partly in one district and partly in another, the District Magistrate for the purposes of these regulations shall be the District Magistrate authorized in the behalf by the Central Government;
- (16) "disused workings" mean such workings in a mine where work has been temporarily stopped due to some reasons but which are accessible and include unused workings.
- (17) "explosive" shall have the same meaning as is assigned to that term in the Indian Explosives Act, 1884;
- (18) "Face" means the moving front of any working place or the inbye end of any gallery, roadway or drift;
- (19) "fiery seam" means a seam in which a fire or spontaneous heating exists in the workings below ground or in open cast workings lying within the precincts of a mine;
- (20) "flame proof enclosure" means an enclosure for electrical machinery or apparatus provided with an enclosure that will withstand, when the covers or other access doors are properly secured, an internal explosion of the flammable gas or vapour which may enter or which may originate inside the enclosure, without suffering damage and without communicating the internal inflammation (or explosion) to the external flammable gas or vapour in which it is designed to be used, through any joints or other structural openings in the enclosure.
- (21) "Form" means a Form as set out in the First Schedule;
- (22) "gas" includes fume or vapour;
- (23) "gassy seam of the first degree" means a coal seam or part thereof lying within the precincts of a mine not being an open cast working whether or not inflammable gas is actually detected in the general body of the air at any place in its workings below ground, or when the percentage of the inflammable gas if and when detected, in such general body of air does not exceed 0.1 and the rate of emission of such gas does not exceed one cubic metre per tonne of coal produced;
- (24) "gassy seams of the second degree" means coal seams or part thereof lying within the precincts of a mine not being an open cast working in which the percentage of inflammable gas in the general body of air at any place in the workings of the seam is more than 0.1 or the rate of emission of inflammable gas per tonne of coal produced exceeds one cubic metre but does not exceed ten cubic metres;
- (25) "gassy seams of the third degree" means of coal seam or part thereof lying within the precincts of a mine not being an open cast workings in which the rate of emission of inflammable gas per tonne of coal produced exceeds ten cubic metres;
- (26) "general body of air" means the general atmosphere in a seam and includes the atmosphere in the roof cavities, but does not include general atmosphere in the sealed off area or in any borehole drilled in coal or in the adjacent "strata";

- (27) "Goaf" means any part of workings below ground wherefrom a pillar or part thereof, or in the case of "longwall" workings, coal has been extracted but which is not a working place;
- (28) "haul road" means any passage of road which is maintained and used in connection with the workings of opencast mines for plying of machinery.
- (29) "heavy earth moving machinery" means automotive or electrical trackless machinery used in mechanized opencast mines for digging, drilling (excluding hand held drills and drill machines capable of drilling hole of a diameter upto 50 mm), dredging, hydraulicing, ripping, dozing, grading, excavating, loading, transporting minerals or overburden.
- (30) "Incline" means an inclined passage or road either on the surface or below ground;
- (31) "Inset" means a landing or platform in a shaft, and includes an excavation therefrom between the top and the bottom of the shaft;
- (32) "machinery" means –
- (i) any locomotive or any stationary or portable engine, air compressor, boiler or steam apparatus, which is, or
  - (ii) any such apparatus, appliance or combination of appliances intended for developing, storing, transmitting, converting or utilizing energy, which is, or
  - (iii) any such apparatus, appliance or combination of appliances if any power developed, stored, transmitted, converted or utilized thereby is, used or intended for use in connection with mining operations; or
  - (iv) any such equipment used for cutting, drilling, loading and transport of material.
- (33) "Manager" means a person possessing the prescribed qualifications and appointed in writing by the owner or agent to be in charge of a mine under the Act, and appointed under section 17 of the Act;
- (34) "material" includes coal, stone, debris, or any other material;
- (35) "Misfire" means the failure to explode of an entire charge of explosives in a shot-hole or blast hole;
- (36) "month" means a calendar month;
- (37) "Official" means a person appointed in writing by the owner, agent or manager to perform duties or supervision in a mine or part thereof and includes an assistant manager, a ventilation officer, a safety officer, a sampling incharge, dust incharge, an overman, a sirdar, an engineer and a surveyor;
- (38) "Onsetter" means a person appointed to superintend the raising and lowering of persons, tools and materials and to transmit signals at any inset or shaft bottom;
- (39) "Overman" means a person possessing a Manager's or Overman's Certificate, who is appointed by the manager in writing, under any designated whatsoever, to perform the duties of supervision of control in a mine or part thereof, and is as such superior to a sirdar;
- (40) "Permitted explosive" means an explosive manufactured by such firm and of such type as the Chief Inspector may from time to time specify by notification in the Official Gazette;
- (41) "public road" means a road maintained for public use and under the jurisdiction of any government or local authority;

- (42) "quarter" means a period of three months ending on the 31<sup>st</sup> March, 30<sup>th</sup> June, 30<sup>th</sup> September or 31<sup>st</sup> December;
- (43) "railway" means a railway as defined in the Indian Railways Act, 1890;
- (44) "Regional Inspector" means the Inspector of Mines having jurisdiction over a geographical area in which the mine is situated and over which he exercise his powers under the Act.
- (45) "river" means any stream or current of water, whether seasonal or perennial, and includes its banks extending up to the highest known flood level;
- (46) "roadway" means any part of a passage or gallery below ground which is maintained in connection with the working of a mine;
- (47) "Schedule" means a Schedule appended to these regulations;
- (48) "Shaft" means a way or opening leading from the surface to workings below ground or from one part of the workings below ground to another, in which a cage or other means of conveyance can travel freely suspended, with or without the use of guides;
- (49) "Socket" means a shot-hole or blast hole or part thereof remaining after being charged with explosive and blasted, and which is not known to be a misfired hole;
- (50) "Ventilating district" means such part of a mine below ground as has an independent intake airway commencing from a main intake airway, and an independent return airway terminating at a main return airway, and, in the case of a mine or part thereof which is ventilated by natural means, the whole mine or part; and
- (51) "Working" means any excavation made or being made in a mine for search of or obtaining coal.
- (52) "working place" means any place in a mine to which any person has lawful access.

## CHAPTER-II : Returns, Notices and Records

**3. Notice of Opening.** – (1) The notice required by section 16 of the Act shall be submitted in Form I. And a copy thereof shall be submitted to the Regional Inspector. The Form shall be accompanied by a plan showing the boundaries of the mine and the shafts or openings of the mine, trijunction or revenue pillars and other prominent and permanent surface features :

Provided that if the boundary of a mine is changed as per sub-regulation (1) of regulation 122 or 123, a plan showing the new boundary, shall be submitted within seven days of the said change.

(2) The notice specified in sub-regulation (1) shall be accompanied by a copy of the surface plan prepared under sub-regulation (1) of regulation 66 and a copy of safety management plan prepared under regulation 105.

Provided that, in respect of a mine, which has already been opened, such a plan shall be submitted within six months of coming into force of these Regulations.

(3) The notice specified in sub-regulation (1) shall also be accompanied by a copy of the Mine Closure Plan in the prescribed format notified by a general or special order in this regard, to the Chief Inspector of Mines and a copy thereof to the Regional Inspector.

Provided that, in respect of a mine, which has already been opened, such a plan shall be submitted within six months of coming into force of these Regulations.

**4. Quarterly Returns** – On or before the 20<sup>th</sup> day of January, April, July, and October every year, the owner, agent or manager shall submit to the Chief Inspector and the Regional Inspector correct returns in respect of the preceding quarter in Form II of First Schedule.

**5. Annual Returns** – (1) On or before 20<sup>th</sup> day of February in every year, the owner, agent or manager shall submit to the District Magistrate and to the Chief Inspector annual returns in respect of the preceding year in Form III.

(2) If a mine is abandoned or working thereof is discontinued over a period exceeding 60 days or if a change occurs in the ownership of a mine, the returns required under sub-regulation (1) shall be submitted within 30 days of abandonment or change of ownership or within 90 days of discontinuance, as the case may be.

**6. Notice of abandonment or discontinuance** – (1) When it is intended to abandon a mine or seam or to discontinue working thereof for a period exceeding 60 days, the owner, agent or manager shall not less than 40 days before such abandonment or discontinuance, give to the Chief Inspector and the Regional Inspector a notice stating the reasons for the proposed abandonment or discontinuance and the number of persons likely to be affected thereby:

Provided that when on account of unforeseen circumstances a mine is abandoned or discontinued before the said notice has been given or when without previous intention the discontinuance extends beyond a period of 60 days, the notice shall be given forthwith.

(2) Notwithstanding anything contained in sub-regulation (1), when it is intended to abandon or discontinue for more than 60 days, any workings belowground over which is situated any property vested in the Government or any local authority or any railway or any building or permanent structure not belonging to the owner, the owner, agent or manager shall, not less than 40 days before the date of such abandonment or discontinuance, give notice of his intention to the Chief Inspector and the Regional Inspector.

(3) When a mine or seam has been abandoned, or the working thereof has been discontinued over a period exceeding 60 days, the owner, agent or manager shall, within seven days of the abandonment or of the expiry of the said period, give to the Chief Inspector, the Regional Inspector and the District Magistrate notice in Form I.

**7. Notice of re-opening** – (1) When it is intended to re-open a mine or seam after abandonment or after discontinuance for a period exceeding 60 days, the owner, agent or manager shall, not less than 30 days before resumption of mining operations, give to the Chief Inspector, the Regional Inspector and the District Magistrate notice in Form I.

(2) When a mine has been re-opened, the owner, agent or manager of the mine shall forthwith communicate the actual date of re-opening to the Chief Inspector and the Regional Inspector.

**8. Change in ownership and addresses, etc.** – (1)(a) When a change occurs in the name of ownership of a mine or in the address of the owner, the owner, agent or manager shall, within seven days from the date of the change, give to the Chief Inspector and the Regional Inspector a notice in Form I :

Provided that where the owner of a mine is a firm or other association of individuals, a change –

- (i) of any partner in the case of a firm;
- (ii) of any member in the case of an association;
- (iii) of any director in the case of a public company; or
- (iv) of any shareholder in the case of a private company;

shall also be intimated to the Chief Inspector and the Regional Inspector, within seven days from the date of the change.

(b) When the ownership of a mine is transferred, the previous owner or his agent shall make over to the new owner or his agent, within a period of seven days of the transfer of ownership, all plans, sections, reports, registers and other records maintained in pursuance of the Act and of these regulations, or orders made thereunder, and all correspondence relating to the working of the mine relevant thereto, and when the requirements of this clause have been duly complied with, both the previous and the new owners or their respective agents shall forthwith inform the Chief Inspector and the Regional Inspector in writing.

(2) Any appointment is made of an agent, manager, engineer, surveyor, ventilation officer, safety officer, under manager or assistant manager or when the employment of any such person is terminated or any such person leaves the said employment, or when any change occurs in the address of any agent or manager, the owner, agent or manager shall, within seven days from the date of such appointment, termination or change give to the Chief Inspector of Mines and the Regional Inspector a notice in Form I.

**8A. Appointment of agent** – (1) The owner of a mine shall submit in writing to the Chief Inspector and the Regional Inspector, a statement showing names and designation of every person authorised to act on behalf of the owner in respect of management, control, supervision or direction of the mine.

(2) The statement shall also show the responsibilities of every such person and the matters in respect of which he is authorised to act on behalf of the owner.

(3) Every such person shall be deemed to be agent for the mine or group of mines, as the case may be, in respect of the responsibilities as specified in such statement.

(4) Any change, addition or alteration in the names or other particulars of the aforesaid statement shall be reported in writing to the Chief Inspector and Regional Inspector within seven days from the date of such change, addition or alteration.



**9. Notice of Accident – (1)(a)** When there occurs in or about a mine –

- (i) an accident causing loss of life or serious bodily injury in connection with mining operations;
- (ii) an explosion or ignition;
- (iii) a spontaneous heating or outbreak of fire, or appearance of smoke or other indication of heating or outbreak of fire;
- (iv) fire in any part of working or in any machinery; fall from height of any excavation, loading or transport machinery; bursting of equipment under pressure;
- (v) an influx of inflammable or noxious gases;
- (vi) an irruption or inrush of water or other liquid matter;
- (vii) an instantaneous failure of a pillar, part of a pillar or several pillars of coal (i.e., a 'bump') in workings below ground;
- (viii) a premature collapse of any part of the workings;
- (ix) any accident due to explosives;
- (x) a breakage or fracture of rope, chain, headgear, pulley or axle or bearing thereof, or other gear by which persons or materials are lowered or raised in a shaft;
- (xi) an over winding of cages or other means of conveyance while men or materials are being lowered or raised;
- (xii) a breakage or fracture of any essential part of winding engine, crankshaft, coupling, bearing, gearing, clutch, drum or drum shaft, or failure of emergency brake;
- (xiii) a bursting of any equipment containing steam, compressed air or other substance at high pressure; or
- (xiv) a breakage, fracture or failure of any essential part of any machine or apparatus whereby the safety of persons may be endangered;
- (xv) a slide/failure of dump or side in opencast workings.

the owner, agent or manager shall forthwith inform the Regional Inspector about the occurrence by telephone, express telegram, fax, or by special messenger; and shall also, within 24 hours of every such occurrence, give notice thereof in Form IV-A to the District Magistrate, the Chief Inspector and the Regional Inspector and in the case of an accident mentioned in sub-clause (I) of this clause, also to the Coal Mines Labour Welfare Commissioner. The owner, agent or manager shall simultaneously exhibit a copy of the notice on a special notice board outside the office of the mine and shall ensure that the notice is kept on the board in a legible condition for not less than 14 days from the date of such exhibition.

(b) When an accident causing loss of life or serious bodily injury occurs in or about a mine in connection with the generation, storage, transformation, transmission, supply or use of electrical energy, the owner, agent or manager shall also forthwith inform the Electrical Inspector of Mines by telephone, express telegram or special messenger.

(2) If death results from any injury already reported as serious under sub-regulation (1) or if any injury other than the serious injury become serious, the owner, agent or manager shall within 24 hours of his being informed of the same], give notice thereof to the District Magistrate, the Chief Inspector, the Regional Inspector and the Coal Mines Labour Welfare Commissioner.

(3) In respect of every persons killed or injured as above, the owner, agent or manager shall, within seven days of the occurrence, send to the Chief Inspector, particulars in Form IV-B.

**10. Notice of disease –** Where any person employed in a mine contract any disease notified by the Central Government in the Official Gazette, the owner, agent or manager shall, within three days of his being informed of the disease, give notice thereof in form V to the District Magistrate, the Coal Mines Labour Welfare Commissioner, the Chief Inspector, the Regional Inspector and Inspector of Mines (Medical).

### **CHAPTER – III : Examinations and Certificates of Competency and of Fitness**

**11. Board of Mining Examinations** – (1) For the purpose of these regulations, there shall be constituted a Board of Mining Examinations, (hereinafter referred to as 'the Board').

(2) The Board shall consist of the Chief Inspector, who shall be its Chairman (ex-officio), and five members possessing atleast degree in mining, and

- (a) first class manager's certificate granted under regulation 12 of these regulations or under the Coal Mines Regulations, 1957,
- (b) having practical experience in coal mines, or
- (c) serving in an institution imparting education in mining engineering at the degree or equivalent level, or
- (d) engaged in mining research or planning, to be appointed by the Central Government:

Provided that the Board shall be so constituted that it shall include atleast three members possessing qualifications laid down in clause (a) and (b) and atleast one member possessing qualifications laid down either in clause (c) or in clause (d).

(3) Every member (other than the Chairman) of the Board shall hold office for a period of three years from the date of the notification appointing him a member of the Board or until his successor is appointed and takes charge, whichever is later :

Provided that –

- (i) a member may at any time resign his office;
- (ii) a member appointed under clause (c) or sub-regulation (2) shall cease to hold office upon his ceasing to serve in any such institution, as is referred to in that clause;
- (iii) a person appointed to fill a vacancy caused by reason of the death, resignation, or by reason of ceaser of office under sub-clause (ii), of a member, shall hold office for the remaining period for which such member would have, but for such reason, continued as member.

(4) A person who holds, or who has held, office as member of the Board shall, subject to the other provisions of this regulation, be eligible for re-appointment to that office.

(5) A member of the Board (other than the Chairman) shall receive such remunerations as the Central Government may fix.

(6) An Inspector nominated in this behalf by the Chief Inspector shall act as Secretary to the Board (hereinafter referred to in this regulation as the Secretary).

(7) Notwithstanding anything contained in this regulation, the Central Government may, if satisfied that it is necessary so to do in the public interest, re-constitute the Board even though the term of office of all or any of the members thereof has not come to an end.

(8) Meetings of the Board shall be held as and when the Chairman considers them necessary, and unless otherwise decided by the Chairman, all meetings of the Board shall be held at Dhanbad.

(9)(a) For every meeting of the Board, not less than ten clear days prior notice intimating the time and place of the proposed meeting and signed by the Chairman or the Secretary shall be given to each member who is not absent from India.

(b) Such notice shall be delivered at, or posted to the usual place of residence of the member, and each such notice shall be accompanied by a list of items of business to be disposed of at that meeting.

(c) Notwithstanding what is contained in clauses (a) and (b), in cases of urgency, an emergent meeting may be called for by Chairman at any time, by intimating the members, only two days in advance, of the time and date of such meeting and the subject matter for discussion at such meeting:

Provided that if at any meeting there is no quorum as aforesaid, the meeting shall automatically stand adjourned to a date which is seven days later or if that day is a public holiday to the next working day and the time, place and agenda for the adjourned meeting shall remain unchanged. It shall thereupon be lawful to dispose of the business at such meeting irrespective of the number of members attending.

(10)(a) The Chairman shall preside at every meeting of the Board.

(b) If the Chairman is absent for any reason, the members present shall elect one from among themselves to preside over the meeting, and the members so elected shall, for the purposes of that meeting, have all power of the Chairman.

(11) No business shall be transacted at a meeting of the Board unless atleast three members, including the Chairman, are present.

(12)(a) All matters which the Board is required to consider shall be considered at its meeting, or, if the Chairman so decides, by circulation of the papers, to every member who is not absent from India.

(b) When any matter is referred to by circulation as aforesaid, any member can request that it should be considered at a meeting of the Board and the Chairman may direct that it shall be so considered but when two or more members so request, the Chairman shall direct that it shall be so considered at a meeting to be held.

(13)(a) The Secretary shall place, before the Board a list of business to be transacted at the meeting.

(b) No business which is not included in such list shall be considered unless the Chairman permits.

(14)(a) Every matter at a meeting, shall be decided by the majority of votes of the members present at such meeting.

(b) Every matter referred to the members by circulation under sub-regulation (13) shall be decided by the majority opinion of the members to whom the papers were circulated, unless the Chairman reserves it for consideration at a regular meeting to be held later.

(c) In case of equal division of votes or opinions of the members, Chairman shall have a casting vote or opinion.

(15)(a) The Secretary shall record the minutes of each meeting in a bound-paged book kept for the purpose and copies of such minutes of the meeting shall be circulated to all members present in India.

(b) The minutes so recorded shall be confirmed at the next meeting of the Board and signed by the Chairman in token thereof.

(16)(a) The Chairman in addition to any other powers and duties conferred upon him under these regulations, shall :

- (i) present all important papers and matters to the Board as early as possible;
- (ii) the issue orders for carry out the decisions of the Board;
- (iii) have power to refer, in his discretion, any matter to the Central Government for their orders; and
- (iv) have powers generally to take such action or pass such orders necessary to implement the decisions of the Board.

(b) The Chairman may, during his temporary absence by reason of leave or otherwise, authorise any member of the Board to perform all or any of the duties of the Chairman during such absence.

(c) Unless the Chairman otherwise directs, all proceedings of the Board shall be conducted in camera and be regarded as confidential.

**12. Certificates granted by the Board** – (1) Certificates under these regulations shall be granted by the Board.

(2) Certificates granted by the Board shall be valid throughout the territories to which these regulations extend, and shall be of the following kinds –

- (a) Manager's first class certificate of competency to manage a coal mine (in these regulations referred to as a First Class Manager's Certificate);
- (b) Manager's second class certificate of competency to manage a coal mines (in these regulations referred to as a Second Class Manager's Certificate);
- (c) Surveyor's certificate of competency to survey the workings of a mine (in these regulations referred to as a Surveyor's Certificate);
- (d) Overman's certificate of competency to carry out inspections and duties as required under these regulations (in these regulations referred to as an Overman's Certificate);
- (e) Sirdar's certificate of competency to carry out inspection and duties as required under these regulations (in these regulations referred to as a Sirdar's Certificate);
- (f) Winding engineman's certificate (in these regulations referred to as engine-driver's certificate) to drive a winding engine of any type or class or of such type or class or types or classes as may be specified in the certificate;
- (g) Certificate of competency to test for the presence of inflammable gas (in these regulations referred to as a Gas-testing Certificate);

Provided that any of the certificate aforesaid, other than Engine Driver's Certificate and Gas-testing certificate may be restricted to mines having opencast workings only, and this fact shall be endorsed on the certificate.

**13. Examinations and examiners** – (1) Certificates shall be granted to candidates after such examination and in such form as the Board may specify:

Provided that the Board may, subject to the conditions specified in the bye-laws exempt any persons from appearing at the examination or part thereof for the want of a certificate referred to in regulation 12.

(2) The examinations shall be held at such times and at such centres as may be fixed by the Board, and shall be conducted by examiners appointed by the Board.

(3) The examiners so appointed shall be subject to the orders of the Board in respect of all matters relating to the conduct of the examinations, and shall receive such remuneration as the Board, with the sanction of the Central Government, may fix.

(4) The Board may make bye-laws as to the procedure for and the conduct of the examinations and as to the granting of certificates of competency and of fitness as required under these regulations, and shall, so far as may be practicable, provide that the standard of knowledge required for the grant of certificates of any particular class and the standard of medical fitness shall be uniform throughout the territories to which these regulations extend.

(5) Every bye-law made by the Board under this regulation shall be published in the Official Gazette, and no such bye-law shall have effect until three months after the date on which it was so published.

**14. Submission of applications** – (1) Applications for an examination conducted by the Board shall be made to the Board not less than 60 days prior to the date fixed for the examination and on a form supplied for the purpose.

(2) Notice regarding the date and place of the examinations for the Manager's, Surveyor's and Overman's certificates shall be published under the order of Board, in such periodicals as the Board may direct, not less than 60 days prior to the date fixed by the Board for receiving applications.

**15. Age and general qualifications of candidates** – (1)(a) No persons shall be admitted as a candidate as any examination held by the Board unless he is 20 years of age.

(b) No persons shall be admitted as a candidate as any examination for a Manager's, Surveyor's, Overman's or Sirdar's Certificate unless he holds a valid first-aid certificate of the standard of the St. John Ambulance Association (India):

Provided that if any candidate satisfies the Board that he has not had sufficient opportunity to obtain such first-aid certificate, the Board may, by order in writing, admit him to the examination on such conditions, if any, as it thinks fit to impose.

The certificate of experience must be in the prescribed form and signed by Manager. Manager's signature must be dated by the manager with the seal of his office. Capacity, nature of work done, place, experience and dates of commencement and termination of training shall be clearly indicated. Candidate shall sign at the specified place.

For Gas-testing exam, every application is required to be accompanied by an original certificate by the Manager of the mine or from Principal of technical institution etc. or from the Training Officer of such VT Center where gas-testing arrangements are provided, to the effect that in view of his knowledge of Gas-testing etc. the candidate is fit to be admitted in gas-testing examination. For Winding Engine Driver's exam, the certificate issued by manager should clearly mention the type of winding engine on which experience was obtained.

(c) Every application for any examination as aforesaid shall be accompanied by:

(i) a certificate of age granted by a Gazetted Officer of the Government or by the headmaster of a recognized school of a Higher Secondary or equivalent standard:

Provided that in the case of a person holding a matriculation or equivalent certificate, such certificate shall be submitted as evidence of age;

(ii) a medical certificate obtained not more than two years prior to the date of his application, from a qualified medical practitioner not below the rank of a Civil Assistant Surgeon or from a Certifying Surgeon, certifying the candidate to be free from deafness, defective vision or any other infirmity, mental or physical, likely to interfere with the efficiency of his work; and

(iii) a certificate from some person of good repute as to the general good conduct and sobriety of the candidate.

(2) No persons shall be admitted as a candidate to any examination for Manager's, Surveyor's, Overman's or Sirdar's Certificate unless he has passed the Secondary School examination of a

recognized Board of its equivalent, and for an Engine-driver's Certificate unless he satisfies the Board that he is literate.

(3) No person shall be admitted as a candidate at an examination for a Manager's or Overman's Certificate, which is not restricted to mines having opencast workings only, unless he has obtained a Sirdar's Certificate not so restricted and a Gas testing Certificate, and no person shall be admitted as a candidate at an examination for Manager's or Overman's Certificate restricted to mines having opencast workings only unless he has obtained a Sirdar's Certificate:

Provided that this clause shall not apply-

(i) to a candidate for a Manager's Certificate, if he already holds a Overman's Certificate granted under regulation 22 and

(ii) to candidate for a Manager's First Class Certificate if he already holds a Manager's Second Class Certificate granted under regulation 22.

**16. Practical experience of candidates for Manager's examinations** – (1) No persons shall be admitted as a candidate at any examination for a First or Second Class Manager's Certificate unless other than an exchange certificate to which the provisions of regulation 21 apply under the Board is satisfied that he has had practical experience in a coal mine for a period of not less than six and five years respectively:

Provided that a candidate:

(a) who has received a diploma in mining or mining engineering or other equivalent qualification approved in that behalf by the Central Government, such period shall be reduced to five and four years respectively, and

(b) who has passed a degree in mining engineering or other equivalent qualification approved in that behalf by the Central Government, such period shall be reduced to two and one year respectively.

Provided further that aforementioned period of experience shall be obtained after acquiring the relevant academic qualification.

(2) The nature of the practical experience required of a candidate for Manager's Certificate shall be approved by the Board and gained in one of the following capacities in a coal mine having an average monthly output of not less than 1000 tonnes.

(a) as a workman, or mining apprentice having direct practical experience of getting coal and of stonework, timbering and repairing; or

(b) as an official in respect of mining operations:

Provided that out of the period of experience required under sub-regulation (1) from candidate for an examination of –

(i) First Class Manager's Certificate not restricted to mines having opencast workings only, a period of not less than eighteen months should have been spent in the workings belowground of a mine;

(ii) Second class manager's certificate not restricted to mines having opencast workings only, a period of not less than twelve months should have been spent in the workings belowground of a mine.

Provided further than the Board may approve a part of the period of the experience gained while engaged in inspections, rescue, research, planning, teaching or any other work, connected with mining operations, so however that, the aforesaid period shall not, inclusive of the period of experience in metalliferous mines approved under regulation 18 exceed six months in case of Second Class and one year in case of First Class Manager's Certificate.

**17. Practical experience of candidates for Surveyor's examinations** – No person shall be admitted as candidate at any examination for a Surveyor's Certificate unless he has satisfied the Board that he has had not less than two years' practical experience of surveying of a type approved by the Board. In case of candidates for a certificate which is not restricted to mines having opencast workings the said experience shall include practical experience for a period of not less than six months of surveying the workings belowground of a mine having an average monthly output of not less than 1000 tonnes or such other mines as the Board may approve in this behalf:

Provided that the aforesaid period of two years shall be reduced to six months in case of a candidate who has received a certificate, diploma or degree in mining, mining engineering or opencast mining, mine surveying, or civil engineering or other equivalent qualification approved in that behalf by the Central Government, subject, however to the condition that in case of a candidate for a certificate which is not restricted to mines having opencast workings, the said six months' experience should have been gained in workings belowground of a mine as aforesaid.

**18. Practical experience of candidates for Sirdar's examinations** – (1) No persons shall be admitted as a candidate at any examination for a Sirdar's Certificate unless the Board is satisfied that he has had practical experience and training in a coal mine for a period of not less than three years:

Provided that such period shall be reduced to a period of one year in the case of a candidate who has received a diploma or certificate in scientific and mining training after a course of at least two years at an educational institution approved in that behalf by the Central Government or who has taken a degree in scientific and mining subject at a university approved in this behalf by the Central Government.

(2) The nature of the practical experience required of candidates for the aforesaid examinations shall be experience of a type approved by the Board and notwithstanding anything contained in sub-regulation (1), the Board may for the purpose approve a part of the period of practical experience, which has been obtained in a mine other than a coal mine up to a period not exceeding one year.

**19. Practical experience of candidates for Engine-driver's Certificates** – No persons shall be admitted as a candidate at any examination for an Engine-driver's Certificate unless the Board is satisfied that he has had practical experience of driving a winding engine or as an assistant to a qualified winding engine driver for a period of at least one year.

**20. Number of attempts at examination** – No person shall be admitted for examination for a particular certificate beyond five attempts.

**20. Fees for grant of Certificates** - (1) Fee in respect of every application for grant of a certificate shall be as notified in official gazette from time to time by the Board of Mining Examination.

(2) Except where the candidate has died before the examination or where fee has been erroneously paid.

(3) Except as aforesaid examination fee once paid shall not be refundable.

**21. Exchange Certificates** – (1) The Board may grant to any person, holding a Manager's, Surveyor's, Engine driver's, Foreman's, Mate's or Blaster's Certificate granted under any law for the regulation of mines in force in any other country or under the Metalliferous Mines Regulations made under this Act, a corresponding certificate of a similar class under these regulations, if he possess such experience and passes] such examination as the Board may stipulate:

Provided that the Board may, subject to such conditions as it may specify, exempt any person from appearing at the examination or part thereof for the grant of an Exchange Certificate.

(2) Every application for the grant of an Exchange Certificate under sub-regulation (1) shall be accompanied by:

- (i) a medical certificate obtained not more than six months prior to the date of his application, from a qualified medical practitioner not below the rank of a Civil Assistant Surgeon or from a Certifying Surgeon certifying the candidate to be free from deafness, defective vision or any other infirmity, mental or physical, likely to interfere with the efficient discharge of his duties; and
- (ii) a certificate from some person of good repute as to the general good conduct and sobriety of the candidate:

Provided that in the case of a Manager's Certificate, the candidate shall also satisfy the Board that he has undergone, for a period of not less than six months, a course of practical training in India in the mines and in a manner approved by the Chief Inspector for the purpose. Before the commencement of his practical training in India as aforesaid, every person shall submit to the Chief Inspector an application in the form prescribed by the Board for the purpose in the bye-laws made under sub-regulation (4) of regulation 13:

Provided further that the aforesaid requirement in regard to practical training may be dispensed within the case of a candidate who has had already obtained not less than six month's practical experience approved by the Board and of the nature specified in sub-regulation (2) of Regulation 16, in a coal mine in India.

(3) Fee as prescribed by the Board of Mining Examination shall be paid in respect of every examination under this regulation.

**22. Duplicate Certificates** – If any person proves to the satisfaction of the Board that he has, without any fault on his part, lost or been deprived of a certificate granted to him under these regulations, the Board may, upon realization of the following fees, and subject to such terms and conditions as it thinks fit, cause a copy of the Certificate to be delivered to him –

- (a) in the case of Manager's or Surveyor's Certificate      Rs.1000.00
- (b) in the case of any other Certificate                              Rs.400.00

The word "DUPLICATE" shall be stamped across every such copy.

**23. Certificates to be delivered to the manager** – When the holder of an [Overman's, Sirdar's, Engine driver's, , Gas-testing Certificate] is employed in a mine in a capacity which requires the possession of the said certificate, he shall deliver such certificate to the manager of the mine in which he is for the time being employed. The manager shall deliver to such person a receipt for the same; and shall retain the certificate in the office at the mine so long as the holder thereof is so employed, and shall return it to the holder on his ceasing to be so employed.



**24. Suspension or cancellation of Manager's, Surveyor's, Overman's, Sirdar's, Engine-driver's or Gas testing Certificates :** - (1) If the Regional Inspector is of the opinion that the holder of a Manager's, Surveyor's, Overman's, Sirdar's, Engine-driver's, or Gas-testing Certificate is incompetent or is guilty of negligence or misconduct in the performance of his duties under the Act or under these regulations, he shall bring the matter to the notice of the Board.

The Board may authorise in writing an Inspector, not being and not below the rank of the Inspector whose report formed the basis of the said opinion, to hold an enquiry to determine whether or not such a person (hereinafter referred to as the delinquent) is fit to continue to hold such certificate. The Board shall, before the beginning of the enquiry, furnish to the delinquent a statement of the case on which the enquiry is instituted.

(2) During such enquiry the Inspector authorised to conduct the enquiry shall be provided with all relevant documents and he shall record:

- (a) the evidence of any witness that formed the basis of the said opinion;
- (b) any evidence that the delinquent may like to give;
- (c) the evidence of any witness that the delinquent may like to produce;
- (d) the evidence of Manager of the mine; and
- (e) any other evidence that may be considered necessary or relevant by the Inspector conducting the enquiry.

Unless the delinquent fails to be present in spite of sufficient notice, the evidence aforesaid shall be recorded in the presence of the delinquent and he shall be given a reasonable opportunity to cross-examine the witness (other than those produced by him). The Inspector conducting the enquiry also may cross-examine the delinquent and the witnesses.

(3) The Inspector who conducted the enquiry shall, within fifteen days from the date of conclusion of his enquiry, send a report to the Board together with his findings, the notes of evidence recorded during the enquiry and other relevant records.

(4) Copies of the notes of evidence and the findings of the Inspector who conducted the enquiry shall also be sent to the delinquent who may submit his written representation to the Board within thirty days from the date of despatch of such copies.

(5) The Board may, after considering the evidence and other records and the written representation, if any, submitted by the delinquent, either cause further enquiry to be made in case and thereupon, or otherwise, either exonerate the delinquent of the charges against him or suspend or cancel the certificate, as it deems fit.

(6) Against any order of the Board under this regulation, an appeal shall lie before Central Government within 30 days of the order.

(7) Where a certificate is suspended or cancelled under this regulation suitable endorsement may be made on such certificate or a duplicate thereof issued under regulation 22.

**25. Retirement age for managers and officials, etc –** (1) No person shall act as a manager or an official or a winding engineman in a mine after attaining the age of 60 years unless he has obtained, within the preceding one year, a medical certificate of fitness certifying him fit to carry out the duties prescribed for him in the Act and in these regulations and orders made thereunder:

Provided that if the Chief Inspector or the Regional Inspector is of the opinion that a person as aforesaid, though less than 60 years of age, is medically unfit to carry on the duties prescribed for him in the Act and in the regulations, and orders made thereunder, the Chief Inspector or the Regional Inspector may, by an order in writing, require such persons to obtain a medical

certificate of fitness within such period, not exceeding three months, as he may specify therein; and no such persons shall continue to act in any capacity as aforesaid after the period so specified unless he has obtained a medical certificate of fitness.

- (2) The medical certificate of fitness as aforesaid shall be obtained from such authority and in such manner as the Board may specify.
- (3) Without prejudice to the requirement to the Sub-Regulation 1 of this Regulation no persons shall act as manager or an official after attaining the age of 65 years.

## CHAPTER – IV : Inspector and Mine Officials

**26. Qualifications of Inspectors** – (1) After the coming into force of these regulations, no new person shall be appointed as Chief Inspector unless he holds a degree in mining engineering of an educational institution approved by the Central Government and also a First Class Manager's Certificate granted under these regulations.

(2) After the coming into of these regulations, no person shall be appointed as an Inspector unless he holds a degree in mining engineering of an educational institution approved by the Central Government and also a First Class Manager's Certificate granted under these regulations:

Provided that –

- (i) in relation to electrical machinery installed in mines, a person holding a degree in electrical engineering of an educational institution approved by the Central Government may be so appointed;
- (ii) in relation to other machinery or mechanical appliances installed in mines, a person holding a degree in mechanical engineering of an educational institution approved by the Central Government may be so appointed; and
- (iii) in relation to the provisions of the Act and of the regulations which relate to matters concerning the health and welfare of persons, a person holding a degree in medicine, surgery, social science or labour welfare, as the case may be, of an educational institution approved by the Central Government or a person holding such other qualifications as the Central Government may approve in this behalf may be so appointed.

**27. Definition – For the purpose of these regulations –**

- (a) all excavations within the mine boundary and all premises, plants, machinery and works as specified in clause (j) of sub-section (1) of section 2 of the Act shall collectively constitute the mine;
- (b) the expression, "average output" of any mine, means the average output per month during the preceding financial year of the total output from all excavations within the specified mine boundaries.

Explanation – For the purpose of this clause, the expression "financial year" means a period of twelve months from the first day of April to the last day of March.

**28. Qualifications and appointment of managers** – (1)(a) No mine shall be opened, worked or re-opened unless there is a manager of the mine, being a person duly appointed and having such qualifications as are required by these regulations.

- (b) No person shall act or be employed as a manager unless he is 23 years of age and is paid by, and is directly answerable to, the owner or agent of the mine.

(2) Except as hereinafter provided in sub-regulation (5), and subject to the provisions of sub-regulation (3), no person shall act or continue to act, or be appointed, as manager of a mine or mines the average output of which corresponds to the figures given in column (I) of the table below unless he holds the corresponding qualifications given in column (ii) thereof:

(i)	(ii)
For belowground mines: (a) In excess of 2,500 tonnes per month (b) not exceeding 2,500 tonnes per month.	A First Class Manager's Certificate not restricted to opencast mines only. A First or Second Class Manager's Certificate not restricted to opencast mines only.
For opencast mines: (c) In excess 20,000 cum per months of material handled (d) Not exceeding 20,000 cum material handled per month	A First Class Manager's Certificate  A First or Second Class Manager's Certificate

Provided that in respect of a mine having both opencast and underground workings a person holding First Class Manager's Certificate not restricted to opencast mines shall only be appointed as the manager of the mine irrespective of production.

Provided further that where special conditions exist, the Chief Inspector may, by an order in writing, direct that in the case of any such mine as is referred to in clause (b) or (d) of the table, the manager thereof shall be the holder of a First Class Manager's Certificate.

(3) Where under the provisions of sub-regulation (2) a person holding a First or Second Class Manager's Certificate has been appointed as manager, a person holding lower qualifications shall not, except with the previous permission in writing of the Chief Inspector and subject to such conditions as he may specify therein, be so appointed during the succeeding twelve months, notwithstanding any reduction in the average output of the mine.

(4) No person shall act, or be appointed, as manager of more than one mine except with the previous permission in writing of the Chief Inspector and subject to such conditions as he may specify therein. No such permission shall have effect for a period exceeding 12 months, unless renewed. The Chief Inspector may at any time, by an order in writing, vary or revoke any such permission in the circumstances under which the permission was granted have altered or the Chief Inspector finds that the manager has not been able to exercise effective supervision in the mines under his charge.

(5) The Chief Inspector may, by an order in writing, and subject to such conditions as he may specify therein, authorise any person whom he considers competent, being appointed to act as manager of any mine or mines for a specified period, notwithstanding that such person does not possess the qualifications prescribed in that behalf by sub-regulation (2); and may by a like order revoke any such authority at any time.

(6)(a) Where by reason of absence or for any other reason, the manager is unable to exercise daily personal supervision or is unable to perform his duties under the Act or these regulations, or orders made thereunder, the owner, agent or manager shall authorise in writing a person whom he considers competent to act as manager of the mine:

Provided that –

- (i) such person holds a Manager's Certificate;
- (ii) no such authorisation shall have effect for a period in excess of 30 days, except with the previous consent in writing of the Chief Inspector and subject to such conditions as he may specify therein;
- (iii) the owner, agent or manager, as the case may be, shall forthwith send by registered post, Speed post or Fax to the Chief Inspector and the Regional Inspector a written notice intimating that such an authorisation has been made, and stating the reason for

- the authorisation, the qualifications and experience of the person authorised, and the date of the commencement and ending of the authorisation; and
- (iv) the Chief Inspector or the Regional Inspector may, except in the case of a persons possessing the qualifications specified in sub-regulation (2), by an order in writing, revoke any authority so granted.
- (b) The persons so authorised shall, during the period of such authorisation, have the same responsibilities, discharge the same duties, and be subject to the same liabilities as the manager.

(7)(a) No manager shall vacate his office without giving due notice in writing to the owner or agent at least 30 days before the day on which he wishes to vacate his office:

Provided that the owner or agent may permit the manager to vacate his office after giving a shorter notice.

- (b) No owner or agent shall transfer, discharge or dismiss a manager unless the manager has been relieved by a duly qualified person as prescribed under sub-regulation (2).
- (c) Nothing in sub-regulation (6) shall confer on the owner, agent or manager the right to authorise during any period of such notice, any person not duly qualified to manage the mine under sub-regulation (2), to act as the manager except in case of illness or other causes over which the manager has no control, or except with the previous written permission of the Chief Inspector and subject to such conditions as he may specify therein:

Provided that the Regional Inspector shall not permit any such authorisation for a period exceeding 60 days from the date on which the mine is worked without a manager duly qualified under sub-regulation (2).

(d) A copy of every such notice and authorisation shall forthwith be sent to the Regional Inspector by registered post, speed post or Fax.

(8)(a) The owner or agent shall provide suitable residential accommodation for the manager and the assistant manager within a distance of twenty five Kilometers from all mine openings; and every manager, under manager and assistant manager shall reside in the accommodation so provided:

Provided that where special difficulties exist which render compliance with these provisions not reasonably practicable, the Regional Inspector may, by an order in writing and subject to such conditions as he may specify therein, grant exemption from the same.

- (b) No manager shall be entrusted by the owner or agent with any work, nor shall he himself perform any work, which will necessitate his frequent or prolonged absence from the mine.
- (c) If any doubt arises as to any matter referred to in the foregoing clauses of this sub-regulation, it shall be referred to the Chief Inspector for decision.

(9) No manager shall act as agent or assistant manager or in any other supervisory capacity in another mine,

**29. Charge report of managers** – When there is a change of manager of any mine the outgoing manager shall hand over to the incoming manager a charge report in form VII of first schedule, giving general information about the mine, sources of dangers, important safety works under execution requiring attention of manager and other important matters from the point view of safety required to be attended by the incoming manager. The charge report shall be signed by both the outgoing and incoming managers. A copy of the charge report duly signed shall be sent to the Regional Inspector of the mines forthwith.

**30. Qualifications and appointment of Safety Officers** – In every belowground mine the average monthly output of which exceeds 5,000 tonnes or in every opencast mine the average monthly material handled of which exceeds 20,000 cum, the manager shall be assisted in the work of promoting safe practices in the mine by a Safety Officer who shall be a person holding the following qualifications:

- (1) in the case of a belowground mine having an average monthly output in excess of 15,000 tonnes, or in case of a mine having opencast workings with an average monthly material handled in excess of 50,000 cum a First Class Manager's Certificate;
- (2) in case of a belowground mine having an average monthly output in excess of 10,000 tonnes, but not exceeding 15,000 tonnes or in case of a mine with opencast working having an average monthly material handled in excess of 20,000 cum but not exceeding 50,000 cum a First or Second Class Manager's Certificate;
- (3) in the case of a belowground mine having an average, monthly output in excess of 5,000 tonnes but not exceeding 10,000 tonnes, holder of a First or Second Class Manager's Certificate or a degree or diploma in Mining or Mining Engineering approved by the Central Govt.

Provided that where special conditions exist, the Chief Inspector may by an order in writing and subject to such conditions as he may specify therein, permit or require the appointment of a Safety Officer in variation of these provisions:

Provided further that where the Chief Inspector is of the opinion that, due to the large size of a mine, or due to other conditions existing at a mine, it is not possible for the Safety Officer to attend to his duties by himself, he may, by an order in writing and for reasons to be recorded therein, require the appointment of such number of persons holding such qualifications as he may specify in the order, to assist the Safety Officer.

**31. Appointment of Assistant Manager-**

(1) In every mine having below ground workings the average monthly output of which exceeds 7,000 tonnes, the manager shall be assisted by assistant managers on the following scale:

Average monthly output	Number of assistant managers
Upto and including 10,000 tonnes	One
Above 10,000 tonnes	One additional assistant manager for every 5,000 tonnes output or part thereof in excess of 10,000 tonnes

Provided that in a mine where the average output exceeds 20,000 tonnes, at least one of the under managers or assistant managers as aforesaid shall hold a First Class Manager's Certificate:

(2) In every mine having opencast workings the manager shall be assisted by atleast one assistant manager in each working shift on the following scale:

Average monthly material handled	Number of assistant managers
More than 1.5 lakh cum and less than 7.5 lakh cum	One assistant manager for every 50,000 cum and atleast one Assistant Manager shall be holding First Class Certificate in each shift.
Above 7.5 lakhs cum	One Assistant Manager for every

1,00,000 cum of material handled and at least one Assistant Manager shall be holding First Class Certificate in each shift.

(3) "The Chief Inspector may, by an order in writing and subject to such conditions as he may specify therein, permit or require the appointment of assistant managers in variation with these provisions.

**32. Qualifications and appointment of ventilation officer;** - In every below ground mine consisting of gassy seams of first degree, the average monthly output of which exceeds 5,000 tonnes or of second or third degree the average monthly output of which exceeds 2500 tonnes, the manager shall be assisted in the work of supervising the maintenance of the ventilation system of the mine in accordance with the provisions of these regulations by a ventilation officer who shall be a person holding the following qualifications:

(a) in the case of a mine consisting of gassy seams of first degree and having an average output in excess of 15,000 tonnes or a mine consisting of gassy seams of second or third degree and having an average output in excess of 10,000 tonnes, a Manager's Certificate; and in every other case, a Manager's Certificate or a Degree, Diploma or Certificate in Mining or Mining Engineering approved by Central Govt.

Provided that, where special conditions exist, the Regional Inspector may, by an order in writing and subject to such conditions as he may specify therein, permit or require the appointment of a ventilation officer in variance of these provisions or require the appointment of such number of persons to assist the ventilation officer, as may be specified in the order:

Provided further that, in the case of a mine consisting of gassy seams of first degree and having an average output less than 15,000 tonnes, the Regional Inspector may, considering the nature and extent of working therein, permit, by an order in writing and subject to such conditions as he may specify therein combining of the post of ventilation officer with that of safety officer appointed under Regulation 30.

Explanation: For the purpose of this regulation the expression "average output" means the average per month of the total output during the preceding financial year from the belowground workings of all seams. Where the mine consists of gassy seams of different degrees, the aforementioned average output shall be deemed to be from the seam or seams of the highest degree of gassiness.

**33. Appointment of engineers** – (1) At every mine where machinery is used, an engineer holding a degree or diploma in mechanical engineering, electrical engineering, mining machinery or mining engineering or equivalent qualification shall be appointed to hold general charge of such machinery, and to be responsible for its installation, maintenance and safe working.

Provided that where electrical energy at medium voltage and above is used and the installed capacity of all electrical equipment is 5 mega watts and above, an engineer holding a degree or diploma in electrical engineering or equivalent qualification shall be appointed to hold charge of all the electrical equipment installed at the mine in addition to that specified above.

Provided further that nothing in this sub-regulation shall be deemed to prohibit the employment of two or more engineers at one mine so long as the jurisdiction and sphere of responsibility of every such engineer is defined by the manager in writing.

(2) Notwithstanding anything contained in sub-regulation (1) the Chief Inspector may, by order in writing, specify any qualification in addition to those referred to in that sub-regulation in respect of

a mine or class of mines, if having regard to the conditions obtaining in such mine or class of mines, he is satisfied that it is necessary to do so in the interests of safety.

(3) No person shall undertake the duties of an engineer of more than one mine without the previous permission in writing of the Regional Inspector and subject to such conditions as he may specify therein. The Regional Inspector may at any time, by an order in writing, vary or revoke such permission.

(4) Where by reason of temporary absence by any cause, the engineer, appointed under sub-regulation (1) is unable to perform his duties, the manager shall authorise in writing a person whom he considers competent to act in his place:

Provided that –

- (a) notice of every such authorisation shall be sent to the Regional Inspector forthwith;
- (b) no such authorisation shall have effect for a period in excess of 30 days except with the previous written consent of the Regional Inspector and subject to such conditions as he may specify therein; and
- (c) the Regional Inspector may by an order in writing, revoke any authority so granted.

**34. Appointment and qualifications of senior officials** – (1) At every mine, one or more overman shall be appointed to hold charge of the different districts of the mine on each working shift unless otherwise specified by the Regional Inspector of Mines.

(2) The district assigned to an overman under sub-regulation (1) shall not be of such a size, nor shall any additional duties other than his duties under these regulations be such, as are likely to prevent him from carrying out in a thorough manner the duties prescribed for him under these regulations.

(3) For the purpose of this Regulation every person employed as an official subordinate to the manager and superior to the Sirdar shall hold either a Manager's Certificate or an Overman's Certificate.

**35. Appointment of surveyors** – (1) At every mine, one or more persons holding a Surveyor's Certificate shall be appointed to be the Surveyor for carrying out the surveys and levellings and for preparing the plans and sections required under the Act or the regulations, or orders made thereunder.

(2) No person shall be appointed as a surveyor of more than one mine or in any other capacity in the same mine, without the previous permission in writing of the Regional Inspector and subject to such conditions as may be specified therein:

(3)(a) The number of surveyors required to be appointed shall be on the following scale namely:

The average monthly output in tonnes	No. of Surveyors
For below ground mines	
8,000 tonnes and below	One
Above 8,000 tonnes	One for every additional 15,000 tonnes or part thereof:
For opencast mines	
The average monthly material handled in cum	No. of Surveyors
50,000 cum upto 9.00 lakhs cum	One for every 3.0 lakhs cum
Above 9.0 lakhs cum	One every 5.00 lakhs cum

Provided that for calculating the output of the belowground mine only half of the output in the mine obtained from the depillaring operations shall be taken into consideration.



(b) Notwithstanding anything contained in this regulation, the Chief Inspector may, by an order in writing and subject to such conditions as he may specify therein, permit or require the appointment of surveyors in variation of these provisions depending upon the conditions prevailing in the mines.

If a mine has more than one surveyor each shall carry the duties and the responsibilities of the surveyor for the part or section of the mine to be assigned in writing by the owner, agent or manager:

Provided that the owner, agent or manager shall appoint one of the surveyors to be responsible for the preparation and maintenance of the plans required to be prepared and maintained under these regulations who shall also be responsible for co-ordination and overall supervision of survey work in the mine.

**36. Appointment of Officials and competent persons** – (1)(a) The owner, agent or manager shall appoint such number of competent persons, including officials and technicians as is sufficient to secure, during each of the working shifts –

- (i) adequate inspection of the mine and the equipment thereof;
- (ii) a thorough supervision of all operations in the mine;
- (iii) the installation, running and maintenance, in safe working order, of all machinery in the mine; and
- (iv) the enforcement of the requirements of the Act and rules and regulations framed thereunder

(b) Without prejudice to the requirement of clause (a), where the mine is worked on more than one shift, the owner, agent or the managers shall arrange that during the afternoon shift and the night shift, the mine is under the general supervision of at least an assistant manager, if any, and of an experienced overman in other cases.

(2) It shall be the responsibility of the manager to see that the persons so appointed are competent to perform the duties assigned to them. No person shall be so appointed unless he is paid by the owner or agent and is answerable to the manager.

Provided that the Chief Inspector under special circumstances may vary the requirements of this sub-regulation by an order in writing.

(3) Copies of all appointments made under sub-regulation (1) shall be entered in a bound-paged book kept for the purpose. A list of all such competent persons shall also be maintained.

(4) Without prejudice to the requirements of sub-regulation (2), every manager on taking over charge of a mine, shall satisfy himself that all persons already appointed under sub-regulation (1) are competent to perform the duties assigned to them; and if he finds them competent, he shall either countersign their authorisations or issue fresh ones.

**37. General Management** – (1) The owner, agent and manager shall provide for the safety and proper discipline of persons employed in the mine.

(2) Except in a case of emergency, no person who is not an official or a competent persons shall give, otherwise that through the manager, instructions to a person employed in a mine, who is responsible to the manager.

## **CHAPTER-V: Duties and Responsibilities of Workmen, Competent Persons and Officials**

**38. Duties and responsibilities of Owner** – (1) In taking preventive and protective measures the owner should assess the risk and deal with it in the following order of priority:

- (a) Eliminate the risk;
- (b) Control the risk at source;
- (c) Minimize the risk by means that include the design of safe work systems; and
- (d) In so far as the risk remains, provide for the use of personal protective equipment, having regard to what is reasonable, practicable and feasible, and to good practice and the exercise of due diligence.

(2) Owners shall take all necessary measures to eliminate or minimize the risks to safety and health in mines under their control and in particular;

(a) ensure that the mine is designed, constructed and provided with electrical, mechanical and other equipment, including a communication system, to provide conditions for safe operation and a healthy working environment;

(b) ensure that the mine is commissioned, operated, maintained and de-commissioned in such a way that workers can perform the work assigned to them without endangering their safety and health or that of other persons;

(c) take steps to maintain the stability of the ground in which persons have access in the context of their work;

(d) where practicable, provide, from every underground workplace, two exits each of which is connected to separate means of egress to the surface;

(e) ensure the monitoring, assessment and regular inspection of the working environment to identify the various hazards to which the workers may be exposed and to assess their level of exposure;

(f) ensure adequate ventilation for all underground workings to which access is permitted;

(g) in respect of zones susceptible to particular hazards, draw up and implement an operating plan and procedures to ensure a safe system of work and the protection of workers;

(h) take measures and precautions appropriate to the nature of a mine operation to prevent, detect and combat the start and spread of fires, explosions and inundations;

(i) ensure that, when there is serious danger to the safety and health of workers, operations are stopped and workers are evacuated to a safe location; and

(j) when managers or supervisors observe non-compliance with safety and health regulations or codes of practice by any person they should ensure that corrective actions are taken immediately. If such action is unsuccessful, the problem should be referred to a higher level of management immediately.

(3) The owner shall prepare an emergency response plan specific to each mine for reasonably foreseeable industrial and natural disasters.

(4) where workers are exposed to physical, chemical or biological hazards, the owner shall:

(a) inform the workers, in a comprehensible manner, of the hazards associated with their work, the health risks involved and relevant preventive and protective measures;

(b) take appropriate measures to eliminate or minimize the risks resulting from exposure to those hazards;

(c) where adequate protection against risks of accident or injury to health including exposure to adverse conditions cannot be ensured by other means, provide and maintain at no cost to the worker, suitable protective equipment, clothing as necessary and other facilities as defined by these regulations; and,

(d) provide workers who have suffered from an injury or illness at the workplace with first aid, appropriate transportation from the workplace and access to appropriate medical facilities.

(5) The owner shall ensure that:

- (a) Adequate training and re-training programs and comprehensible instructions are provided for workers, at no cost to them, on safety and health matters as well as on the work assigned;
- (b) adequate supervision and control are provided in each shift to secure the safe operation of the mine;
- (c) a system is established so that the names of all persons who are underground can be accurately known at any time, as well as their probable location;
- (d) all accidents and dangerous occurrences are investigated and appropriate remedial actions are taken; and
- (e) a report as specified by these regulations is made to the Regional Inspector of Mines and to the Chief Inspector of Mines on accidents and dangerous occurrences.

(6) The owner shall ensure regular health surveillance of workers exposed to occupational health hazards specific to mining operations.

**39. General responsibilities of suppliers, manufacturers and designers-** Those who design, manufacture, import, provide or transfer machinery, equipment or substances for use in coal mines shall ensure

- (a) that the machinery, equipment or substances do not entail dangers for the safety and health of those using them correctly.
- (b) make available:
  - (i) information concerning their requirement for the correct installation and use of machinery and equipment and the correct use of substances;
  - (ii) information concerning the hazards of machinery and equipment, the dangerous properties of hazardous substances and physical agents or products;
  - (iii) information on how to eliminate or control risks arising from the identified hazards associated with the products.

**40. Responsibilities of contractors –**

(1) All contractors deployed in a mine for any work shall,

- (a) establish effective ongoing communication and coordination between appropriate levels of the mine prior to commencing work, which should include provisions for identifying hazards and the measures to eliminate and control risks ;
- (b) ensure arrangements for reporting work related injuries and diseases, ill health and incidents among the contractors' workers while performing work for the mine;
- (c) provide relevant workplace safety and health hazards awareness and training to their workers prior to commencing and as work progresses as necessary;
- (d) ensure that all provisions of the Mines Act and its subordinate legislation are followed.

(2) When using contractors, the owner, agent and manager shall ensure that :

- (a) the same safety and training requirements apply to the contractors and their workers as to the workers to the establishment;
- (b) where required, only such contractors are used that have been duly registered or hold licenses;
- (c) the contracts specify safety and health requirements as well as sanctions and penalties in case of non-compliance. Contracts should include the right for mine officials to stop the work whenever a risk of serious injury is apparent and to suspend operations until the necessary remedies have been put in place.

**41. Duties of persons employed in mines –** (1)(a) Every person shall strictly adhere to the provisions of the Act and of the regulations and orders made thereunder, and to any order or direction issued by the manager or an official with a view to the safety or convenience of persons

not being inconsistent with the Act and these regulations; nor shall he neglect or refuse to obey such order or directions.

(b) No persons shall interfere with, impede or obstruct any person in the discharge of his duties, nor shall he offer or render any service, or use any threat, to any other person with a view to preventing him from complying with the provisions of the Act and of the regulations, and orders made thereunder or from performing his duties faithfully. If any person who receives any such offer or threat, fails to inform the manager forthwith, he shall also be guilty of a breach of these regulations.

(2) Every person shall, immediately before proceeding to work and immediately after terminating work at the end of his shift, have his name recorded in the register maintained under section 48(4) of the Act. In case of workings belowground, he shall get his name recorded every time he proceeds belowground or returns to the surface.

(3) Every person employed in a mine shall,

(a) take reasonable care for their own safety and health that of other persons who may be affected by their acts and omissions at work including the proper care and use of protective clothing, facilities and equipments placed at their disposal;

(b) report forthwith to their immediate supervisor any situation which they believe could present a risk to their safety or health or that of other persons, and which they cannot properly deal with themselves;

(c) co-operate with the employer to permit compliance with the duties and responsibilities placed on the employer

(4).(a) No person shall, except with the authority of an official, remove or pass through any fence, barrier or gate, or remove or pass any danger signal.

(b) Subject to any directions that may be given by an official, no person shall, except for some justifiable purpose, go into any part of the mine other than that part in which he works, or travels to or from his working place by any roadway other than the proper traveling roadway

(5) No person shall sleep whilst on duty.

(6) Subject to the provisions of the Act and of these regulations and orders made thereunder, no person shall remain in a mine beyond the period over which his shift extends.

**42. Duties of competent persons** – Every competent person shall be subject to orders of superior officials, and shall not –

(a) depute another person to perform his work without the sanction of his superior official;

(b) absent himself without having previously obtained permission from such official for the term of his absence or without having been relieved by a duly competent person; and

(c) without permission from such official, perform during his shift any duties other than those for which he has been appointed.

**43. Duties of officials** – (1) Every official shall carry out the duties assigned to him by the manager or assistant manager in accordance with the provisions of the Act and of the regulations and orders made thereunder.

(2) Every official shall, to the best of his power, see that persons under his charge understand and carry out their respective duties properly.

**44. Duties and responsibilities of managers** – (1)(a) In every mine daily personal supervision shall be exercised by the manager; and in case of workings belowground, he shall visit and examine the workings belowground on at least four days in every week to see that safety in every respect is ensured. Of these inspections one at least in every fortnight shall be made during the night shift:

Provided that when owing to any unavoidable cause he is unable to carry out the aforesaid duties or inspections, he shall record the reason for the same in the book kept under clause (b).

(b) The manager, and the assistant manager, if any, shall each maintain, in a bound paged book kept for the purpose, a diary; and shall record therein the result of each of his inspections and also the action taken by him to rectify the defects noticed, if any.

(2) The manager shall make arrangements for all overmen and other officials to meet him or the assistant manager once in every working day for the purpose of conferring on matters connected with their duties.

(3)(a) The manager shall see that a sufficient supply of proper materials and appliances for the purpose of carrying out the provisions of the Act and of the regulations or orders made thereunder and for ensuring the safety of the mine and the persons employed therein, is always provided at the mine; and if he be not the owner or agent of the mine, he shall report in writing to the owner or agent when anything is required for the aforesaid purpose, that is not within the scope of his authority to order. A copy of every such report shall be recorded in a bound-paged book kept for the purpose.

(b) On receipt of a requisition under clause (a) the owner or agent shall promptly arrange to supply the said materials and appliances, and shall within three days of receipt of the requisition, intimate to the manager in writing the action taken to meet the requisition.

(4) The manager shall assign to every competent person his particular duties, shall on his appointment make over to him a copy of the regulations, rules and bye-laws and of any orders made thereunder which affect him, and shall take all possible steps to ensure that every such person understands, carries out and enforces the provisions therein contained in a proper manner.

(5) The manager shall provide every overman with a tracing, upto the date of the last survey, showing the workings of the district belowground assigned to him. Where any work of reduction or extraction of pillars is being carried out, such tracing shall show clearly the order in which such reduction or extraction is to be carried out.

(6) The manager shall examine all reports, registers and other records required to be made or kept in pursuance of the Act or of the regulations, or orders made thereunder, and shall countersign the same and date his signature. He may, however, by an order in writing, delegate this duty to an assistant manager except in cases where a specific provision is made requiring the manager to countersign a report or register.

(7) The manager shall give attention to, and cause to be carefully investigated, any specific representation or complaint that may be made to him in writing by an employee of the mine as to any matter affecting the safety or health of persons in or about the mine.

(8) When any accident, resulting in serious bodily injury to any person or in loss of life, occurs in a mine, the manager shall inspect the site of accident as soon as possible, and shall also either himself or through an assistant manager, have an inquiry made into the cause of and circumstances attending the accident. The result of every such enquiry and a plan and sections and wherever practicable a photograph or photographs of the site of the accident showing details

shall be recorded in a bound paged book kept for the purpose and copy thereof shall be furnished to the Chief Inspector and Regional Inspector within fifteen days of the accident.

(9) The manager shall perform such other duties as have been prescribed in that behalf under the Act, the regulations, or orders made thereunder.

(10) The manager may suspend or take such disciplinary action against any employee for contravention of any of the provisions of the Act, these regulations or orders made thereunder.

**45. Duties of Safety Officers**– (1) The duties of the Safety Officer shall be :

(a)(i) to visit surface and underground parts of the mine with a view to meeting the workers on the spot to talk to them on matters of safety, inviting suggestions thereon;

(ii) to take charge of the newly recruited staff and show them around the mine pointing out the safe and unsafe acts during the course of their work in the mine;

(b)(i) to investigate all types of accidents and incidents in the mine including minor accidents; to analyse the same with a view to pinpointing the nature and common cause of accidents in the mine;

(ii) to maintain detailed statistics about mine accidents and to analyse the same with a view to pinpointing the nature and common causes of the accidents in the mine;

(iii) to study and apprise the manager of all possible sources of danger such as inundation, fire, coal dust and others;

(c)(i) to hold safety classes and give safety talks and lectures to the members of the supervisory staff;

(ii) to organize safety weeks and other safety education and propaganda in mine;

(d) to see that all concerned mine employees are fully conversant with various standing orders, codes of practices (such as those relating to stoppage of mine mechanical ventilators and to the occurrence of a fire or other emergency in the mine) and Systematic Support Rules;

(e) to provide assistance in the formulation of programme for training at the mine level; including vocational training, training in gas-testing, and training in First Aid;

(f) to report to the manager as a result of his visits to the various facts of the mine, as to whether the provisions of the Mines Act, Regulations and Rules made thereunder are being complied with in the mine;

(g) to promote safety practices generally and to lend active support to all measures intended for furthering the cause of safety in the mine and ensure reasonable compliance to the recommendations of the Safety Committee and Work man's Inspectors ; and

(h) to assist the manager in any other matter relating to safety in the mine.

(2) The safety officer shall ensure that an appropriate emergency plan as required under these regulations is put in place and the requirements of the same are strictly implemented.

(3) Except in an emergency no duties other than those specified above shall be assigned to the Safety Officer.

(4) The Safety Officer shall maintain in a bound paged book a detailed record of the work performed by him every day.

**46. Duties and responsibilities of assistant managers**– (1) The assistant manager shall carry out the duties assigned to him by the manager, and shall see that in the part of the mine assigned to him by the manager, all work is carried out in accordance with the provisions of the Act and of the regulations and orders made thereunder.

(2) The assistant manager shall, subject to the orders of the manager, visit and examine the workings under his charge, or part thereof, on every working day.

(3) The assistant manager shall, from time to time, carefully examine every travelable part of the mine or part thereof placed under his charge, whether frequented by workpersons or not.

(4) In the absence of the manager, the assistant manager shall have the same responsibility, discharge the same duties and be subject to the same liabilities as the manager, but not so as to exempt the manager therefrom.

**47. Duties of Ventilation Officer** – The Ventilation Officer shall,

(a)(i) ensure the observance of all regulations and orders concerning ventilation, spontaneous heating, fire, gas and coal dust including dust suppression and shall advise the manager if any alteration is required in the ventilation system to ensure adequacy of ventilation in compliance with the regulations or orders;

(ii) advise the manager on day to day problems of ventilation, gas and coal dust;

(iii) maintain close liaison with the assistant managers and other supervisory staff, and assist them in their day-to-day ventilation problems;

(b)(i) carry out ventilation surveys of the mine and undertake any other special work relating thereto as may be directed by the manager from time to time;

(ii) take such steps as are necessary to ensure compliance with the ventilation standards required in terms of these regulations or otherwise;

(c)(i) check the speed of the main mechanical ventilator, amperage drawn by its electric motor, and fan drift water gauge at least once in a day. Any unusual change in the water gauge shall be investigated by him and reported to the manager;

(ii) determine the efficiency of the main mechanical ventilator once at least in every three months and get the fan blades and the fan drift cleaned when necessary;

(iii) ensure that copies of standing orders in the event of stoppage of the main mechanical ventilator are posted at conspicuous places at the mine, and see that the person concerned understand the instructions contained therein;

(d) ensure the correct siting and installation of auxiliary and booster fans underground;

(e) examine at frequent intervals all ventilation appliances like doors, brattices, air crossings, regulators, stoppings, booster and auxiliary fans, ventilation ductings and other devices of ventilation control in the mine and report any defect in the same to the manager. He shall take necessary steps to stop any leakage through such devices and see that the ventilation appliances are maintained in good order;

(f) see that sufficient quantity of good air is coursed into all working places and reaches all other workings belowground. For this purpose, he shall, as may be required by regulations, otherwise –

- (i) see that the ventilation stoppings and brattices etc. are constructed as per specifications and are kept extended sufficiently;
- (ii) see that measurements of air quantity, temperature and humidity are regularly taken as prescribed and bring up-to-date the entries on the check boards provided at each air measurement station;
- (iii) determine the Ventilation Efficiency Quotient;
- (iv) see that mine air samples are properly collected at the appointed time and place, and analysed immediately; and
- (v) make observations for inflammable gas;

(g)(i) maintain separate tracing of the ventilation, rescue, stone dusting and the dust sampling plans and bring them up-to-date;

(ii) bring to the notice of surveyor any changes in the ventilation system or ventilation appliances and shall see that all old markings on the ventilation and rescue plans are corrected and new ventilation circuits are shown forthwith;

(h) regularly check the barometer provided at the mine. Any unusual change in barometer pressure shall be reported by him to the manager and appropriate actions are taken;

(i) take care of the instruments and apparatus used in the mines for environmental monitoring and ensure that all such instruments are maintained in good order and calibrated at specified intervals;

(j) regularly visit returns of working districts and old workings including fire stoppings, if necessary, for symptoms of spontaneous heatings and fire, report to the manager forthwith any such symptoms observed by him and shall himself take such steps as may be immediately necessary for the safety of the workers;

(k) check the fire fighting measures and take necessary steps by regular rehearsals to ensure that all fire fighting equipments are maintained in working order and the concerned staff are fit and conversant with their duties in the event of a fire in the mine;

(l) (i) take necessary steps for proper cleaning, treatment and suppression of coal dust in the mine and see that the arrangements for wet-cutting at the faces and water spraying at and within 90 metres of the working places are properly installed and function satisfactorily;

(ii) see that the stone dust barriers are correctly sited, properly constructed and maintained in accordance with the statutory requirements or otherwise; and bring the entries on the check boards up-to-date from time to time;

(iii) see that samples of mine roadway dust and of airborne dust samples (if required by the manager) are regularly taken in the prescribed manner;

(m) collect air samples from sealed off areas, exhaust gases from diesel vehicles and from such other places as may be required by the manager;

(n) see that all records and reports relating to ventilation and coal dust are kept up-to-date and entries are made regularly in the check boards for ventilation and stone dust barriers:



Provided that nothing contained above shall exempt the manager, assistant manager, surveyor, overman, sirdar or any other competent person concerned, from any corresponding duties and responsibilities prescribed for them in these regulations or any orders made thereunder; and

(p) assist the manager in any matter relating to the ventilation of the mine.

(2) Except in an emergency no duties other than those specified above shall be assigned to the ventilation officer.

(3) The Ventilation Officer shall maintain, in a bound paged book, a detailed record of the work performed by him every day.

**48. Duties and responsibilities of overman** – The overman shall strictly observe the following provisions, namely –

(1) (a) Subject to the orders of superior officials, he shall have responsible charge and control of such part of the mine, and shall carry out such duties, as may be assigned to him by the manager.

(b) He shall, while on duty, carry a tracing of the workings of such district and shall keep the tracing up-to-date.

(c) He shall, in his district, make the inspections and reports required by these regulations.

(d) He shall be responsible to see that the subordinate officials and competent persons in his district carry out their respective duties in a proper manner.

(e) He shall, to the best of his power, enforce in his district the provisions of the Act, of these regulations and orders made thereunder, and shall, subject to the control of the manager and the assistant manager, if any, give such directions as may be necessary to ensure compliance with those provisions, and to secure the safety of the district and the safety and proper discipline of the persons employed therein.

(2) He shall see that sufficient supplies of timber brattice and other necessities required for the safe working of his district are kept in convenient places therein.

(3) (a) He shall see that every air-crossing, stopping, door, brattice and other ventilation device is maintained in good order.

(b) He shall, in his district, see that the ventilation is effective; and when brattices or air pipes are required to be used for the ventilation of the working places, he shall see that they are kept sufficiently advance to ensure that an adequate amount of air reaches every such working place.

(c) He shall have power to send out of the mine any person under his charge infringing or attempting to infringe any provision of the Act or of the regulations or orders made thereunder, or failing to carry out any direction given with regard to safety; and shall report in writing any such infringement or attempted infringement or failure to the manager.

(4)(a) He shall see that all tracks and tramlines are properly laid, graded, ballasted or otherwise packed.

(b) He shall see that the manholes on the haulage roadways are kept safe, clear of any obstruction, and properly white-washed.

(c) He shall see that the stop-blocks, runway switches and other safety devices are fixed and used as required under the regulations, that drag or back-stays are provided and regularly used

behind tubs ascending declines and that a sufficient supply of suitable sprags is provided where tubs are loaded on a gradient or lowered down a gradient by hand.

(d) He shall, if he finds any of the ropes, chains, signals, brakes, jig wheels and post or other apparatus in use in his district to be in an unsafe condition, stop the use of the same forthwith.

(5) He shall be responsible to see that except for the purpose of inspection, examination and repairs every person other than an official or a haulage attendant travels by the travelling roadway.

(6) He shall give prompt attention to the removal of any danger observed or reported to him, and shall see that dangerous places are adequately fenced off.]

(7) He shall, under the direction of the manager, see that approved safety lamps are used and naked lights excluded wherever and whenever danger from inflammable gas is apprehended.

(8) In case of opencast working he shall be responsible to see that-

(a) sides of benches are kept dressed;

(b) stability of benches is not endangered;

(c) haul roads are kept maintained;

(d) stability of overburden dumps is not endangered;

(e) there is no over crowding of men and machinery at the working faces;

(f) that adequate lighting is provided at area under his control

(8)(a) He shall devote the whole of his time to his duties and shall visit each working place in his district as often as may be necessary or possible.

(b) He shall not, except for justifiable cause, leave the district in his charge until he had finished the inspections required under these regulations and any other duties that he is required to perform, or until relieved by a duly appointed substitute.

(c) He shall, if the mine is working in a continuous succession of shifts, confer with the official succeeding him and give him such information as may be necessary for the safety of his district and of persons employed therein.

(9) He shall, at the end of his shift, record in a bound-paged book kept for the purpose a general report in the prescribed format on the performance of all his duties during the shift, including anything concerning the proper working of the mine and the safety and discipline of persons employed in his district.

**49. Duties and responsibilities of Sirdars** – The Sirdar or other competent person appointed under regulation 132 shall strictly observe the following provisions, namely –

(1)(a) Subject to orders of superior officials, he shall have responsible charge and control of the district of the mine assigned to him by the manager or assistant manager.

(b) He shall take reasonable means to ensure the proper observance of the requirements of the Act and of the regulations, and orders made thereunder by persons under his charge and shall, as soon as practicable, report any contravention thereof to his superior official.

(2)(a) He shall make such inspection and reports as are required by these regulations, and in making such examination, he shall pay particular attention to edges of the goaf, if any, for checking supports and for presence of gas.

(b) Except in the case of a mine working in a continuous succession of shifts, he shall, on completion of the first inspection of the district, proceed to the station appointed under regulation

132 and instruct all persons as to their places of work and as to any special precautions necessary to be observed by them.

(c) If he finds any person in a place other than the one assigned to him, he may order such person out of the mine, and shall forthwith report the matter to his superior official.

(d) He shall ensure that no inexperienced person is employed on any work except under the supervision of an experienced person.

(3)(a) He shall see that the roof and sides of all traveling roadways to, and working places in, his district are made and kept secure.

(b) Where the height of any working place in the district in his charge measures from floor to roof exceeds three metres, he shall see that they are kept at convenient places in the district-

- (i) a suitable wooden bunt or pole by which all parts of the roof may be effectively tested by a person standing on the floor; and
- (ii) a ladder of suitable length.

(c) He shall report to his superior official any deficiency in timber, appliances and other necessaries required for the safe working of the district.

(4) Where either of the two ways affording means of egress from the district to the surface is not ordinarily used for travelling, he shall travel, once at least in every seven days, the whole of such way in order to make himself thoroughly acquainted with the same.

(5) He shall see that no timber support is withdrawn except by means of a safety prop-withdrawer.

(6)(a) If he observes any dangerous place during the course of his inspections or if any danger at a place where workpersons are employed is reported to him, he shall, if the danger cannot be removed forthwith withdraw all persons from such place and shall not leave the place until the danger has been removed in his presence or all approaches to the place have been fenced off so as to prevent persons from inadvertently entering such place.

(b) He shall take care that any dangerous operation is carried out with due precaution, and in such cases shall be present throughout whenever any work of clearing falls of ground and setting of supports therein is being carried out.

(c) He shall cause the entrance to every place which is not in actual use or in course of working or extension, to be fenced across the whole width, so as to prevent persons from inadvertently entering such place.

(d) If he finds any accumulation of inflammable or noxious gases, he shall carry out the provisions of regulations 169 and shall not remove such accumulation until he has received instructions in that behalf from his superior official.

(7) He shall, on receipt of information of an accident to any person in his district, proceed at once to the place of accident, inspect the place and, if required, supervise the rescue operations, and shall report or send notice of the accident to the manager or assistant manager.

(8)(a) He shall devote the whole of his time to his duties, and shall not leave the mine until the end of the shift or until relieved by a duly appointed substitute.

(b) If the mine is worked by a continuous succession of shifts, he shall, before leaving his district, confer with the sirdar or competent person succeeding him, and shall acquaint him with all

matters requiring his personal attention and give him such other information as may be necessary for the safety of his district and of the persons employed therein.

**50. Duties and responsibilities of shotfirers** – The shotfirers shall –

- (a) carry out his duties in accordance with the provisions of the regulations and of any orders made thereunder with respect to the transport and use of explosives;
- (b) be responsible for the observance by his assistants, if any, of such provisions and of any direction with a view to safety which may be given to them by a superior official;
- (c) not hand over any explosives to any unauthorised person;
- (d) see that clay, sand or other suitable stemming material is available in sufficient quantities at convenient places;
- (e) be present when shots are being charged and stemmed; and shall himself fire the shots; and
- (f) be responsible, when a shot has misfired, for seeing that the place is adequately fenced, and that the provisions of regulations 207 are strictly observed.

**51. Duties of support man** – The support man shall carry out the orders of the manager or assistant manager, overman, sirdar or other competent person with respect to securing of roof and sides. He shall ensure placement of supports strictly in accordance to the support plan. He shall at once report to the sirdar or other competent person any shortage of support materials in his district. In case use of timber, he shall also be responsible to see that woodcuttings are not left in any working belowground.

**52. Duties of attendants of main mechanical ventilators** – The person in charge of the main mechanical ventilator shall –

- (a) keep the ventilator running at the speed fixed by the manager;
- (b) examine the machinery and observe the pressure-recorded or water gauge and the speed-indicator at intervals of not more than one hour, and shall, enter the readings of the indicator in a bound-paged book kept for the purpose at the fan-house;
- (c) immediately report to his superior official any stoppage of, damage to, or defect or derangement in the machinery, or any unusual variation in the water-gauge or other indicators; shall also immediately report to him any unusual circumstances in regard to mine ventilation which may come to his notice; and
- (d) where the ventilator is continuously operated, shall not leave his post until received by a duly appointed substitute.

**53. Duties of lamp-cabin incharge** – The competent person in charge of a lamp-cabin–

- (a) shall be responsible for ensuring that all lamps in the lamp-cabin including safety lamps are properly maintained as per manufacturers specification and in accordance with the provisions of the regulations;
- (b) shall see that the lamp-cabin and safety lamp-room is kept in a neat and tidy condition, and that all damaged and defective gauges, glasses and other parts of safety lamps are not kept or stored in such room;
- (c) shall see that fire extinguishers or other means of dealing with fires provided in the lamp-cabin and safety lamps room are in good condition and readily available for use;
- (d) shall see that all records required by the regulations for the issue, return and maintenance of lamps including safety lamps are properly maintained;
- (e) shall ensure that every person going below ground is provided with a lamp having adequate charge to sustain at least whole of the shift and

- (f) shall carry out such other duties relating to the maintenance, issue and return of lamps including safety lamps as may be specified by the manager or the or assistant manager.

**54. Duties and responsibilities of surveyors** – (1) The surveyor shall –

- (a) make such accurate surveys and leveling, and prepare such plans and sections and tracings thereof, as the manager may direct or as may be required by the Act or by the regulations or orders made thereunder, and shall sign the plans, sections and tracings and date his signature; and
- (b) be responsible for the accuracy of any plan and section, or tracings thereof that has been prepared and signed by him.

(2) The surveyor shall record in abound-paged book kept for the purpose –

- (a) the full facts when workings of the mine have approached to about 120 metres from the mine boundary, or from disused or waterlogged workings;
- (b) any doubts which may exists concerning the accuracy of the plans and sections prepared under these regulations; and
- (c) any other matter relating to the preparation of the plans and sections that he may like to bring to the notice of the manager.

Every entry in the book shall be signed and dated by the surveyor and countersigned and dated by the manager:

Provided that where in any mine two or more surveyors are employed, each of the surveyors shall make the entries aforesaid in respect of the workings in his jurisdiction or of the plans and sections in his charge.

- (3) Nothing in sub-regulation (2) shall absolve the owner, agent or manager of his responsibility under the Act and under these regulations or orders made thereunder.

**55. Duties and responsibilities of engineers** – The engineer or other competent persons appointed for the purpose –

- (a) shall, subject to the orders of the manager and other superior official, hold general charge of all machinery at the mine; and shall be responsible for the proper installation, maintenance and safe working of such machinery;
- (b) shall, when any machinery is shifted or newly installed, see that it is given a trial run before it is put into use and shall be present during every such trial run;
- (c) shall be present throughout whenever any work of installing, changing or recapping of any winding rope, or of installing, changing or annealing any suspension gear, is being carried on;
- (d) shall see that the provisions of the Act and of the regulations and orders made thereunder relating to the installation, maintenance, operation or examination of machinery are properly carried out by himself or by subordinate officials, competent persons or workpersons as the case may be, appointed for the purpose; and
- (e) shall, if foreman, electrical supervisor, mechanics, electricians or other subordinate officials or competent persons are appointed for the purpose, examine all reports, registers and other records relating to the installation, maintenance, operation or examination of machinery required to be made or kept in pursuance of the Act, these regulations or orders made thereunder, and shall countersign the same and date his signature.

**56. Duties of winding enginemen** – (1) At the beginning of his shift the winding engineman shall examine the engine, brakes and all appliances in his charge, and shall satisfy himself that they are in good working order.

- (2) Every winding engineman shall during his shift keep the winding engine and apparatus connected therewith properly cleaned and oiled, and shall see that the engine room is clean and free of inflammable material.
- (3) The winding engineman shall immediately report in writing to the engineer or other competent person appointed for the purpose any defect which he has noticed in the engine, brake, indicator, drum, rope or other appliances under his charge.
- (4) The winding engineman shall not allow any unauthorised person to enter the engine room or in any way to interfere with the engine.
- (5) The winding engineman shall thoroughly acquaint himself with, and carefully attend to, the prescribed code of signals; and shall not start the engine until he has received the proper signal to do so. If the signal is indistinct, he shall not start the engine until it has been repeated and he clearly understands it.
- (6) The winding engineman shall avoid jerk in starting, running and stopping the engine, and shall cause the cage or other means of conveyance to be brought gently to rest at any stopping place.
- (7) While persons are being lowered or raised in the shaft, the winding engineman shall not drive the engine at a speed higher than that fixed by the manager for manriding purposes and approved by the Regional Inspector.
- (8) The winding engineman shall not unclutch the drum of his engine until he has assured himself immediately beforehand by testing the brake of the drum against the full power of the engine that the brake is in proper condition to hold the load suspended from the said drum. When the drum is unclutched, he shall use the brake only for the purpose of maintaining such drum stationery, and shall not lower men or materials from an unclutched drum.
- (9) The winding engineman shall on no pretext leave the handle or brake whilst the engine is in motion, or while persons are riding a cage or other means of conveyance in the shaft.
- (10) The winding engineman shall not leave the engine whilst persons are at work in the shaft. Whenever he has occasion to leave the engine, he shall cut off the power and secure the drums with the brake.
- (11) The winding engineman of a winding engine by which persons are lowered or raised in a shaft, shall not leave the engine at the end of his shift unless all the persons have come out of shaft or unless relieved by a duly appointed substitute.

**57. Duties of banksmen and onsetters** – (1) Every banksmen or onsetter shall observe the following provisions, -

- (a) He shall, subject to the orders of a superior official, have full control of the top or bottom of shaft and the inset, as the case may be and shall report to such official any person who, without authority, gives a signal or disobeys instructions.
- (b) He shall thoroughly acquaint himself with, and carefully attend to, the prescribed code of signals, and shall properly transmit the signals by the means provided. He shall not act on any signal the correctness of which he is in doubt, except a signal which he believes to be "to stop". He shall not allow any unauthorised person to give signals.
- (c) He shall immediately report to his superior official any defect in the signalling installation.

- (d) He shall devote the whole of his time of duties, and shall not leave his post during the period of his duty. Where persons are raised or lowered in the shaft, he shall not leave his post at the end of his shift unless all the persons have come out of the shaft or unless relieved by a duly appointed substitute.
- (e) He shall not allow more than the authorised number of persons to enter the cage or other means of conveyance at any one time.
- (f) He shall not, unless specially authorised in writing by the manager in that behalf, allow any persons when riding in a cage or other means of conveyance, to take with him any bulky material other than tools and instruments:

Provided that nothing in this clause shall be deemed to prohibit the carrying, in a cage or other means of conveyance, the explosives by a shotfirer or other competent person.

- (g) After any stoppage of winding for repairs or for any other cause for a period exceeding two hours, he shall not allow any person to ride in the cage or other means of conveyance unless it has been run at least one complete trip up and down the working portion of the shaft.
- (h) He shall not allow any person to ride on the top or edge of any cage or other means of conveyance except when engaged in examination, repair or any other work in the shaft.
- (i) He shall, after persons have entered the cage, see that the cage gates on both sides are in position and closed, before signaling for the cage to be lowered or raised.
- (j) He shall not allow any unauthorised person to handle tubs in or out of the cage. While tubs are being lowered or raised, he shall also see that the catches are holding the tubs properly before signalling the cage or other means of conveyance away. If he notices any defect in the tub-catches, he shall immediately inform his superior official.
- (k) He shall not, at any entrance into a shaft or inset which is provided with gates or fences not worked by the cage or other means of conveyance, begin to remove the gate or fence until the cage or other means of conveyance has stopped at the entrance, and shall close the gate before he has signalled the cage or other means of conveyance away. He shall not permit any unauthorised person to open or interfere with the gate.
- (l) He shall see that all fences and gates provided at the top of the shaft or at any inset are in position.
- (m) He shall not permit any unauthorised person to remove a fence or gate; and if he notices any defect in such fence or gate he shall immediately inform his superior official.
- (n) He shall keep the top of the shaft or the inset and the floor of every cage free from loose material.
- (o) He shall, when long timber, pipes, rails or other material projecting over the top of a cage or other means of conveyance are lowered or raised, see that the projecting ends are securely fastened to the rope, chains or bow.
- (p) He shall, when he suspects that the cages are not working smoothly in the shaft or when he hears anything unusual happening in the shaft while the winding engine is working, immediately give signal to the winding engineman to stop the engine.

(2)(a) At the beginning of his shift, the banks man shall see that the keps are in proper working order.

- (b) The banksman, when he is informed of any danger in the shaft, shall not allow any person to descend except for the purpose of examination or repair; and during the time that such examination or repair is going on, shall be on duty and listen for signals.
  - (c) The banksman shall not permit any person descending the shaft to carry any intoxicating drink or drug, or allow any intoxicated person to descend.
- (3) He shall not leave his place of work unless duly relieved by his successor.

**58. Duties of haulage attendants, etc.** – (1) At the beginning of his shift, the haulage engineman shall examine the engine, its brake and all appliances in his charge, and shall satisfy himself that they are in good working order.

(2) The haulage engineman shall, during his shift keep the haulage engine and apparatus connected therewith properly cleaned and oiled, and the engine-room clean and free of inflammable material.

(3) The haulage engineman shall report immediately to the engineer or other competent person appointed for the purpose any defect which he has noticed in the engine, drum, rope or other appliances under his charge.

(4) Whenever the haulage engineman has occasion to leave the engine, he shall cut off the power and secure the engine with the brake.

(5) The haulage engineman and signaller shall not allow any unauthorised person to enter the engine-room or in any way to interfere with the engine or signal, as the case may be.

(6) Every haulage engineman and signaller shall thoroughly acquaint himself with, and carefully attend to, the prescribed code of signals. The haulage engineman shall not start the engine until he has received the proper signal to do so. If the signal is indistinct, he shall not start the engine until it has been repeated and he clearly understands it.

(7) The person in charge at the top of any haulage plane or incline shall see that the stop-block are blocking the way, before allowing any tub to be brought on to the top landing; and shall cause the tubs to be securely coupled to each other and to the rope or chain, before the stop block is opened. In case any alternative safety appliance is provided, he shall cause the same to be brought into use on every such occasion.

(8) The person who is responsible for the attachment, to the haulage rope, of any tub or set of tubs at any stopping place on any haulage plane or incline, shall see that no person remains in a position of danger at or near such stopping place while the rope is in motion.

(9) The person in charge of any tubs or set of tubs, which it is intended to send up any haulage plane or incline on which drags or back-stays are required to be used, shall securely fix the drag or back-stay or cause it to be so fixed, before such tub or set of tubs is set in motion.

(10) The person in charge at the top or bottom of the incline shall see that no unauthorised person rides on any tub.

(11) Before a train of side-tipping tubs is set in motion, the person in charge shall see that the safety catches of all such tubs are properly secured.

**59. Duties of Locomotive drivers**– (1) The locomotive driver shall, before commencing work in his shifts, ensure that the audible signal, lights and the brakes of the locomotive are in proper working order.



- (2) The locomotive driver shall not work the locomotive unless the locomotive is fitted with sufficient headlights as prescribed.
- (3) The locomotive driver shall immediately report to the engineer or other competent person appointed for the purpose any defect which he has noticed in the locomotive or any part or fitting thereof.
- (4) The locomotive driver shall not set the locomotive in motion until audible warning has been given by him to persons whose safety may be endangered. He shall also give the audible warning when the locomotive is approaching a level crossing or any place where any person is at work or where the driver's sight is intercepted.
- (5) The locomotive driver shall not leave a locomotive unattended away from the places where it is housed, unless he has ensured that it cannot be set in motion by any unauthorised person.
- (6) The locomotive driver shall ensure that no unauthorised person drives, handles or rides on a locomotive.
- (7) When tubs or wagons are being pushed in front of the locomotive, the shunter shall accompany the leading wagon.

**60. Duties of cutting and loading machine drivers and mechanics/fitters** – (1) Where a machine is required to work on a gradient exceeding 1 in 5 an effective contrivance to prevent the machine running back shall be provided and used.

- (2) No cutting or loading machine shall be fitted or otherwise moved with the cutting or loading tool in motion, except in the actual process of cutting or loading. If the cutting or loading tool, as the case may be, cannot be locked out of gear securely, it shall be removed before flittings is started.
- (3) No person shall make any repair or adjustment to a cutting or loading machine or shall put in or take out a pick, until he has made such arrangements as will prevent the mechanism being inadvertently put into motion while such operation in is being performed.
- (4) No person shall open or replace the cover of any electrical part of a cutting or loading machine, except under the supervision and in the presence of an engineer, electrician or other competent person appointed for the purpose.
- (5) The cutting or loading machine operator shall not leave the machine unless he has completely cut off the power and has assured himself that the moving parts of the machine shall not be inadvertently set in motion.

**61. Duties of magazine incharge** – The magazine incharge shall,–

- (a) subject to the orders of superior officials, be responsible for the proper receipt, storage and issue of explosives in and from the magazine;
- (b) maintain such records of explosives so received, stored and issued, as are required by the rules made under Indian Explosives Act, 1884, and under the Act and under the regulations, rules, byelaws and orders made thereunder;
- (c) not issue explosives to any person other than a competent persons; and when explosives are returned to the magazine, shall re-issue such explosives before issuing fresh stock;
- (d) record in a bound-paged book kept for the purpose the names of various competent persons and the quantity and nature of explosives issued to each of them; and shall similarly record the quantity and nature of explosives returned to the magazine by each such person;

- (e) securely lock each canister before issuing it to the competent persons and shall also check whether the canister is returned to the magazine in locked condition; he shall not issue explosives in any canister which is not in proper repair or which cannot be securely locked;
- (f) not allow any unauthorised person to enter the magazine;
- (g) not issue any explosive for which the prescribed shelf life has expired; and
- (h) if he discovers any shortage of explosives in the magazine forthwith inform the manager in writing.

**62. Duties of register keepers and attendance clerks, etc.** – (1) Every person appointed to keep registers or other records required to be kept by or under the Act or under these regulations, or orders made thereunder, or to make entries therein, shall make the necessary entries in ink and with reasonable dispatch.

(2) During the whole time that persons are at work, the attendance clerk shall remain on duty at attendance cabin which shall be provided near the workplaces, or in case of workings belowground, near the outlet used by the workpersons to enter and leave such workings.

(3) No person who is not an employee of the mine or is not entitled to enter the mine under the Act or under the regulations, or orders made thereunder, or is not so authorised by the manager, shall enter the mine. It shall be the duty of the attendance clerk to see that no such person enters the mine; if any such person forcibly enters the mine, the attendance clerk shall immediately report the matter in writing to the manager.

(4) If after the commencement of a shift any official or a competent person has not got his attendance recorded in the register maintained under section 48(4) of the Act, the attendance clerk concerned shall, within two hours after the commencement of the shift, report the fact in writing to the Manager, or the under manager or assistant manager or other official in charge of the shift.

**63. Duties of dragline, shovel, excavator, surface miner, spreader, mobile transfer conveyor operators, etc.** - Every person authorised to operate a dragline, shovel, excavator or truck etc. shall –

- (a) personally inspect the machine assigned to him in the beginning of his shift and test the various systems, subsystems and protective devices,
- (b) not take out the machine for work nor shall he work the machine unless he is satisfied that it is mechanically sound and in efficient working order,
- (c) maintain a record of every inspection made under clause (a) in a bound paged book kept for the purpose and shall sign every entry made therein,
- (d) keep the cabin or engine room and all window glasses clean,
- (e) keep the walkways, hand-rails, ladder-ways free of loose tools, lubricants or other material that might fall or cause a tripping hazard,
- (f) not allow any unauthorised person to ride on the machine,
- (g) not move or operate the machine when persons are in such proximity as to be endangered,
- (h) not swing the bucket over passing haulage units or over the cabin of units being loaded,
- (i) lower the bucket to ground, switch off the power supply to the machine or stop the prime mover and lock the cabin door before leaving the machine.

**64. Duties of Truck and dumper operators –**

- (1) Every person authorized to operate trucks and dumpers in a mine,
- (a) Shall personally inspect the machine assigned to him in the beginning of his shift and test the various systems, subsystems and protective devices,
- (b) shall not take out the machine for work nor shall he work the machine unless he is satisfied that it is mechanically sound and in efficient working order,

(c) shall not drive the machine under his charge too fast, shall avoid distractions, and shall drive defensively. He shall not attempt to overtake another vehicle unless he can see clearly far enough ahead to be sure that he can pass it safely. He shall sound the audible warning signal before overtaking.

(d) When approaching a stripping/ loading equipment the driver of the truck/dumper shall sound the audible warning signal and shall not attempt to pass the stripping equipment until he has received proper audible signal in reply.

(e) Before crossing a road or railway line he shall reduce his speed, look in both directions along the road or railway line and shall proceed across the road or line only if it is safe to do so.

(f) The driver shall sound the audible warning signal while approaching 'blind' corner or any other points from where persons may walk in front unexpectedly.

(g) The driver shall not operate the truck or dumper in reverse unless he has a clear view of the area behind. He shall give an audible warning signal before reversing a truck or dumper.

(h) The driver shall be sure of clearance before driving through tunnels, archway, plant structures etc.

(2) The driver shall see that the vehicle is not overloaded and that the material is not loaded in a truck or dumper so as to project horizontally beyond the sides of its body and that any material projecting beyond the front rear is indicated by a red flag during day and by red light after day light hours.

(3) The driver shall not allow any unauthorized person(s) to ride on the vehicle.

## CHAPTER-VI : Plans and Sections

**65. General requirements about mine plans** – (1) Every plan or section prepared or submitted in accordance with the provisions of the regulations shall –

- (a) show the name of the mine and of the owner, and the purpose for which the plan is prepared;
- (b) show the true north, or the magnetic meridian and the date of the later;
- (c) show a scale of the plan at least 25 centimeters long and suitably subdivided;
- (d) unless otherwise provided, be on a scale having a representative factor of 2000:1 or 1000:1;

Provided that the Chief Inspector may, by an order in writing and subject to such conditions as he may specify therein, permit or required the plans to be prepared on any other suitable scale; and

- (e) be properly inked in on durable paper, tracing cloth or on polyester film and be kept in good condition.
  - (f) an abstract of all statutory restrictions in respect of any specified workings with a reference to the order imposing the same.
- (2) The conventions shown in the Second Schedule shall be used in preparing all plans and sections required by the regulation.
- (3) The plans and sections required by the regulations shall be accurate within such limits of error as the Chief Inspector may specify by a general or special order:
- (4) The plans and sections required under these regulations shall be maintained up to date which is not earlier than three months :

Provided that where any mine or seam or section is proposed to be abandoned or the working thereof to be discontinued or rendered inaccessible, the plan and section shall be brought up-to-date before such abandonment or at the time of discontinuance; as the case may be, unless such abandonment or discontinuance has been caused by circumstances beyond the control of the owner, agent or manager, in which case the fact that the plan or section is not up-to-date shall be recorded on it.

(5) All the reference stations at surface and the reference points of underground surveys shall be shown in their correct position relative to the survey of India national grid within the limits of error of survey and plotting.

(6) Plans and sections required to be maintained under the regulations shall be kept available for inspection in the office at the mine, and shall not be removed therefrom except by or with the approval in writing of the Regional Inspector, unless a true copy thereof has been kept therein.

**66. Type of plans** – (1) The owner, agent or manager of every mine shall keep the following plans and sections:

- (a) A surface plan showing every surface feature within the boundaries, such as telephone, telegraph or power transmission line, watermain, tram-line, railway, road, river, watercourse, reservoir, tank, bore-hole, shaft and incline opening, opencast working, subsidence and building on the surface.
- (b) An underground plan showing :
  - (i) the position of the workings of the mine belowground;
  - (ii) every bore-hole and shaft with depth, incline opening, cross measure drift, goaf, fire-stopping or seal, water-dam (with dimensions and other particulars of construction), pumping station and haulage roadway;

- (iii) every important surface feature within the boundaries, such as railway, road, river, stream, watercourse, tank, reservoir, opencast working and building which is within 200 metres of any part of the workings measured on the horizontal plane;
- (iv) the general direction and rate of dip of the strata;
- (v) such sections of the seam as may be necessary to show any substantial variation in the thickness or character thereof and showing the working section, and such sections of the strata sunk or driven through in the mine or proved by boring as may be available;
- (vi) the position of every roll, washout, dyke and every fault with the amount and direction of its throw; and

Whenever this plan is brought up-to-date the then position of the workings shall be shown by dotted line drawn through the ends of the workings and such dotted line shall be marked with the date of the last survey.

(c) Where a seam has an average inclination of more than 30 degrees from the horizontal, one or more vertical mine section or sections, as may be required by the Regional Inspector, showing a vertical projection of the mine working.

(d) A ventilation plan, and section where necessary, showing the system of ventilation in the mine, and in particular –

- (i) the general direction of air-current;
- (ii) every point where the quantity of air is measured;
- (iii) every air-crossing, ventilation door, stopping and every other principle device for the regulation and distribution of air;
- (iv) every fire-stopping and its serial number;
- (v) every room used for storing inflammable material;
- (vi) the position of fire-fighting equipment;
- (vii) every water-dam with dimensions and other particulars of construction;
- (viii) every pumping, telephone and ambulance station; and
- (ix) every haulage and travelling roadway.

(e) A joint survey plan showing the details required under clause (b) of regulation 66 and clause (a) of sub-regulation (4). The plan shall be signed by the Surveyor and the Manager of the adjoining mine (s) having working within 60 m of the common boundary (or where the boundary is in dispute, within 60 m. of the boundary claimed by the owner of the mine concerned) signifying the correctness of the common boundary, or the disputed boundaries, as the case may be, and of the position of the workings in relation to one another.

(f) A geological plan of the area of leasehold, on a suitable scale.

(g) A water-danger plan and section showing:

- (i) nullah, river, lake, water pond, water coarse, drainage or any other water bodies on surface or belowground existing upto 200 metres of the mine boundary of the mine.
- (ii) the position of the working belowground; an every borehole and shaft (with depth), drive, crosscut, staple pit, excavation and air passage connected therewith;
- (iii) the position of every dyke, fault and other geological disturbance with the amount and direction of its throw;
- (iv) levels taken in workings belowground at easily identifiable points sufficient in number to allow of the construction of sections along all drives, main headings and haulage roadways;
- (v) every source of water such as river, stream, water-course, reservoir, water-logged opencast workings on the surface, and also the outline of all water-logged workings belowground lying within 60 metres of any part of the workings measured in any direction ;

- (vi) every reservoir, dam or other structure, either above or belowground, constructed to withstand a pressure of water or to control inrush of water, along with reference to its design and other details of construction;
- (vii) surface contour lines drawn at vertical intervals not exceeding five metres (or ten metres in the case of a mine where there are no workings belowground ; or in cases of mines situated in hilly terrain, such other larger interval as the Regional Inspector may permit by an order in writing and subject to such conditions as he may specify) over the whole area lying within 200 metres of any part of the workings; and
- (viii) the highest flood level of the area.

All levels taken above and belowground shall be referred to a plane in relation to a bench mark which shall be established on the surface in the mine. Particulars of this bench mark, together with its height above the Mean Sea Level, shall be shown on the plans and sections maintained under this clause.

(2) Separate plans and sections for the workings of every seam or of every separate section of every seam shall be kept in respect of clause (b), (c) (d) and (e) of sub-regulation (1) :

Provided that in respect of plans maintained under clause (b) of sub-regulation (1), combined plans of all seams, which are lying within nine metres of each other and which are worked at the mine shall also be kept; and in the combined plans, workings in different seams or sections shall be shown in different colours.

(3)(a) The plans maintained under clauses (a) and (b) of sub-regulation (1) shall also show spot levels on the floor of the workings –

- (i) along all haulage roadways, at every roadway junction, except in roadways where tramming is done by manual means where the spot levels may be shown at points not more than 150 metres apart; and
- (ii) in the case of headings which have been discontinued either temporarily or permanently, also at the end of such headings.

Where two drifts in stone or two galleries in coal pass over one another, this shall be clearly indicated on the plans, with appropriate noting, if necessary.

(c) A permanent bench-mark shall be established on the surface, and all levels taken above and belowground shall be referred to a plane in relation to such bench-mark. Particulars of the bench-mark, together with its height above Mean Sea Level, shall be shown on the plans required to be maintained under these regulations.

(4)(a)(i) The plans kept under clauses (a) and (b) of sub-regulation (1) shall also show the settled boundary of the mine, or where the boundary is in dispute, the boundaries claimed by the owner of the mine and by the owners of the mines adjacent to the disputed boundary:

Provided that where it is not possible to show the complete boundary of leasehold on the same plan, an additional key plan or any other suitable scale showing such boundaries and the outline of the workings shall also be maintained.

(ii) The plans required to be kept under clause (b) of sub-regulation (1) shall also show the workings, and all features as prescribed in that clause, both above and belowground of all adjacent mines as are situated within 60 metres, measured on any plane, of the boundary claimed by the owners of the mines.

(b) The owner, agent and manager of every mine shall as soon as its workings extend to within 60 metres of the settled boundary with an adjustment (or where the boundary is in dispute within 60 metres of the boundary claimed by the owner of the adjacent mine) inform the owner, agent or manager of such mine of the fact of such extension and shall also give all reasonable facilities to

the surveyors of its adjacent mines to carry out the surveys and levellings required to be made under this sub-regulation.

(5)(a) The Regional Inspector may, by an order in writing, require such additional details to be shown on the plans and sections required to be kept under these regulations, or the preparation and maintenance of such other plans and sections showing such details and on such scale and within such time as he may specify in the order.

(b) The Regional Inspector may, by an order in writing, require the owner, agent or manager to submit to him within such time such plans and sections, or tracings thereof, as he may specify in the order.

(c) The owner, agent or manager shall, at any time if required by the Regional Inspector, show on any plan or section the then position of the workings of the mine.

**67. Plans and sections to be submitted after abandonment or discontinuance** – (1) Where any mine or seam or section thereof is abandoned or the working thereof has been discontinued over a period exceeding 60 days, the person who was the owner of the mine at the time of abandonment or discontinuance shall, within 30 days after the abandonment or within 90 days after the discontinuance of the workings, as the case may be, submit to the Chief Inspector two true copies of the up-to-date plan and section of the workings of the mine or seam or section maintained under clauses(a), (b), (c) and (e) of regulation 66(1). Every such copy shall show the bearing and distance of at least one of the shafts or openings of the mine from a trijunction or revenue pillar or from any other prominent and permanent surface feature, the position of all water-dams built belowground (with their dimensions and other particulars of construction) and also the spot levels at the ends of the workings:

Provided that if a change of ownership occurs after the abandonment or discontinuance and before the expiry of the 30 days or the 90 days aforesaid, as the case may be, such plans and sections shall be submitted forthwith.

(2) The original or a certified true copy of the plan and section submitted under sub-regulation (1) shall be kept in the office at the mine.

(3) The Chief Inspector may, on such conditions as he thinks fit to impose, and on payment of the cost of preparing copies as determine by him, supply copies of a plan or section submitted to him under sub-regulation (1) or such parts thereof as he thinks fit -

- (a) to any person having a bonafide interest in the mine, seam or section;
- (b) to the owner, agent or manager of an adjacent mine.

**68. Survey instruments and materials**– (a)The owner or agent shall provide adequate number of accurate and reliable survey instruments and materials for the proper carrying out of all survey and levelling work and for the preparation of plans and sections required under these regulations; and no other instruments shall be used in connection with any such survey or levelling work.  
(b) The Survey Instruments so provided shall be checked, maintained and calibrated at regular intervals to maintain their accuracy level.

**69. List of plans, sections and instruments and their storage** – (1) All plans and sections, and tracings or copies thereof, kept at the mine shall be serially numbered.

(2) Suitable arrangements shall be made at every mine for the proper storage and maintenance of every plan and section of all instruments and materials. Such arrangements shall provide for flat storage of every plan and section.

Provided that where special conditions exist the Chief Inspector may by an order in writing permit storage and maintenance of plans and sections in any other form subject to such conditions as he may specify in the order.

(3) Every field book and other notes used in the preparation of plans and sections required under these regulations shall be duly indexed and kept in the office at the mine.

(4) A list of all plans and sections maintained under these regulations, or any orders made thereunder, and tracings or copies thereof; of all survey instruments provided under regulation 68 with their respective types specifications and identification numbers; and of all field books and other notes kept under sub-regulation (3) shall be kept in a bound paged book kept for the purpose, and shall be brought up-to-date whenever necessary. Every entry in the book shall be signed and dated by the surveyor, and countersigned and dated by the manager.

**70. Preparation of Plans by Surveyors** – (1) Every plan and section, and tracing thereof, prepared under these regulations shall be prepared by or under the personal supervision of the surveyor.

(2) Every plan or section, or any part thereof, prepared by or under the supervision of a surveyor shall carry thereon a certificate by him to the effect that the plan or section or part thereof is correct; and shall be signed and dated by the surveyor and countersigned and dated by the manager on every occasion that the plan or section is brought up-to-date.

(3) Every tracing of a plan or section or of any part thereof shall bear a reference to the original plan or section from which it was copied and shall be certified thereon by the surveyor to be a true copy of the original plan or section. The certificate shall be signed and dated by him.

(4) If the surveyor fails or omits to show any part of the workings or allow the plans or sections to be inaccurate, he shall be guilty of a breach of these regulations. Nothing in this sub-regulation shall, however, exempt the owner, agent or manager of their responsibility to ensure that every plan or section prepared, kept or submitted under these regulations or by any order made thereunder is correct and maintained up-to-date as required thereunder.

**71. Plans to be checked on change of ownership or on re-opening, etc** – (1) When there is a change in ownership of a mine, or where a mine or part thereof is reopened, or where in any mine or part thereof it is intended to start any extraction or reduction of pillars, the owner, agent and manager shall ensure that the plans and sections of the mine or part are accurate. If any doubt arises as to the accuracy of the plans and sections in any respect, he shall have accurate plans and sections prepared afresh before any drivage or other work of development or of extraction or reduction of pillars is commenced.

(2) If the Regional Inspector is of the opinion that any plan or section prepared, kept or submitted under the regulation is inaccurate, he may, by an order in writing, require a fresh survey made and a new plan or section prepared within such time as he may specify therein.

(3) If the plan or section required to be prepared under sub-regulation (2) is not prepared within the time specified in the order, or to the satisfaction of the Regional Inspector, or the plan or section is not prepared or brought up-to-date as required under these regulations, he may get the plan or section prepared by any other agency; and the cost thereof, as certified by the Chief Inspector, shall be defrayed by the owner of the mine and recoverable from him as an arrear of land revenue.



## CHAPTER-VII : Means of Access and Egress

**72. Outlets from a mine** – (1) Except for the duration of shaft sinking or the drivage of other means of access and egress from the mine together with the necessary development work, no person shall be employed, or be permitted to enter or remain for purposes of employment, in any working belowground, unless the working is provided with at least two separate means of access to and egress to the surface:

- (a) with which every seam or section for the time being at work has a communication so as to afford separate means of ingress and egress to the persons employed therein;
- (b) which do not have their surface openings in the same building; and
- (c) which are under the sole control of the manager :

Provided that the Chief Inspector may, by an order in writing and subject to such conditions as he may specify therein, permit the employment belowground of persons even in a case where the two shafts, inclines or outlets are not under the control of the same manager.

(2) The Regional Inspector may, by an order in writing and subject to such conditions as he may specify therein, permit the employment belowground of restricted number of persons even in a case where places in the workings of the mine do not contain two means of egress from each working place.

(3) Suitable arrangements shall be made for persons to descend and ascend by each of such means of access and egress; and

- (a) where the shaft is more than 30 metres in depth, such arrangements shall be by mechanical means. Every mechanical equipment used for the purpose shall be so installed and maintained as to be constantly available for use. In case of a doubt as to whether any such arrangement is suitable or not it shall be referred to the Chief Inspector for decision;
- (b) Both the means of egress and the equipment used therein for the transport of persons shall be kept constantly in a safe condition to facilitate ease of traveling, including clearances for hand carried stretchers;
- (c) where in any shaft, ladders are used as a means of ingress or egress of persons employed in a mine, every such ladder shall –
  - (i) be of strong construction;
  - (ii) be securely fixed in the shaft at an inclination of not more than 80 degrees from the horizontal;
  - (iii) be made continuous or without perceptible overlapping or break except at platforms which shall be provided at intervals of not more than nine metres;
  - (iv) project at least one metre above the mouth of the shaft, and above every platform, except where strong holdfasts or handrails are provided;
  - (v) have rungs equally spaced and at a sufficient distance from the wall or any timber to ensure proper foothold; and
  - (vi) be maintained in good repair.

(4) Such shafts, inclines or outlets shall not be less than 13.5 metres distant from one another at any point, and each shall be connected with the other by means of a walkable passage, not less than 1.8 metres high 1.5 metres wide, through the workings belowground that are being served by such shafts, inclines or outlets.

(5) Whenever the connection between two outlets which are required to be maintained under sub-regulation (1) has been obstructed or found dangerous, only such persons as are necessary to clear the obstruction or to repair the dangerous part of the connection or to make a new second

outlet, as the case may be, shall be employed belowground until such time as the connection has been re-established or a new second outlet has been provided.

(6) The foregoing provisions of this regulation with respect to shafts, inclines and outlets shall not apply -

- (a) to any working for the purpose of making a connection between two or more shafts, inclines or outlets; and
- (b) to any working for the sole purpose of searching for or proving minerals;

Provided that nothing in this sub-regulation shall be deemed to authorise the driving of roadways for the development of a seam before a second outlet has been made in accordance with the said provisions.

**73. Working shafts** – (1) All entrances to the mine shaft shall be adequately illuminated throughout working hours

(2) Every shaft in use or in course of being sunk and every incline or other outlet shall be made and kept secure.

(3) Every shaft in the course of being sunk shall be provided with a permanent lining of metal, concrete or masonry, which shall at no time, be more than six metres from the bottom of the shaft:

Provided that where iron or steel rings with a substantial lagging are used below the permanent lagging and are kept close to the bottom of the shaft, this distance may be increased to not more than 20 metres:

Provided further that in the case of a shaft where special conditions exist which make compliance with the provisions of this sub-regulation not necessary, the Regional Inspector may, by an order in writing and subject to such conditions as he may specify therein, grant exemption from the operation thereof.

(4) All surface and seepage water shall be channeled in such a way as to prevent it from falling freely into the shaft.

(5) The top, all insets and bottom of every working shaft and the sump thereof shall be kept clear and free from loose materials, tools and debris.

**74. Fencings and gates at outlets** – (1) Every entrance to a mine from the surface, and the top and all entrances between the top and bottom, including the sump, if any, of every working, ventilating or pumping shaft, shall be kept securely fenced so designed and constructed as to prevent any person accidentally falling down the shaft or coming into contact with a moving part of the hoisting equipment provided in the shaft.

(2) Every walkable entrance from the surface to the workings belowground shall be provided with a substantial gate which shall be kept closed and locked when there are no persons belowground:

Provided that where such entrance is not used as a means of ingress or egress in or out of the mine, it shall be permanently closed so as effectively to prevent persons from entering therein.

**75. Outlets from mine parts** – Every part of a mine shall, where practicable, be provided with at least two ways affording means of egress to the surface. If any doubt arises as to whether the provision of two such ways is practicable or not, it shall be referred to the Chief Inspector for decision.

**76. Periodic examination, etc. of outlets** – (1) Every shaft, incline and other outlets provided as required by regulation 72 shall be examined, once at least in every seven days, by an overman or other competent person. A report of every such examination shall immediately thereafter be recorded in a bound paged book kept for the purpose and shall be signed and dated by the person making the examination.

(2) If at the time of such examination or at any other time, the shaft, incline or other outlet is found to be not safe, it shall not be used for any purpose, except as a natural airway, until it has been made safe in all respects. Report of every such action taken shall be recorded in the book kept under sub-regulation (1).

## CHAPTER-VIII : Transport of Men and Materials – Winding in shafts

**77. Appointment, etc., of winding enginemmen** – (1) No person shall be appointed as a winding enginemman unless he holds an engine driver's certificate.

Provided that this clause shall not apply to the driver of an Electrical Winding Engine upto 30 h.p. or of a steam or compressed air winding engine which has cylinders not exceeding 18 centimetres in diameter and which is not used for raising or lowering persons.

(2) Where special difficulties exist which make compliance with the provisions of sub-regulation (1) not reasonably practicable, the Chief Inspector may, by an order in writing and subject to such conditions as he may specify therein, relax the said provisions.

(3) No person, other than a winding enginemman appointed under sub-regulation (1) shall operate any winding engine:

Provided that in an emergency any other competent person may be permitted to operate the engine.

(4) The name of the winding enginemman on duty, together with the period of his shift shall be posted in the winding engine room. Where the Regional Inspector is of the opinion that the duties of any winding enginemman are unduly arduous, he may by an order in writing require the period of his shift to be reduced to such period, not less than five hours, as he may specify.

**78. New winding installations** – (1) When it is intended to bring into use any new winding installation for lowering and raising persons, the owner, agent or manager shall, not less than 60 days before such use, give notice of such intention to the Regional Inspector in the prescribed proforma given in the first schedule. The notice shall contain detailed specifications of the installation.

(2) A winding engine which is shifted from one site to the other within the same mine or from one mine to other shall be considered as a new installation for the purpose of this regulation.

(3) If the Chief Inspector, by an order in writing requires, such additions or alterations shall be made to the installation, as he may specify the order.

**79. Construction and installation of winding equipment** – (1) Every part of a winding installation, including headgear shall be of sound construction and adequate strength, and shall be maintained in safe working order. In case of any doubt as to the foregoing, it shall be referred to the Chief Inspector for decision.

(2) The engine shall be firmly connected to a rigid foundation and shall be so designed, constructed and maintained that with the power provided, the raising and lowering of persons or materials can be carried out with ease, regularity and safety.

(3) Unless otherwise permitted in writing by the Chief Inspector and subject to such conditions as he may specify therein, every engine for winding shall be so situated in relation to the headgear that the winding rope shall not, in the extreme position, subtend in either direction an angle more than one and a half degrees with the plane of the sheave or pulley used in connection with the rope.

(4)(a) The diameter of the drums or sheaves of the winding engine, and of the pulleys and sheaves used in connection with the winding shall, unless otherwise permitted in writing by the Chief Inspector and subject to such conditions as he may specify therein, be not less than 80

times the diameter of the rope in the case of winding installations installed before the 25<sup>th</sup> day of October, 1955 and not less than 100 times the diameter of the rope in other cases:

Provided that the Chief Inspector may, by an order in writing, require that in the case of any specified winding installation installed before the date aforesaid, the diameter of the said drums, pulley or sheaves shall not be less than such size, upto 100 times the diameter of the rope, as he may specify in the order.

- (b) The grooves of such sheaves or pulleys shall be suited to the diameter of such rope.
- (c) Every pulley or sheaves used in connection with winding shall, while in motion, rotate in a vertical plane, and shall be maintained in such a condition that slipping is reduced to a minimum.

**80. Fittings of winding engines** – At every shaft, including a shaft in the course of being sunk, where winding is effected by means of an engine, the following provisions regarding winding engines shall have effect, namely:

(1) There shall be on the drum such flanges, and also if the drum is conical or spiral such other appliances, as will be sufficient to prevent the rope from slipping or coiling unevenly. Except in friction winder, the end of the rope shall be securely fixed in such a manner that the rope is not unduly strained. There shall be at least two turns of the rope on the drum when the cage or other means of conveyance is at its lowest working point in the shaft.

(2)(a) There shall be provided one or more brakes on the drum or the drum-shaft, which:

- (i) if there are two cages or other means of conveyance, will hold such cages or other means of conveyance when the maximum torque is applied in either direction; or
- (ii) if there is only one cage or other means of conveyance, will hold the loaded cage or other means of conveyance in midshaft when the maximum torque is applied downwards.

(b) At least one of the brakes shall be so designed that the brake remains at the 'on' position except when operated.

(c) Where the brake or brakes are power-operated, at least one of them shall be arranged to be applied automatically at all times if the power supply fails.

(d) The brake on the drum shall be used only for the purpose of keeping such drum stationary and not for lowering the cage or other means of conveyance, except in cases where the engine is to be worked at a very low speed as when examining the winding rope or the shaft.

(3) Where the winding engine is worked by steam or compressed air, a screw stop-valve shall not be used as controlling valve of the engine.

(4) Every engine shall be equipped with a reliable depth-indicator (in addition to any mark on the rope) showing to the winding engineman the position of the cage or other means of conveyance in the shaft, and an automatic device that will ring a bell in the engine room when the ascending cage or other means of conveyance is at a distance of not less than two revolutions of the drum from the top of the shaft. The depth-indicator shall be tested after every adjustment or replacement of the winding rope.

**81. Shaft fittings** – At every winding shaft, other than a shaft in the course of being sunk – to which the provisions of regulation 85 shall apply – the following provisions shall have effect, namely:

(1)(a) Two independent and efficient means shall be provided and maintained for interchanging separate, distinct and definite signals between the top of the shaft and –

- (i) the bottom or other permanent landing of the shaft; and
- (ii) every inset for the time being in use.

One of such system shall be by electrical means.

There shall also be provided and maintained efficient means for transmitting such signals from the top of the shaft to the winding engineman. All signals shall be transmitted by mechanical or electrical means.

(b) In signaling, the following code of signals shall be used and strictly observed :

ONE RAP	:	STOP when engine in motion
ONE RAP	:	RAISE when engine at rest.
TWO RAPS	:	LOWER
THREE RAPS	:	MEN ready to ascend or descend
THREE RAPS	:	IN REPLY – men may enter the cage or other means of conveyance.

Any other signals shall be addition to, and shall not interfere with, the foregoing.

(c) A printed copy of the code of signals, including additional signals, if any, shall be posted prominently at the top of the shaft and at every such inset and landing and also in the winding engine room.

(d) No person other than the banksman or onsetter shall give any signal unless he is an official of the mine or is authorised in writing by the manager to give signals.

(e) Any defect in the signaling system shall be immediately reported to a supervisory official who shall take action to have the defects rectified.

(2)(a) The shaft shall be provided with sufficient number of guides to ensure smooth and safe travel of the cage or other means of conveyance.

(b) Where rope guides are used, the cheese-weights or bottom clams shall be kept so exposed as to permit regular examination.

(3) Above the topmost landing, 'dogs' or other devices for holding the cage or other means of conveyance in the event of an overwind shall be provided, other guides, runners or receivers shall be sprung.

(4)(a) Exception in friction winders, at the top of every shaft where cages are used, suitable keps shall be provided and so arranged as to fall into the 'on' position when the operating lever is released.

(b) At every inset where keps or folding platforms are provided, arrangements shall be made to lock the keps or platforms securely in the 'off' position; and when in the 'off' position such keps or platforms shall leave the shaft clear for the passage of the cage. In every such case, a proper automatic indicator to show the position of the keps or platforms, as the case may be, shall be provided in such a position as to be easily seen by the banksman.

(5) Protective roofing, sufficient to prevent danger from anything falling in the shaft, shall be provided and maintained at the bottom of the shaft. The gap, both vertical and horizontal, between the protective roofing and the top of cage, when the cage is at the bottom of the shaft, shall not exceed 15 centimeters.

**82. Manwinding** – At every shaft, other than a shaft in the course of being sunk, where a winding engine is used for the purpose of lowering or raising persons, the following provisions shall have effect, namely : -

(1) In respect of every part of the winding installation, including pulleys or sheaves, cages, chains, distribution plates and detaching hooks, the following particulars shall be recorded in a bound paged book kept for the purpose -

- (a) Name of the manufacturer and the year of manufacture;
- (b) Specifications and dimensions;
- (c) Reference to every certificate supplied with the part;
- (d) Date of installation of each part; and
- (e) Any other detail that may be necessary or required by the Regional Inspector;

All entries in the book shall be made and signed by the engineer or other competent person, and shall be countersigned and dated by the manager.

(2) Whenever any part or article is replaced or any repaired part or article used in any winding installation, the fact of such replacement or repair shall be recorded in the book kept under sub-regulation (1).

(3) (a) A single linked chain shall not be used, except for the short coupling chain attached to a cage or other means of conveyance. Such single-linked chain shall be attached to the safety hook through a distribution plate or other approved appliance.

(d) Where safety-chains are used, their length shall be such that if the king-bolt breaks, the shock to the cage or other means of conveyance is as slight as possible.

(4) Where drum-clutches are provided, the following provisions shall have effect, namely –

(a) The operating gear of the clutch of the drum shall be provided with locking gear to prevent inadvertent withdrawal of the clutch.

(b) Every engine used for the lowering or raising of persons shall have a suitable interlocking device so fitted that it is not possible –

- (i) to unclutch any drum unless the brakes of such drum are applied; or
- (ii) to release the brakes until the drum clutch is fully engaged and securely locked.

(c) Unless the cage or other means of conveyance attached to the drum is resting at the bottom of the shaft, the drum shall not be unclutched unless the winding engineman has assured himself immediately beforehand that the brake is fully applied.

(5) Except in friction winders, there shall be provided between the rope and the cage or other means of conveyance a detaching hook. The space between such detaching hook, measured from the centre of the hole for attaching it to the rope shackle, and the detaching-bell or plate when the cage or other means of conveyance is at its normal position at the top of the shaft, shall be not less than 1.8 metres where a geared engine is used, and not less than 3.6 metres where a direct acting engine is used.

(6) In every shaft the engine shall be fitted with an automatically recording speed indicator.

(7)(a) In every shaft, there shall be provided an effective automatic contrivance to prevent overspeeding and overwinding, hereinafter called the 'Automatic Contrivance'. The Automatic Contrivance shall prevent the descending cage from being landing at the pit bottom or other permanent landing at a speed exceeding 1.5 metres per second and shall also control the

movement of the ascending cage in such a manner as to prevent danger to persons riding therein. The Regional Inspector may, by an order in writing, specify the maximum speed of winding in any shaft.

(b) Tests of every Automatic Contrivance and every brake shall be made by the engineer or other competent persons appointed for the purpose, in the following manner -

- (i) once at least in every seven days, by raising each cage or other means of conveyance, in turn, to pass the last control point above the topmost landing; and
- (ii) once at least in every three months, by attempting to land the descending cage at excessive speed. For the purpose of this test, the setting of the Automatic Contrivance may be altered so that pre-determined point in the shaft is regarded as the landing.

The results of every such tests shall be recorded in a bound paged book kept for the purpose, and shall be signed and dated by the person making the test.

(c) Unless the Automatic Contrivance is in full and fixed engagement with the winding engine, it shall be fully engaged, either automatically or by the winding engineman, wherever necessary to be lowered or raised; and a proper automatic indicator to show that this has been done shall be provided in such a position as to be easily seen by the banksman. No person shall be allowed to enter any cage or other means of conveyance until the indicator shows that the Automatic contrivance has been fully engaged.

(8) Except where an Automatic Contrivance is provided to prevent overwinding, a point shall be fixed and marked on the indicator of the engine in such a way as to show when the cage or other means of conveyance is at a distance of not less than twice the circumference of the drum from the completion of the wind; and if such cage or other means of conveyance contains persons, the winding engineman shall not, as soon as it has reached the point aforesaid, raise it for the remaining distance at a speed exceeding 1.2 metres per second.

(9) Where the only means of egress in a mine is by apparatus worked by steam or electricity, precautions shall be taken to ensure that the two winding engines do not fail simultaneously, and in particular, in the case of electric winding engines, the engines shall be capable of being connected to two separate power supplied. Unless the Chief Inspector by an order in writing otherwise directs, the provisions of this sub-regulation shall be deemed to be satisfied if an emergency winding gear is maintained.

(10)(a) Every cage or other means of conveyance in which persons ride, shall be –

- (i) covered completely at the top;
- (ii) closed in at the two sides in a manner sufficient to prevent persons or things from projecting beyond the sides;
- (iii) provided with a rigid hand-bar fixed in a position where it can be easily reached by all persons in the cage or other means of conveyance; and
- (iv) provided with suitable gates or other rigid fences such that the gap between the floor of cage or other means of conveyance and the lowest part of the gate or fence does not exceed 15 centimetres and that between any two members of the gate or fence does not exceed 25 centimetres. Gates or fences shall not open outwards; and they shall be so fitted and maintained that they cannot be accidentally opened.

(b) The floor of every cage or other means of conveyance shall be strongly constructed and so maintained to prevent any part of the body of a person riding in the cage or other means of conveyance from projecting beyond the floor.

(11) Not more than such number of persons as may be authorised by the manager shall be allowed to ride in the same cage or same deck of a cage or other means of conveyance at one



time; and a notice specifying the number shall be posted at the top and bottom of every shaft and at every inset. The number of persons fixed as aforesaid shall be such as to allow approximately 0.20 square metre of floor area per person.

(12)(a) No person shall, when ascending or descending a shaft, take with him any bulky material other than tools and instruments, except when engaged in repairing the shaft or with the written authority of the manager.

(b) Except as provided in clause (a), no person shall ride in a cage while materials or tubs are being raised or lowered in any of the cages or other means of conveyance.

(13) The Chief Inspector may, subject to such conditions as he may specify, relax the requirements of this regulation if the circumstances in any mine or part thereof are such as to tender compliance with such requirements not reasonably practicable.

**83. Multi-decks** – Where a cage has two or more decks which are used simultaneously, each floor at a landing shall be connected by an effective signalling device with the main floor of the landing; and only the banksman or the onsetter or an official, as the case may be, at such main floor shall give action signal, and only after he has satisfied himself that all cage gates are closed.

**84. Winding of material** – (1) Every cage used for the raising or lowering of tubs shall be provided of tubs shall be provided with catches or other effective contrivances to prevent the tubs falling out. The cage shall not be set in motion unless the catches or other effective contrivances are in position.

(2)(a) The floor of every cage shall be kept clean; and no skip, bucket or tub shall be filled up to such height that any of the contents can fall out.

(b) Before long timber, pipes, rails, or other material projecting over the top of the cage or other means of conveyance are lowered or raised, the projecting ends shall be securely fastened to the rope, chain or bow.

**85. Winding in sinking shafts** – At every shaft in the course of being sunk, where a winding engine is used the following provisions shall have effect, namely :

(1) If the shaft exceeds 45 metres in depth, there shall be provided for each bucket or other means of conveyance a detaching-hook between the centre of the hole for attaching the detaching-hook to the rope shackle and the detaching bell or plate, when the bucket or other means of conveyance is at the top landing, there shall be a clear over-run space of not less than 3.6 metres.

(2) Where the shaft exceeds 150 metres in depth –

(a) the bucket or other means of conveyance, when used for lowering or raising persons, shall be provided with sufficient cover overhead for protection from things falling down the shaft; and

(b) these shall be provided for each bucket or other means of conveyance a sufficient number of guides which shall be kept extended to within 22.5 metres of the shaft bottom at all times when sinking is in progress:

Provided that the Regional Inspector may, by an order in writing, require the provision of guides in a shaft less than 150 metres in depth.

(3)(a) There shall be provided and maintained two separate means of interchanging distinct and definite signals between the bottom and the top of the shaft. Efficient means shall also be provided and maintained for transmitting such signals from the top of the shaft to the winding

engineman. The signaling appliances shall be examined by a competent person once at least in every 24 hours. The result of every such examination shall be recorded in a bound paged book kept for the purpose and shall be signed and dated by the person making the examination.

(b) Except with the permission in writing of the Chief Inspector and subject to such conditions as he may specify therein, the following code of signals shall be used and observed in signaling.

ONE RAP	STOP when engine in motion
ONE RAP	TAKE UP SLACK when engine at rest.
ONE RAP	RAISE SLOWLY
TWO RAPS	LOWER
THREE RAPS	TAKE UP SLACK when men are riding.

Any other signals shall be in addition to, and shall not interfere with, the foregoing.

(c) A printed copy of the code of signals, including additional signals, if any, shall be posted prominently at the top of the shaft and also in the winding engine room.

(d) Except while riding in a bucket or other means of conveyance, no person other than the chargeman or a person authorised in writing by the manager, shall give any signal.

(4) Every bucket or other means of conveyance in which persons or materials are conveyed, shall be of strong construction and so maintained as to prevent persons or materials from falling.

(5)(a) At the top of the shaft or at the landing where the bucket or other means of conveyance is normally landed, suitable doors or covering shall be provided. Except as may be required for the passage of the bucket or other means of conveyance, the doors or covering shall always be kept closed.

(b) Where the shaft exceeds 45 metres in depth, the persons working at the bottom of the shaft shall also be protected by an adequate protective covering which shall be kept lowered to within 22.5 metres of the bottom of the shaft at all times when sinking is in progress. Every such protective covering shall extend over the whole area of the shaft, sufficient space being left therein only for the passage of the bucket or other means of conveyance. Where special circumstances exist, the Chief Inspector may, by an order in writing and subject to such conditions, as he may specify therein, grant an exemption from the provisions of the clause.

(6) Not more than such number of persons as may be authorised by the manager shall be allowed to ride in the bucket or other means conveyance at one time; and a notice specifying such number shall be posted prominently at the top of the shaft.

(7) When tools, implements or other materials are lowered or raised, the banksman or chargeman, as the case may be, shall see that -

- (a) the bucket is properly loaded;
- (b) materials are not loaded above the rim;
- (c) long timber, pipes, rails, tools or other material with ends projecting over the rim are securely fastened to the rope, chains or bow; and
- (d) the bucket, before being sent away, is steadied, and the bottom and sides thereof are free from adhering material.

(8) Where guides are provided, the bucket or other means of conveyance shall be raised slowly from the bottom of the shaft, until the rider is picket up.

(9) While persons are at work on any scaffold or platform in the shaft, the following precautions shall be strictly observed :

- (a) The scaffold or platform shall be secured to the sides of the shaft in order to prevent it from swinging;
- (b) The opening for the passage of the bucket or other means of conveyance, shall be so protected as effectively to prevent anything falling through it;
- (c) The scaffold or platform shall not be lowered or raised except under the order of the chargeman or other competent person.

**86. Winding ropes, etc.** – At every shaft where a rope is used for winding purposes, the following provisions shall have effect, namely:

(1)(a) No rope, bar, link, chain or other attachment to a cage or other means of conveyance shall be used unless it is of good quality and manufacture, is free from any visible defect and is of adequate calculated strength:

Provided that the Chief Inspector may, by an order in writing prohibit the use of any rope or type of ropes where, in his opinion such use is unsafe.

(b) The attachment between the rope and the cage or other means of conveyance shall be of such type and be maintained in such manner as to obviate accidental disconnection.

(c) In case of a doubt, as to the fitness of any rope, bar, link, chain or other attachment used or intended for use, it shall be referred to the Chief Inspector for decision.

(2)(a) Except, in a sinking shaft less than 30 metres in depth, every winding rope shall be made of cold drawn steel wire, and the gauge of the wires used in the construction of such rope shall be suited to the diameter of the drums, pulleys and sheaves of the winding installation.

(b) In any shaft, including a shaft in course of being sunk, where persons are lowered or raised and where guides are not provided, no rope other than a rope of non-spinning type shall be used.

(c) No rope which has been spliced shall be used for winding purposes.

(d) Unless exemption in writing has been granted by the Chief Inspector and subject to such conditions as he may specify therein, no rope the braking load of which at any one point therein is less than 10 times the maximum static load on it when the cage or other means of conveyance attached to the end of the rope is at the lowest working point, shall be used or continued in use.

(e) At every mine where a shaft is used for lowering or raising persons, at least one spare winding rope suitable for use in such shaft, shall be kept in store.

(3)(a) For every rope in use or intended for use, a certificate showing its breaking load, quality, construction and diameter (obtained from the manufacturer or supplier) and a history of its use, including a record of diameters of the drums, sheaves and pulleys used in conjunction with the rope, shall be kept in a bound paged book kept for the purpose. All entries therein shall be made and signed by the engineer or other competent person, and shall be countersigned and dated by the manager.

(b) If in the case of a rope a test certificate as to the amount of its breaking load is not available, it shall not be used unless a portion thereof, not less than three metres in length, has been cut off from the end of the rope attached to the cappel and tested in a laboratory, institution or test house approved by the Central Government for the purpose.

(4) No winding rope which has been in use for more than three and half year shall be used for winding purposes:

Provided that where the Regional Inspector is satisfied that due to sparing use any such rope is in good condition even after the expiry of the said period, he may, by an order in writing and subject to such conditions as he may specify therein, allow the use of such rope for a longer period. Every application for permission to use a rope after the period of three and a half years aforesaid shall be accompanied by a copy of the entries, in respect of the rope, in the book kept for the purpose under sub-regulation (3), and also by a certificate as to the strength of the rope, obtained in the manner laid down in clause (b) of the sub-regulation. The certificate aforesaid shall relate to a piece of the rope cut off not more than three months prior to the date of the application:

Provided further that where the Regional Inspector is of the opinion that any rope has become unsafe for use in a shaft before the expiry of the period of three and a half years aforesaid, he may, by an order in writing, prohibit the use of such rope for winding purposes. An appeal any such order may be preferred to the Chief Inspector.

(5)(a) No mode or type of capping shall be used, which fails to withstand a load of at least 10 times the maximum static load thereon.

(b) The cappel of a round rope shall not be attached to the rope by rivets passing through the rope.

No bent back wire type cappel shall be used with winding rope.

(d) Where white metal is used in the capping of ropes, the tapered portion of the socket shall not be less than six and a half times the diameter of the rope for the size upto 25 millimeter, and seven and one-third times, in case of ropes of diameters higher than 26 millimeter.

(e) If white metal is used in the capping of ropes -

- (i) its melting point shall not exceed 300 degrees centigrade, and its temperature when poured into the socket shall not exceed 363 degree centigrade;
- (ii) in the length of rope which is to lie within the tapered part of the socket, the fibre core, if any, shall be cut and the wires shall be untwisted and thoroughly cleaned; and
- (iii) the socket shall be heated to a temperature of about 100 degrees centigrade before the white metal is poured into it.

(6) Except in friction winder, every rope shall be recapped once at least in every six months, or if necessary, at shorter intervals and also after every overwind. Before every such recapping, a length, including the capping, of at least two metres shall be cut off the rope. Every piece of rope so cut-off shall be opened and its internal condition examined. The operation shall be carried out under the supervision of the engineer or other competent person, who shall record the date and other particulars thereof (including the length of the rope remaining after recapping) in a bound paged book kept for the purpose and shall sign and date the same.

**87. Suspension gear** – (1) All parts of the suspension gears shall be of a type as approved by the Chief Inspector of Mines.

(2) All parts of suspension gear in regular use shall unless otherwise permitted by the Chief Inspector, be renewed after a period of service of not more than six years, and at shorter intervals if necessary. The factor of safety shall not be less than 10 for components of suspension. Threaded joints shall be avoided. Wherever it is not practicable to avoid a threaded joint, a factor of safety not less than 15 shall be ensured.

(3)(a) All cage chains in general use and all other parts of suspension gear between the rope and the cage or other means of conveyance, including the detaching-hook, shall be taken apart, cleaned and carefully examined as to wear and tear (where necessary by gauging) and for rust and cracks, once at least in every six months, or if necessary, as shorter intervals. The various parts shall be annealed or given other proper heat treatment before being refitted. The annealing

or other heat treatment shall be done only in a proper furnace where the temperature could be controlled

Provided that in the case of such chains or gear manufactured from a steel which is not liable to deterioration necessitating annealing or heat treatment, the Chief Inspector may by an order in writing and subject to such conditions as he may specify therein, grant exemption from the carrying out of this operation;

Provided further than detaching hooks used in sinking shafts shall be taken apart, cleaned and carefully examined once at least in every week and the shear pin replaced by a new one every time such examination is carried out.

(b) Non-destructive testing shall also be adopted for testing of vital components of machinery, such as drum shafts, brake tie rods and suspension gears at regular intervals. Any harmful crack or flaw detected as a result of such tests shall be immediately reported to the Regional Inspector and use of such machinery or its components shall be discontinued forthwith.

(c) Every detaching bell or plate used in connection a safety-hook shall be examined, and the opening therein checked by calipers or gauges, once at least in every 30 days.

(d) The operations and examination required under this sub-regulation shall be carried out by or under the supervision of the engineer or other competent person, who shall record the date and other particulars thereof in a bound paged boo kept for the purpose, and shall sign and date the same.

**88. Precautions after recapping, etc** - After every installation or recapping of a rope and after every renewal or refitting of any suspension gear, the engineer or other competent person shall, after the cages or other means of conveyance fully loaded with materials have made five trips up and down the working portion of the shaft, examine the cappel and other parts of the suspension gear to see that they are in proper working order. A report of every such examination shall be recorded in the book kept under regulation 87(2), and shall be signed and dated by the persons making the examination.

**89. Examination of winding equipment** – (1) It shall be the duty of the engineer or other competent person to examine –

(a) Once at least in every 24 hours –

- (i) the attachment of the winding rope to the drum, the depth indicator, every part of the suspension gear in the shaft, including cages or other means of conveyance and their gates, and every external part of the winding apparatus, upon the proper working of which the safety of persons depends; and
- (ii) the brakes of the winding engines;

(b) Once at least in every seven days –

- (i) each winding rope, by passing the rope at a speed not exceeding one meter per second; and
- (ii) the external parts of the winding engine, the guides and the signalling arrangements fitted in a shaft;

(c) Once at least in every 30 days, every winding rope, by passing the rope at a speed not exceeding 0.5 metre per second. For the purpose of this examination, the rope shall be cleaned of any entrusted dirt and grease at all places particularly liable to deterioration and at other places, not more than 30 metres apart throughout the length, and any reduction in the

circumference of the rope and the superficial condition of the wires as to wear, corrosion, brittleness and fracture at every such place shall be noted; and

(d) Once at least in every 12 months, the winding engine as to the condition of its internal parts.

(2) A report of every such examination shall be recorded in a bound paged book kept for the purpose, and shall be signed and dated by the person who made the examination.

(3) If on any examination made as aforesaid, there is discovered any weakness or defect by which the safety of persons may be endangered, such weakness or defect shall be immediately reported in writing to the engineer or other competent person and to the manager; and until such weakness or defect is remedied the winding installation shall not be used.

**90. Gates and fences** – (1) At the top of every shaft and at every inset which is in use, there shall be provided suitable gates or fences which shall effectively close the openings into the shaft at all times when a cage or other means of conveyance is not at the top or the inset. Every such gate at the top of a shaft shall be self-operating.

(2)(a) At every landing where it is necessary for persons to pass from one side of the shaft to the other, an adequate passby shall be provided for enabling them to do so without entering or crossing the shaft. Every passby so provided shall be not less than 1.8 metres high and 1.2 metres wide, and shall be kept clear of all obstructions.

(b) No person shall enter or cross, or be permitted to enter or cross the exposed space at the bottom of any working shaft except for the purpose of entering or leaving a cage or other means of conveyance or for undertaking an examination, repair or any other work therein; and no persons shall be allowed to work in any such space unless the cages or other means of conveyance, if any, have been stopped and adequate precautions have been taken for the protection of such person.

**91. Duties of persons riding or working in shafts** – (1) No person shall get on or off a cage or other means of conveyance after the same has been signaled to be set in motion or leave it until it has reached the appointed stopping place; nor shall any person ride on the top or edge of any cage or other means of conveyance except when engaged in an examination, repair or any other work in the shaft.

(2) Every person, when at or about the top or bottom of a shaft or any inset, shall obey the lawful orders and directions of the banksman or onsetter, as the case may be.

(3)(a) No person shall carry out any examination, repair or other work in any shaft while winding operations are being carried on; and no winding shall be carried on or permitted while persons are engaged in such examination, repair or work, except where winding is necessary for the same.

(b) The person in immediate charge of any examination, repair or work in any shaft shall warn the banksman and the winding engineman that such examination, repair or work is about to be undertaken.

(c) Every person while engaged in any examination, repair or other work in a shaft shall be accompanied by at least one other person; and all such persons shall be provided with safety belts of a type approved by Chief Inspector of Mines and efficiently protected against the risk of falling.

(d) Every person engaged in carrying out an examination, repair or other work in a shaft shall be protected by a suitable covering from objects falling from above. Every such person shall also be provided with a protective hat; and shall wear the same when so engaged.

**92. General precautions** – (1) No unauthorised person shall enter or be allowed, in a winding engine room.

(2) No adolescent shall descend or ascend a shaft in a cage or other means of conveyance unless accompanied by one or more adult males.

## CHAPTER-IX : Transport of Men and Materials – Haulage

**93. Haulage roadways** – The following provisions shall have effect with respect to every length of roadway in a mine where materials are transported in tubs by means of gravity or of mechanical power.

(1) Every such roadway shall –

- (a) be of adequate dimensions and, as far as practicable, shall be straight and of regular gradient; and
- (b) have tracks properly laid with rails having at least 15 kg/metre section for general purpose and suitable heavier section where the gradient steeper than 1 in 6 or where mine cars of capacity higher than 1.5 cum are in use.

(2)(a) Pulleys, sheaves and rollers that alter the direction of a rope shall be securely fixed.

(b) No person shall guide or adjust a moving rope on to a drum, pulley, sheave or roller except with a lever or other proper appliance.

(3) Material for use in mine haulage tracks and standards in respect of construction, layout and inspection of haulage tracks shall be in accordance with the guidelines notified by the Chief Inspector of Mines from time to time.

(3) Where haulage is effected by one or more ropes, there shall be provided and maintained -

- (a) at the top of every inclined plane, at least one stop-block or other effective contrivance to arrest tubs from running or moving out of control;
- (b) at least one run way switch or other effective contrivance below the first stop-block or other effective contrivance at a distance greater than the length of a set or train of tubs:

Provided that such distance shall not exceed the length of a set or train of tubs by more than 10 metres:

Provided further that where the Regional Inspector, by an order in writing so requires, the stop-block and the switch or other effective contrivance aforesaid shall be so intercoupled that they do not remain simultaneously ineffective:

(c) an attachment, behind an ascending tub or set or train of tubs, of a back-stay, drag or other suitable contrivance for preventing the tub, set or train of tubs running back. Where an endless rope or chain is used, the provisions of this clause shall be deemed to be satisfied if suitable automatic catches or other effective contrivance are provided at suitable intervals along the track to prevent the ascending tubs running back.

Provided that the Regional Inspector may, by an order in writing and subject to such conditions as he may specify therein, grant exemption from the operation of this clause on grounds that compliance with the provisions thereof is not reasonably practicable;

(d) Safety hooks, jazz-rails or other suitable contrivances to prevent runaway in the forward direction;

(e) Tub re-railers at intervals of not more than 250 metres. Where a tub is re-railed manually, it shall either be detached from the rope or ropes or the haulage engine which works the rope shall be stopped; and

(f) on every haulage roadway exceeding 30 metres in length, effective means of transmitting signal from every stopping place on the roadway to the place at which the machinery working the rope is operated. All signals shall be transmitted by mechanical or electrical means:



Provided that the Regional Inspector may, by an order in writing, require means of transmitting signals in the reverse direction also. If any doubt arises as to whether any means of transmitting signal is effective or not, it shall be referred to the Chief Inspector for decision.

(4)(a)(i) The following code of signals shall be used and strictly observed –

ONE RAP	STOP when in motion
TWO RAPS	LOWER or haul in slowly
THREE RAPS	START when at rest
FOUR RAPS	RAISE or haul out slowly

Any other signals shall be in addition to, and shall not interfere with, the foregoing.

(ii) A printed copy of the code of signals, including additional signals, if any, shall be posted prominently at the place in which the machinery that works the rope is operated and at all regular stopping places along the roadway.

(iii) No person, other than a competent persons or an official, shall give any signal.

(b) Where in any mine belowground, a system of haulage roadway (and conveyors, if any) extent to distance of more than 300 metres from the shaft or the entrance to the mine, efficient telephonic communication shall be provided and maintained between the end of every such system and the bottom and top of the shaft or the entrance to the mine as the case may be :

Provided that where travelling is unduly arduous, the Regional Inspector may, by an order in writing, require the provisions and maintenance of telephonic communication shall be provided and maintained between the end of every such system and the bottom and top of the shaft or the entrance to the mine as the case may be :

Provided that where travelling is unduly arduous, the Regional Inspector may, by an order in writing, require the provision and maintenance of telephonic communication in any other case also.

(c) Where telephones or electrical signals are provided -

- (i) adequate precautions shall be taken to prevent signal and telephone wires coming into contact with other cables and electrical apparatus;
- (ii) signal wires shall be supported on insulators, and shall not be energised at more than 30 volts;
- (iii) contact makers shall be so constructed as to prevent accidental closing of the circuit; and
- (iv) In every gassy seam of the second or third degree, all signaling or telephonic communication circuit shall be constructed, installed, protected, operated and maintained in such a manner as be intrinsically safe.

(5) At places where telephone receivers are installed or where signals and safety contrivances are regularly operated, every person using the telephone or operating any such signal or safety contrivance shall be afforded adequate protection against tubs moving out of control.

(6)(a) Where any person is allotted to work or pass while the haulage is in motion, manholes for refuge shall be provided at intervals of not more than 10 metres:

Provided that where the gradient is less than 1 in 6 such manholes may be provided at intervals of not more than 20 metres.

(b) Manholes shall be not less than 1.8 metres in height and 1.2 metres in depth, and not less than 0.75 metres but not more than one metre in width:

Provided that where the roadway is less than 1.8 metres in height, the manholes may be made to the full height of the roadway:

Provided further that the Regional Inspector may, by an order in writing and subject to such condition as he may specify therein, permit the use as manholes or cross-roadways other than haulage roadways, of dimensions larger than those aforesaid.

(c) Every manhole shall be kept clean and clear of obstruction, and white washed both inside and for a distance of not less than 0.3 metres around the aperture.

(d) As far as practicable, all manholes shall be provided on one side of the haulage roadway.

(e) In case where there are serious practical difficulties in providing manholes as specified in clauses (a) and (b), the Regional Inspector may, by an order in writing and subject to such conditions as he may specify therein, permit manholes to be at greater intervals or of other dimensions.

(f) Except where haulage is effected by means of an endless rope or chain, whenever the haulage rope is in motion, every person on the haulage roadway shall take shelter in a manhole.

(7) The manager shall, by an order in writing, in respect of every haulage road or roadway, fix the maximum number of tubs, according as to whether they are loaded or not loaded, that may be coupled together to run as a set or train. A notice specifying the number of tubs so fixed shall be posted prominently at the top and at all regular stopping places of the haulage road or roadway.

(8) At all places where tubs are coupled or uncoupled, there shall be a clear space of not less than one metre –

- (a) between, the tubs and one side of the roadway; and
- (b) where there are two or more tracks also between the adjacent tracks.

(9)(a) When any roadway or face is in direct line with a haulage track and persons may be exposed to danger from runaway tubs, a strong buffer or other effective contrivance to prevent such danger shall be provided and maintained.

(b) A stopblock or other effective contrivance shall be provided near the entrance of every tramming roadway branching off the main haulage road or roadway, and on every track which slopes towards a shaft.

**94. Travelling roadways** – (1) Travelling roadways, separate from haulage roadways on which haulage is effected by mechanical means or gravity, shall be provided for persons to travel to and from their working places. All such traveling roadways shall be made in the intake air, and when this cannot be provided the matter shall be brought to the notice of the Regional Inspector of Mines.

Provided that where a separate traveling roadway cannot be provided that person had to travel along a part of haulage roadway, the following precautions shall be taken:

- i. There shall be provided and maintained effective two way means of transmitting signals between the two ends of the part of the roadway where persons may travel.

- ii. The manager shall fix specific periods for traveling; and notices specifying these periods shall be posted prominently at the top and bottom of and also at all regular stopping places along the haulage roadway.
- iii. Any person who of necessity has to travel along the roadway outside the period fixed for traveling shall not be allowed to do so unless and until a special signal has been given to the haulage engineman.
- iv. Inexperienced persons shall not be permitted to travel the roadway or part unless accompanied by an experienced person.

(2) Every such travelling roadway shall –

- (a) be not less than 1.8 metres high throughout;
- (b) where the inclination exceeds 30 degrees from the horizontal, be provided with suitable steps or ladders;
- (c) where the inclination exceeds 45 degrees from the horizontal, be provided, in addition to steps or ladders, with hand rails or ropes so as to ensure safe travel; and
- (d) where the inclination exceeds 60 degrees from the horizontal, be provided, in addition to the steps or ladders and rails or ropes, with suitable platforms at intervals not exceeding 10 metres measured along the slope.

(3) Except for purposes of inspection, examination or repair, every person other than an official of a haulage attendant shall travel by the travelling roadway.

(4) Where persons using a travelling roadway have to cross a conveyor or a haulage worked by mechanical means or gravity, a suitable cross-over or cross-under bridge or other suitable device approved in writing by the Regional Inspector shall be provided.

(5) No haulage shall be used for the general conveyance of persons except with the permission in writing of the Chief Inspector and subject to such conditions as he may specify therein.

**95. Tubs and their movement** – (1)(a) On every tub there shall be provided and maintained at each coupling end a strong buffer projecting beyond the end and so arranged that when two such tubs are in tandem, the gap between the innermost ends shall not be less than 20 centimeters.

(b) On every side-tipping tub in use, safety-catches shall be provided to prevent accidental tipping. No tub or set or train of tubs shall be set in motion unless all the safety catches are properly secured.

(c) The attachment between a rope or locomotive and a tub or set or train of tubs and the attachment between any two tubs in a set or train, shall be of a type approved in writing by the Chief Inspector by a general or special order and so maintained as to obviate accidental disconnection.

(d) The state of every buffer and drawbar of every tub in use and of every safety-catch, coupling-chain and other attachment shall be examined once at least in every 14 days, by a competent person appointed for the purpose. A report of every such examination shall be recorded in a bound paged book kept for the purpose, and shall be signed and dated by the person who made the examination.

(e) Each component of coupling shall have factor of safety of not less than 7 in relation to maximum static load. The factor of safety shall be ensured by testing at an interval not exceeding 3 years and record thereof shall be maintained.

(f) Every tub while standing on a track having a gradient shall unless held effectively by brakes or securely coupled to a haulage rope or locomotive, be effectively blocked, chained or otherwise secured.

(2)(a) When tubs are about to be moved, persons likely to be endangered shall be warned.

(b) Two or more tubs shall not be moved by hand in close succession but shall be coupled and moved together. Two tubs shall be deemed to be in close succession when the distance between them at any time is less than 10 metres.

(c) No person shall cause or permit a tub to run uncontrolled except with the written permission of the manager:

Provided that the Regional Inspector may, by an order in writing, prohibit the uncontrolled movement of tubs at any place if he is of the opinion that such movement is likely to cause danger.

(d) No person while taking a tub down a gradient exceeding 1 in 20, shall go in front of the tub; and in every case where conditions are such that a person cannot control the tub from behind, he shall not take the tub down unless sprags or other suitable contrivances are used to control it.

(e) Where required for use, a sufficient number of sprags of suitable material and dimensions shall be provided.

(f) Every tub while standing on a track having a gradient of more than 1 in 20 shall unless held effectively by brakes or securely coupled to a haulage rope or locomotive, be effectively blocked, chained or otherwise secured.

(g) Except where haulage is effected by means of an endless rope, the coupling and uncoupling to tubs shall as far as practicable, be done only when the tub or set of the tubs, and the rope if connected to the set is not in motion.

(h) As far as practicable tubs shall not be coupled or uncoupled on a gradient.

(3) No person shall ride on any tub or haulage rope.

**96. Brakes of haulage engines** - Every haulage engine shall be provided with an effective brake.

**97. Haulage ropes** – (1) No rope shall be used for purposes of haulage if it has any serious visible defect over any length and its factor of safety is less than 8.

(2) Every rope which is capped shall be recapped once at least in every six months, and if necessary, at shorter intervals, under the supervision of a competent person.

(3) For every haulage rope in use, a record of size, construction, quality, name of supplier, and dates of installation and of recapping, shall be kept in a bound paged book kept for the purpose, and all entries therein shall be made by the competent person who shall sign the same and date his signature.

**98. Roadway Conveyors** – (1) Every roadway conveyor shall be so installed that –

- (a) between the conveyor and one side of the roadway, there is a travelling space from obstruction not less than one metre wide;
- (b) the conveyor or any part thereof does not scrape against wooden props or supports;
- (c) the anchoring of the return station of the conveyor is independent of the face or roadway support.

(2) Where the inclination of the conveyor is such as to give rise to danger from sliding objects or material suitable devices shall be used to provide adequate protection against such danger.

(3) On every length of roadway in which a conveyor is installed for transporting loads over a distance exceeding 30 metres, there shall be provided and maintained effective means of transmitting signals from every point on the length of the road to the place at which the machinery working the conveyor is operated:

Provided that the Regional Inspector may, by an order in writing, require means of transmitting signals in the reserve direction also.

(4) (a) The manager of the mine shall formulate and enforce a Code of Practice for safe installation, operation, maintenance and use of belt conveyor belowground including extension of belt conveyor and shifting it from one place in the mine to another. At least 30 days before the commencement of the installation of the belt conveyor belowground, the manager shall submit the Code of Practice to the Regional Inspector of Mines who may at any time by an order in writing require such modification in the Code of Practice as he may think fit in the interest of safety.

(b) The engineer shall be responsible for implementation of the Code of Practice.

**99. Examination of haulage engines** – (1) It shall be the duty of a competent person to examine carefully -

- (a) once at least in every 24 hours, every haulage engine, brake-wheel, rope and other appliance in use; and
- (b) once at least in every seven days, every track where the haulage is effected by means of mechanical power of gravity, and every safety contrivance fitted thereon.

(2) A report of every such examination shall be recorded in a bound paged book kept for the purpose, and shall be signed and dated by the person who made the examination.

**100. Examination of haulage and travelling roadways** – It shall be the duty of the overman or other competent person to examine carefully, once at least in every seven days, the state of all haulage and travelling roads and roadways, including roadways leading to all the outlets of the mine which are in use. A report of every such examination shall be recorded in a bound paged book kept for the purpose, and shall be signed and dated by the person who made the examination.

**101. Locomotives** – (1) No locomotive shall be used belowground otherwise than in accordance with the permission in writing of the Chief Inspector and subject to such conditions as he may specify therein.

(2) No locomotive shall be used where the gradient of the track exceeds 1 in 15.

(3) No person other than the driver shall ride on any locomotive unless authorised in writing to do so by the manager.

(4) Except during shunting operations, the locomotive shall lead the tubs or set or train of tubs.

**102. Road for trucks and dumpers** – (1) All roads for trucks, dumpers or other mobile machinery shall be designed, constructed and maintained in such condition as to be fit for their use.

(2) Except with the express permission of the Chief Inspector in writing and subject to such conditions as he may specify therein no road shall have a gradient steeper than 1 in 16 at any place.

(3) Where practicable, all roads from the opencast workings shall be arranged to provide for one-way traffic. Where this is not practicable, no road shall be of a width less than three times the width of the largest vehicle plying on that road, unless, definite turnouts and waiting points are designated.

(4) All corners and bends in road shall be made in such a way that the operators and drivers of vehicles have a clear view for a distance not less than 30 metres along the road.

(5) Standard traffic signs shall be displayed at conspicuous places along the haul road.

(6) Whenever it is not possible to ensure visibility for a distance of 30 metres there shall be provided two roads for the incoming and outgoing traffic or an alternative system. Adoption of any alternative system shall be intimated to the Regional Inspector of Mines in writing.

(7) Road surface shall as far as practicable be maintained smooth and of sufficient strength.

(8) All roads shall be provided with side drains to avoid damage to the road

(9) In case of ramps over small stretches, a gradient not steeper than 1 in 10 shall be provided.

(10) Where any road exists above the level of the surrounding area, it shall be provided with strong parapet wall or embankment with a height of not less than half the diameter of the wheel of the largest dumper or other vehicle plying or one meter, whichever is greater and of adequate width to prevent any vehicle from getting off the road.

(11) The portion of roads where there is heavy traffic of men and machine, shall have separate lane properly fenced off from haul road for use by pedestrians and two wheelers.

(12) As far as practicable, loaded trucks, dumpers or other vehicles shall not be reversed on gradient.

(13) A berm of height atleast half the diameter of the wheel of the largest dumper plying or one meter whichever is greater and of adequate width is constantly provided and maintained at the edge of the spoil or coal dump.

(14) Sufficient number of stop blocks shall be provided at every discharge point and it shall be used on every occasion material is dumped from the truck, dumper or other such vehicle.

(15) The manager shall formulate Traffic Rules for movement of trucks, dumpers or other vehicles. They shall be prominently displayed at the relevant places in the opencast workings and truck/dumper roads.

(16) No person shall be permitted to work on the chassis of truck, dumper or other vehicles with the body in a rest position until after the truck or dumper body has been securely blocked in position. The mechanical hoist mechanism alone shall not be dependent upon to hold the body of the truck, dumper or other vehicles, in raised position.

(17) Small vehicle shall not be allowed on the haul roads. As far as possible separate roads shall be made for small vehicles. Only authorised small vehicles shall be allowed in opencast working which have a raised red flag in day time and a red light in the night. The flag or light shall be visible to a dumper operator from a distance of atleast 30 metres.

**103. Movement of wagons** – (1) No adolescent shall be employed in moving railway wagons.

(2) The movement of railway wagons shall be carried on under the supervision of a competent male person who shall himself control the brake.

(3) Before wagons are moved, persons likely to be endangered shall be warned by the competent persons appointed under sub-regulation (2).

(4) No person shall move or attempt to move a wagon by pushing at the buffer, or by pulling from in front.

(5) Where two or more wagons are moved simultaneously, the wagons shall be coupled together, and the number shall not exceed the number which can be effectively controlled; they shall be moved only by pushing from the sides or from behind the last wagon.

(6) No locomotive or wagon shall be moved when the natural light is insufficient, unless the approaching end is distinguished by a suitable light or is accompanied by a person carrying a lamp.

(7) No person, other than the competent person referred to in sub-regulation (2), shall pass immediately in front of wagons moving under bins or screens, nor between moving wagons and the under-structure of the bins or screens.

(8) No person shall be upon the buffer of a locomotive or wagon in motion unless there is a secure hand-hold, or stand thereon unless there is also a secure footplate. No person shall pass over the coupling between any two wagons while the wagons are moving.

(9) No person shall cross a line of rails by crawling or passing underneath a train or wagon, nor shall a person sit or sleep underneath a wagon.

(10) Wherever railway wagons are specially placed so as to afford a thoroughfare, such thoroughfare shall be not less than five metres in width.

(11) No material shall be placed or dumped within 1.2 metres from either side of a track of rails.

(12) All space between the rails at switches and crossings, in which the foot of a person is liable to be caught, shall, where possible, be kept filled with concrete, tar, asphalt, or wooden blocks.

**104. Fencings and gates** – (1) Where any haulage road, tramline, rail line or haul road passes over a public road, suitable gates shall be provided to prevent danger to public from a moving tub, set or train of tubs, locomotive or machinery. Every such gate shall be fitted with a danger signal, and when the natural light is insufficient, also with warning lamps.

(2) Where occupied buildings are situated within 15 metres of any haulage road, tramline, rail line or haul road, a substantial fence shall be provided and maintained between such buildings and the haulage road, tramline, rail line or haul road.

## CHAPTER-X : Mine Workings

- 105. Safety management plan-** (1) The owner, agent and manager of every mine shall,
- (a) identify the hazards to health and safety of the persons employed at the mine to which they may be exposed while at work;
  - (b) assess the risks to health and safety to which all employees may be exposed while they are at work;
  - (c) record the significant hazards identified and risks assessed;
  - (d) make those records available for inspection by the employees; and
  - (e) follow an appropriate process for identification of the hazards and assessment of risks.
- (2) The owner, agent and manager of every mine, after consulting the safety committee of the mine and Internal Safety Organisation, shall determine all measures necessary to,
- (a) eliminate any recorded risk;
  - (b) control the risk at source;
  - (c) minimize the risk; and
  - (d) in so far as the risk remains –
    - (i) provide for personal protective equipment; and
    - (ii) institute a program to monitor the risk to which employees may be exposed
- (3) (a) Based on the identified hazards and risks, every owner, agent and manager of mines shall prepare an auditable document that forms part of the overall management and includes organisational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining a safety and health policy of a company. This document shall be called a "Safety Management Plan".
- (b) It shall be the duty of the owner, agent and manager to implement the measures determined necessary and contained in the "Safety Management Plan" for achieving the objectives set out in sub-section (2) in the order in which the measures are listed in the said sub-section.
- (4) The Safety Management Plan shall contain,
- (a) defined mine safety and health policy of the company ,
  - (b) a plan to implement the policy,
  - (c) how the mine or mines intend to develop capabilities to achieve the policy,
  - (d) principal hazard management plans,
  - (e) standard operating procedures,
  - (f) ways to measure, monitor and evaluate performance of the safety management plan, correct matters that do not conform with the safety management plan,
  - (g) a plan to regularly review and continually improve the safety management plan,
  - (h) a plan to review the safety management plan if significant changes occur,
  - (i) details of involvement of mine workers in their development and application.
- (5) The owner, agent and manager of every mine shall periodically review the hazards identified and risks assessed, to determine whether further elimination, control and minimization of risk is possible and consult with the safety committee on the review.
- (6) The owner, agent or manager of every mine shall submit a copy of the 'Safety Management Plan' to the Regional Inspector who may, at any time by an order in writing, require such modifications in the plan as he may specify therein.



(6) The owner, agent and manager of every approved type of mine shall be responsible for effective implementation of the 'Safety Management Plan'.

**106. Manual opencast workings.** – In manual opencast workings, the following precautions shall be observed, namely: -

(1) In alluvial soil, morum, gravel, clay, debris or other similar ground -

(a)(i) the sides shall be sloped at an angle of safety not exceeding 45 degrees from the horizontal or such other angle as the Regional Inspector may permit by an order in writing and subject to such conditions as he may specify therein; or

(ii) the sides shall be kept benched and the height of any bench shall not exceed 1.5 metres and the breadth thereof shall not be less than the height:

Provided that the Regional Inspector may, by an order in writing and subject to such conditions as he may specify therein, exempt from the operation of this clause in any working in the case of which special difficulties exist, which in his opinion make compliance with the provisions thereof not reasonably practicable; and

(b) where any pillar is left 'in situ' for the purpose of measurement, its height shall not exceed 2.5 metres; and where the height of such pillar exceeds 1.25 metres, the base of the pillar shall not be less than 1.5 metres in diameter.

In coal, the sides shall either be kept sloped at an angle of safety not exceeding 45 degree from the horizontal, or the sides shall be kept benched and the height of any bench shall not exceed three metres and the width thereof shall not be less than the height.

Provided that the Chief Inspector may, by an order in writing and subject to such conditions as he may specify therein, exempt from the operations of this sub-regulation any working, in the case of which special difficulties exist which in his opinion make compliance with the provisions thereof not reasonably practicable.

(2) In an excavation in any hard and compact ground or in prospecting trenches or pits, the sides shall be adequately benched, sloped or secured so as to prevent danger from fall of sides. However the height of the bench shall not exceed 6 metres.

(3) No tree, loose stone or debris shall unless otherwise permitted in writing by the Chief Inspector be allowed to remain within a distance of three metres from the edge or side of the excavation.

(4) No person shall undercut any face or side or cause or permit such undercutting as to cause any overhanging.

**107. Mechanised opencast working.**- In all mechanised opencast working, the following precautions shall be observed, namely: -

(1) Before starting a mechanized opencast working, design of the pit, including method of working and ultimate pit slope shall be planned and designed as determined by a scientific study. A copy of the report of such study shall be kept available in the office of the mine:

Provided that in case of mines where such a study has not been made, it shall be the responsibility of the owner or agent to get the aforesaid study made within one year from the date of coming into force of these regulations.

(2) (i) The height of the benches in overburden consisting of alluvium or other soft soil shall not exceed 5 metres and the width thereof shall not be less than three times the height of the bench

(ii) The height of the benches in overburden of other rock formation shall not be more than the designed reach of the excavation machine in use for digging, excavation or removal.

(3) The width of any bench shall not be less than -

- (a) the width of the widest machine plying on the bench plus two metres, or
- (b) if dumpers ply on the bench, three times the width of the dumper, or
- (c) the height of the bench, whichever is more.

(4) Notwithstanding anything contained in sub-regulation (1), (2) and (3) the Chief Inspector may, by an order in writing and subject to such conditions as he may specify therein, require or permit the height and width of benches be less than or more than aforesaid.

**108. Reclamation-** All excavations made by opencast mining shall be suitably reclaimed by back filling or by any other means.

**109. Spoil-banks and dumps. -** (1) While removing overburden, the top soil shall be stacked at a separate place, so that, the same is used to cover the reclaimed area.

(2) The slope of a spoil bank shall be determined by the natural angle of repose of the material being deposited, but shall in no case exceed 37.5 degrees from the horizontal. The spoil bank shall not be retained by artificial means at an angle in excess of natural angle of repose or 37.5 degrees whichever is less.

(3) Loose overburden and other such material from opencast workings or other rejects from washeries or from other source shall be dumped in such a manner that there is no possibility of dumped material sliding.

(4) Any spoil bank exceeding 30m in height shall be benched so that no bench exceeds 30m in height and the overall slope shall not exceed 1 vertical to 1.5 horizontal.

(5) The toe of a spoil-bank shall not be extended to any point within 45m of a mine opening, railway or other public works, public road or building or other permanent structure not belonging to the owner.

(6) A suitable fence shall be erected between any railway or public works or road or building or structure not belonging to the owner and the toe of an active spoil bank so as to prevent unauthorised persons from approaching the spoil-bank.

(7) No person shall approach or shall be permitted to approach the toe of an active spoil bank where he may be endangered from material sliding or rolling down the face.

(8) Adequate precautions shall be taken to prevent failure of the slopes of the spoil banks or dumps.

**110. Transport rules. -** (1) The manager of every mine shall frame and enforce a code of transport rules with due regard to the size and capacity of the transportation machinery in use and prevailing local conditions. A copy of the same shall be submitted to the Regional Inspector, who may at any time, by an order in writing require such modifications in the transport rules as he may specify therein.

Provided that in mines where such machinery are already in use, the aforesaid transport rules shall be framed and enforced within 90 days of the date of coming into force of these regulations.

(2)(a) The Manager shall hand over copies of the Transport rules to all supervisory officials concerned including the Assistant Managers and shall also post such copies at all conspicuous places in the mine in language(s) comprehensible by the workers.

(b) The Manager and such supervising officials shall each be responsible for securing effective compliances with the provisions of the Transport rules, and no mine or part of a mine shall be worked in contravention thereof.

**111. Codes of practice.-** (1) The manager of every mine shall, before commissioning of any excavation or drilling machinery, other than hand held drills, frame and enforce a code of practice for every type of machinery to be used in the mine.

(2) The codes of practice shall be framed with due regard to the type, size and capacity of the machinery in use and prevailing local conditions and a copy of the same shall be submitted to the Regional Inspector, who may at any time, by an order in writing require such modifications in the codes as he may specify therein.

Provided that in mines where such machinery are already in use, the aforesaid codes of practice shall be framed and enforced within 90 days of the date of coming into force of these regulations.

(3) It shall cover –

- (a) Examination and testing of the machinery before first use after installation, re-installation, modification, alteration or repair;
- (b) Schedule and nature of examination and testing of the machine, including its subassemblies, so as to ensure its safe operation;
- (c) The manner in which the records of examination shall be kept.

(4) A copy of the codes of practice framed under sub-regulation (3) shall always be kept in the office of the mine.

**112. Development work –** (1) The dimensions of pillars and galleries, and the shape of pillars, formed in any seam or section shall be such as to ensure stability during the formation and extraction of pillars and during the period between such formation and extraction.

(2) Save with the previous permission in writing of the Region Inspector and subject to such conditions as he may specify therein no gallery in a seam or section shall exceed three metres in height or 4.8 metres in width at any place.

(3) The pillars formed in any seam or section shall normally be rectangular in shape.

(4) (i) The distance between the centres of any two adjacent pillars left in a seam or section shall not be less than that specified in the appended table as corresponding to the depth of the seam or section from the surface at that point and the width of the galleries in the workings in question.

Depth of seam from surface	Where the width of the galleries does not exceed 3.0 metres	Where the width of the galleries does not exceed 3.6 metres	Where the width of the galleries does not exceed 4.2 metres	Where the width of the galleries does not exceed 4.8 metres
	The distance between centres of adjacent pillars shall not be less than			
1	2	3	4	5
	Metres	Metres	Metres	Metres
Not exceeding 60 metres	12.0	15.0	18.0	19.5
Exceeding 60 but not exceeding 90 metres	13.5	16.5	19.5	21.0
Exceeding 90 but not	16.5	19.5	22.5	25.5

exceeding 150 metres				
Exceeding 150 but not exceeding 240 metres	22.5	25.5	30.0	34.5
Exceeding 240 but not exceeding 360 metres	28.5	34.5	39.0	45.0
Exceeding 360 metres	39.0	42.0	45.0	48.0

(ii) The chief inspection may by an order in writing subject to such conditions as he may specify therein exempt a mine or part thereof to form pillars in variance to that specified above.

(5) Nothing in sub-regulation (2), (3) and (4) shall apply to workings in a mine made before 7<sup>th</sup> September, 1926. In such workings, the following provisions shall apply, except during the extraction or reduction of pillars -

- (a) If the distance between the centres of adjacent pillars is smaller than that specified in the table appended to sub-regulation (4) the pillars shall not be further reduced; or
- (b) If the distance between the centres of adjacent pillar is not small that that specified in the table appended to sub-regulation (4), the pillars shall not be so reduced as to render such distance smaller than –

- (i) the distance so specified; or
- (ii) any distance required in this behalf by the Regional Inspector; and

(c) The height and width of the galleries shall not be further increased without the permission in writing of the Regional Inspector and subject to such conditions as he may specify therein.

(6) In the case of all workings, where in the opinion of the Regional Inspector the dimensions of pillars or galleries are such as to render it likely that crushing of pillars or the premature collapse of any part of the workings will occur either before or during the extraction of pillars, he may, by an order in writing require such modification of the dimensions aforesaid in respect of any future working as he may specify.

**113. Depillaring operations** – (1) No extraction or reduction of pillars shall be commenced, conducted or carried out except with the permission in writing of the Chief Inspector] and in accordance with such conditions as he may specify therein. An application in prescribed proforma as given in schedule-III (form) for permission under this sub-regulation shall be accompanied by two copies of an up-to-date plan of the area where pillars are proposed to be reduced or extracted showing the proposed extent of extraction or reduction of pillars, the manner in which such extraction or reduction is to be carried out.

(2) The extraction or reduction of pillars shall be conducted in such a way as to prevent, as far as possible the extension of a collapse or subsidence of the goaf over pillars which have not been extracted.

(3)(a) Save as provided by clause (b), no pillars shall be reduced or split in such a manner as to reduce the dimensions of the resultant pillars below those required by regulation 112 or by any order made thereunder, nor shall any gallery be so heightened as to exceed three metres.

(b) During the extraction of pillars, no splitting or reduction of pillars or heightening of galleries shall be affected for a distance greater than the length of two pillars ahead of the pillar that is being extracted or reduced:

Provided that where pillar extraction is about to begin in a district such splitting or reduction of pillars or the heightening of galleries shall be restricted to a maximum of four pillars. The width of the split-galleries shall not exceed the width prescribed for galleries under regulation 112(4).

(c) The Regional Inspector may, by an order in writing and stating the reasons therefor, relax or restrict the provisions of this sub-regulation in respect of any specified workings to such extent and on such conditions as he may specify therein.

(5) Whether the method of extraction is to remove all the coal or as much of the coal as practicable and to allow the roof to cave in, the operations shall be conducted in such a way as to leave as small an area of uncollapsed roof as possible with due regard to danger from an air blast or weighting on pillars. Where possible, suitable means shall be adopted to bring down the goaf at regular intervals.

(6) Where the voids formed as a result of extraction are stowed with sand or other materials, the owner, agent or manager shall, on or before the 10<sup>th</sup> day of every month submit to the Regional Inspector a statement giving the quantity of coal raised and the quantity of sand or other material stowed in every district during the preceding month.

**114. Extraction of Coal by method other than Bord & Pillar system** - No extraction of coal by a system other than bord and pillar system shall be commenced, conducted and carried except with permission in writing of the Chief Inspector and in accordance with such conditions as he may specify therein. An application for permission under this sub-regulation shall be made in Proforma given in form-I of the Third Schedule. The application shall be accompanied by two copies of an up-to-date plan of the area where such extraction is proposed showing the proposed extent of extraction and the manner of extraction.

**115. Saving clause** – Nothing in regulation 112 or regulation 113 shall prevent the driving of any gallery through any pillar or the enlargement of any gallery beyond the limits specified by or under these regulations, where in the opinion of the manager such work is necessary for haulage, ventilation, drainage or any other purpose necessary for the proper working of the mine, if 14 days' previous notice in writing of the intention to commence such work has been given to the Regional Inspector.

Every such notice shall be accompanied by an offset plan showing details of the operation. If in the opinion of the Regional Inspector such work is likely to endanger the stability of the workings, he may, by an order in writing, require the completion, before commencing such drive or enlargement, of such protective works as he may specify therein.

**116. Roads and working places** – (1) The roof and sides of all working places and travelling roadways, including airways and travelling road-ways to second outlets, shall be made and kept secure.

(2) Proper provision shall be made to prevent the premature collapse of workings; and adequate steps shall be taken to isolate, control or remedy any such collapse which may occur.

(3) Whenever crush of pillars or any symptom of an impending collapse other than ordinarily caused by pillar extraction is detected, the manager shall inform the Regional Inspector forthwith.

**117. Powers of Inspectors** – If in any mine or part thereof, it appears to the Regional Inspector that the provisions of regulations 106, 107, 112, 113 and 116 or of any order issued under any of these regulations have not been complied with, he may give notice in writing to the owner, agent or manager requiring him to take such protective measures, within such time as he may specify in the notice. In case of non-compliance with the requirements of the notice, the Regional Inspector may, by an order in writing, prohibit the extraction of coal in the part or parts of the mine in which protective measures are required to be taken, until the requirements specified in the notice are complied with.

**118. Pointing out contraventions during inspections** – (1) If the Chief Inspector or an Inspector, during his inspection of any mine, finds or comes to know of any contravention of any

provisions of Act or the regulations, rules, bylaws of orders made thereunder, he shall enter such contravention in an inter leafed paged and bound register kept for the purpose at the mine, in Form VI and shall also point out such contravention to the owner, agent or manager, it present on the spot.

The Chief Inspector or the Inspector making the entry in the Register aforesaid shall duly sign such entries with date, and take a carbon copy of the entries for his record:

Provided that the Chief Inspector or the Inspector need not enter such contraventions which require confirmation after a survey or other further examination and he may subsequently intimate the owner, agent or manager, specifying the contraventions, if confirmed, and also any other contraventions which were, by inadvertence, not entered in the register aforesaid:

Provided further that an entry made in the register or the absence of an entry therein as also a communication in pursuance with the aforesaid proviso or absence thereof shall not in any way limit the duties or obligations of a person under the Act or the regulations, rules, bye-laws or orders made thereunder.

(2) When an entry is made in the register –

- (a) the owner, agent and manager shall each be deemed to know what is contained in that entry; and
- (b) a copy thereof shall be displayed within one day of the date of such entry on the notice board of the mine for not less than fifteen days.

(3) The owner, agent or manager of the mine shall return one copy, within a period not exceeding fifteen days from the date of the entry, to the Chief Inspector or the Inspector who made the entry with remarks thereon showing the action taken to remedy the contravention and the date on which such action was taken.

(4) The register –

- (a) shall be kept available for inspection in the office of the mine for a period of at least three years after the date of making of the last entry in it; and
- (b) shall not be removed therefrom before the expiry of the aforesaid period, except by or with approval in writing of the Regional Inspector.

**119. Multi-section and contiguous workings**– (1) No work in a higher seam or section shall be done over an area in a lower seam or section which may collapse.

(2)(a) No workings shall be made in more than one section in any seam, nor shall workings made in any two seams lying within nine metres of each other, without the prior permission in writing of the Chief Inspector and subject to such conditions as he may specify therein.

(b) Every application for permission under the sub-regulation shall be accompanied by two copies of a plan showing the proposed layout of the workings, a section of the seam or seams, the depth of the seam(s) from the surface, the rate and direction of dip, the proposed dimensions of pillars and galleries in each seam or section, and the thickness of the parting between the seams or sections.

(c) Where two or more such seams or sections are worked in a mine, the pillars in one seam or section shall as far as practicable, be vertically above or below the pillars in the other seam or section unless the strata are inclined at an angle of more than 30 degrees from the horizontal.

(d) The parting left between any two such seams or section shall not be less than three metres in thickness at any place :

Provided that the Chief Inspector may, by an order in writing and subject to such conditions as he may specify therein, permit or require a smaller or greater thickness of parting, as the case may be.

**120. Workings under railways and roads, etc.** – (1) No workings shall be made and no work of extraction or reduction of pillars shall be conducted at, or extended to, any point within 45 metres of any railway, or of any public works in respect of which this regulation is applicable by reason of any general or special order of the Central Government, or of any public road or building, or of other permanent structure not belonging to the owner of the mine, without the prior permission in writing of the Chief Inspector and subject to such conditions as he may specify therein.

(2) Every application for permission under sub-regulation (1) shall specify the position of the workings of the mine in relation to the railway or public road or works or building or structure concerned, the manner in which it is proposed to carry out the intended operations, and the limits to which it is proposed to carry out the said operations; and shall be accompanied by two copies of a plan showing the existing and the intended mining operations in so far as they affect the railway or public road or works or building or structure concerned. A copy of the application shall also be sent in the case of a railway, to the railway administration concerned; and in the case of any public works as aforesaid, to such authority as the Central Government may by general or special order direct.

(3) Notwithstanding anything contained in the regulations, the stability of such railway, road, works, building or structure shall not be endangered until it has been dismantled, diverted or vacated, as the case may be.

(4) Where the stability of such railway, road, works, buildings or structure has been endangered due to any mining operations, the Chief Inspector may, by an order, in writing, require the owner to construct in the mine belowground or on the surface such protective works within such time as he may specify in the order.

**121. Protective works before a mine is closed** – (1) The Chief Inspector may, by an order in writing, require the owner of any mine to which regulation 6 applies, to construct in the mine belowground or on the surface such protective works within such time as he may specify therein.

(2) Until the protective works have been constructed to the satisfaction of the Chief Inspector, the means of entering the mine at not less than two entrances shall be kept intact and in working order.

**122. Working near mine boundaries, belowground mines**– (1) The owner, agent or manager of every belowground mine shall have fixed boundaries of the mine and notwithstanding anything contained in sub-regulation (2), these shall not be changed except with the express permission of the Chief Inspector in writing and subject to such conditions as he may specify therein.

(2) No working shall be made within a distance equal to half the distance as specified in column (5) of table under sub-regulation (4) of regulation 112, corresponding to the depth of the seam being worked, of the boundary of any mine and in case of a disputed boundary no working shall be made within the aforesaid distance of the boundary claimed by the owner of an adjacent mine until such time as a binding agreement has been reached as to the correct boundary or the question has been finally determined by a court of law:

Provided that, where work is done in more than one seam, the barrier kept at the boundary shall, as far as practicable, be vertically coincident and of the same dimensions:

Provided further that, where the workings of any seam, for any reason, are extended or get extended within any shorter distance than what is laid down herein above, the Chief Inspector

may, by an order in writing, require the owner to construct such protective works within such time as he may specify in the order.

(3) Notwithstanding anything contained in sub-regulation (2), the Chief Inspector may, by an order in writing and subject to such conditions as he may specify therein, permit the workings of any mine or part thereof to extend within any shorter distance than what is laid down in sub-regulation (2) or may require that the said working shall not extend further than a specified distance.

**123. Working near mine boundaries, opencast mines**– (1) The owner, agent or manager of every opencast mine shall have fixed boundaries of the mine. Notwithstanding anything contained in sub-regulation (2), the boundary shall not be changed except with the permission of the Chief Inspector in writing and subject to such conditions as he may specify therein:

Provided that if any mine consists of two or more separate excavations and if, in the opinion of the Chief Inspector, they are not sufficiently near to one another to permit daily personal supervision being exercised by one manager, the Chief Inspector may, by an order in writing, require the mine to be split into two separate mines.

(2) No working shall be made within a distance of 7.5 metres of the boundary of any mine and, in case of a disputed boundary, no working shall be made within a distance of 7.5 metres of the boundary claimed by the owner of an adjacent mine until such time as a binding agreement has been reached as to the correct boundary or the question has been finally determined by a court of law:

Provided further that, where the workings of any mine, for any reason, are extended or get extended within any shorter distance than what is laid down herein above, the Chief Inspector may, by an order in writing, require the owner to construct such protective works within such time as he may specify in the order.

(3) Notwithstanding anything contained in sub-regulation (1), the Chief Inspector may, by an order in writing and subject to such conditions as he may specify therein, permit the workings of any mine or part thereof to extend within any shorter distance than 7.5 metres aforesaid, or may require that the said working shall not extend further than a specified distance, not exceeding 60 metres, of such boundary.

**124. Support Plan** – (1) The owner, agent or manager of every mine shall formulate a support plan to secure the roof and sides of belowground workplaces, which shall be subject to revision with change in condition, for all workings belowground.

(2) The owner, agent or manager of every mine having workings below ground shall, before commencing any operation frame, with due regard to the engineering classification of strata, local geological conditions, system of work, mechanisation, and past experience, and enforce the support plan specifying in relation to each working place the type and specifications of supports and the intervals between:

- (i) supports on roadways including places where machinery is used for cutting, conveying or loading;
- (ii) each row of props, roof bolts or other supports;
- (iii) adjacent props, roof bolts or other supports in the same row;
- (iv) last row of supports and the face;
- (v) powered supports;
- (vi) fore-poles or sprags;
- (vii) shields; and
- (viii) the pack and the face.



Provided that, in respect of a mine where development operations are already in progress, the support plan shall be framed and enforced within 30 days of the date of coming into force of this regulation.

(3) The manager shall, at least 30 days before the commencement of any operation subject to the proviso to sub-regulation (2) submit a copy of the Support Plan to the Regional Inspector who may at any time, by an order in writing, require such modification in the Plan as he may specify therein.

(4) The Manager shall hand over copies of the Support Plan in English as well as in a local language understood by majority of the persons employed in the mine together with illustrative sketches, to all supervisory officials concerned including the Assistant Manager and Under Manager and shall also post such copies at all conspicuous places in the mine.

(5) The Manager and such supervising officials shall be responsible for securing effective compliance with the provisions of the Support Plan, and no mine or part of a mine shall be worked in contravention thereof.

(6) The support plan shall include inter-alia system of monitoring of the support performance, measurement of strata behaviour, re-setting of supports, provision of temporary support, replacement of old supports, withdrawal of supports and clearing of falls of ground. The support plan shall also include the implementation strategy of the plan, training and inspection and supervision policies.

(7) The owner, agent or manager shall formulate and implement a code of Standing Orders specifying –

- (a) the system and the organisation for procurement and supply of supports of suitable material, adequate strength and in sufficient quantity where these are required to be readily available for use;
- (b) the method of handling including dismantling and assembling where necessary and transportation of the supports from the surface to the face and from the face line to their new site;
- (c) the system and the organisation for maintenance and checking of supports, dressing the roof and side erecting, examining and re-tightening of supports and re-erecting dislodged supports, including the use of appropriate tools;
- (d) the panel of competent persons for engagement as substitutes in the event of a regular supportsmen or dresser absenting from duty; and
- (e) the manner of making all concerned persons such as loaders, dressers, supportsmen, shortfirers, sirdars, overmen and assistant managers including persons empanelled for engagement as substitute supportsmen or dresser fully conversant with the support plan and the Codes of Standing Orders under this sub-regulation and under regulation 127 and the nature of work to be performed by each in that behalf.

**125. Use of Powered supports or shields** - The powered supports and shields used in belowground coalmines shall be of a type approved by the Chief Inspector. The approval standards for such supports shall be determined by the Chief Inspector of Mines.

**126. Setting of support** – (1) (a) Every prop shall be set securely and on a sound foundation, shall be kept tight against the roof.

(b) Where a prop is set on sand or, other loose material, a flat basepiece not less than 5 centimeter in thickness 25 centimeters in width and 75 centimeters in length shall be used.

(c) The lid used over a prop shall have a width not less than the diameter of the prop, a thickness not less than 8 centimeters and a length not less than 50 centimeters.

(2) Every bar set for supporting the roof of a roadway shall be set securely on props or on cogs or shall be securely fixed on the sides of the roadway in holes at least 50 centimeter deep made in the sides of the roadway and shall be made and kept tight against roof. Where lagging is necessary the number of laggings shall not be less than one for every metre length of the bar and the laggings shall be made and kept tight against the roof.

(3)(a) Every cog used as a support shall be well built and set on the natural floor or on a secure foundation, and shall be made and kept tight maintaining maximum possible contact against the roof.

(b) In case of timber for erection of a cog it shall be sufficient to joggle two opposite sides, provided that only four sides sawn sleepers shall be used for goaf edge supports in depillaring panels.

(c) The cogging members shall be not less than 1.2 metres in length.

(d) Before erecting cogs in a depillaring area, props shall be erected at the corners of each cog.

(4) In inclined seams the supporting props and cogs shall be so set as to ensure maximum support having regard to the inclination of the seam or roadway and probable strata movement. Where necessary such supports shall be re-inforced to prevent displacement.

(5) Every ledge and every prominent crack or slip in the roof shall be kept supported with at least a pair of cogs or cross-bars suitably lagged.

(6) Overhanging sides shall be dressed down. Where this is not practicable, stay props or other suitable means of support shall be erected at intervals not exceeding one metre.

(7) Where sand or other material is stowed or a pack is formed for the purpose of support, it shall be packed or made as tight against the roof as practicable over its whole area.

(8) (a) Roof and sides and supports shall be tested as often as necessary; and except where it is no longer necessary for purposes of support, any support loosened, broken or dislodged by or removed in any operation shall be tightened, replaced or reset with the least possible delay and particularly before persons are allowed to pass or resume work after an interruption. Where floor coal or roof coal is taken shorter props shall be replaced with longer props.

(b) In every place wherein roof coal is taken or a fall or roof or sides has occurred, no work of cleaning the dislodged coal or the fall or any part thereof shall be undertaken nor shall any person be allowed to pass, until the newly exposed roof and sides in the vicinity thereof have been examined and made safe, if necessary, by temporary supports.

(9) Notwithstanding anything contained in sub-regulation (8), only such minimum number of persons may be engaged under the supervision of a sirdar or overman as may be necessary for securing the roof and sides thereat.

(10) Where roof bolts are used for support,

- (a) only full column grouted roof bolts with adequate bearing plates shall be used,
- (b) roof bolts shall be installed as soon as the roof has been exposed under direct supervision of an assistant manager or overman,
- (c) holes shall be drilled to correct diameter and length with a suitable drill maintaining verticality / correct inclination in accordance to the support plan,
- (d) hole diameter shall not be more than 8 to 12 mm larger than the bolt diameter,

(11)(a) Powered supports, hydraulic chocks or link-bars shall be advanced as soon as practicable after a web of coal has been taken off the face so as to ensure that the area of unsupported newly exposed roof is kept to a minimum.

(b) Powered supports, hydraulic chocks, props and friction props shall be set securely and checked from time to time. When any defect is detected in any powered support or hydraulic chock, the same shall be attended to as soon as possible. Any defective hydraulic or friction prop shall be replaced immediately.

(c) Where, by reason of any irregularity in the roof, floor or sides or due to any other reasons, any powered support or hydraulic chock becomes ineffective, conventional supports in sufficient number shall be used.

(12) A code of practice shall be framed and implemented by the manager of the mine for correct installation, maintenance and monitoring of all types of supports.

**127. Withdrawal of supports** – Whenever supports are to be withdrawn, the withdrawal shall be done in accordance with the method which shall be specified in the Manager's Standing Orders. The standing orders shall cover –

- (a) the supply and use of appropriate tools and safety contrivances;
- (b) the setting of extra supports to control the collapse of roof from which supports are being withdrawn;
- (c) the sequence of withdrawal of supports; withdrawal of a cog to precede withdrawal of its corner props;
- (d) safe positioning of the persons engaged in the operation and all other persons present nearby;
- (e) training of competent persons who are entrusted with the operations; and
- (f) supervision during withdrawal of supports.

**128. Installation and withdrawal of powered supports** – In every mine where powered supports are used, it shall be the duty of the owner, agent and manager to prepare a plan for the installation of powered supports and a plan for their withdrawal and transport. This plan shall be a part of the support plan and shall be reviewed and approved, with or without any necessary amendment by the Chief Inspector of Mines before implementation.

**129. Provision of roof canopies or cabs** - Electrical, battery, or diesel-powered, self-propelling machinery including shuttle cars used below ground coal mines shall be provided with substantially constructed roof canopies or cabs which will give adequate protection against falls of ground from the roof or sides.

**130. Steep workings** – (1) In workings having an inclination of 30 degrees or more from the horizontal adequate precautions shall be taken to prevent danger to persons from falling or rolling of timber, tools or other appliances or material.

(2) No person shall work or be permitted to work at any place having an inclination of 45 degrees or more from the horizontal, where he is likely to slip or overbalance, unless he is secured by a safety belt or life line or is otherwise safeguarded.

**131. Fencings and gates** – (1) (a) The top of every opencast working shall be kept securely fenced.

(b) Where an excavation which has been formed as a result of any mining operation, extends within a distance of 15 metres from a public road or any building, substantial fencing shall be erected and maintained around the excavation.

(c) Where as a result of mining operations, a subsidence of the surface has taken place or is likely to take place and persons are likely to be endangered thereby, the owner, agent or manager shall keep the entire surface area securely and effectively fenced.

(2) Every entrance to a shaft, staple pit, sump, goaf or other dangerous place shall be provided with an efficient fence, barrier or gate, so designed and constructed as to effectively prevent any person from entering or falling therein.

(3) Where a shaft or staple pit or a gallery having an inclination of more than 30 degrees from the horizontal leads directly into a working place or travelling roadway, such place or roadway and any working place situated on its dip side, shall be securely guarded or otherwise protected as to prevent danger to persons from falling materials.

(4) Every entrance from a roadway in a mine to a part of the mine which, for the time being, is neither being worked nor being used for any purpose, by reason of any cause whatsoever, shall be provided with a fence, barrier or gate so designed and constructed as to prevent any person from inadvertently entering that part of the mine.

(5) (a) Shafts and opencast workings temporarily or permanently out of use and any place in or about an excavation which is dangerous shall be completely filled in or kept securely fenced:

Provided that if in the opinion of the Regional Inspector, any disused trench, pit or other excavation is dangerous, he may, by an order in writing, require the same to be filled in to the level of the adjacent ground.

(b) Before a mine is abandoned or the working thereof discontinued, the owner, agent or manager shall cause the top or entrance of every shaft, incline or other opening into the mine to be fenced by a structure of a permanent character sufficient effectively to prevent persons falling into or entering the same.

**132. Examination by Sirdars** – (1) Every place in a mine, whether belowground or in manual opencast working including travelling roadways and landings, where work is carried on or where persons are stationed or required to pass shall be placed under the charge of a sirdar or other competent person.

(2) The mine or district assigned to a sirdar or other competent person shall not be of such a size, nor shall any additional duties other than his duties under the regulations be such, as to be likely to prevent him from carrying out in a thorough manner the duties prescribed for him under the regulations. If any doubt arises as to the foregoing, it shall be referred to the Chief Inspector for decision.

(3)(a) At the entrance to every mine or district, one or more stations shall be fixed by the manager; and except in the case of a mine working in a continuous succession of shifts no person other than the persons making the examination under clause (b) or an official shall pass beyond any such station until all the roadways and working places to which such persons are required to have access, have been examined by the competent person in charge of the mine or district and found to be satisfactorily ventilated and in safe condition. Every such station shall be legibly marked 'STATION' and shall be of such a size as to accommodate all the persons employed in the district in any one shift.

(b) The sirdar or other competent person accompanied by such assistants as may be required shall, within two hours before the commencement of work in a shift, inspect every part of the mine or district assigned to him, in which persons have to work or pass during the shift and all roadways and working places where work is temporarily stopped and shall ascertain the condition thereof as regards ventilation, sanitation, the presence of gases, the state of the roof and sides, presence of spontaneous heating and other fire risks, and generally so far as the safety of the

persons is concerned. Similar inspections shall be made once at least in every four hours during which the shift continues, of all the roadways and other working places to which persons engaged in the mine or district are required to have access;

- (c) The examination under clause (b) shall be made with an approved flame safety lamp or any other approved apparatus made for the purpose and in case of a fiery seam also with an apparatus for detecting carbon monoxide gas which is approved by the Chief Inspector.
- (d) In case of manual opencast working, the sirdar shall pay attention to overhangs, undercuts, presence of loose stone/materials/trees, etc. within 3m of the edges, foot paths for traveling and carrying loads, fencing on top of the quarry and disused part/ abandoned quarries, fencing along footpaths/ benches where required, use of personal protective equipment and condition of dumps.
- (e) The Sirdar or other competent person shall, at the completion of his shift, record without delay the result of his inspections in a bound paged book in the prescribed format. Every such report shall be a full and accurate report of the inspections and shall include the following.
  - (i) the details referred to in clause (b) or (d);
  - (ii) the number of persons working under his charge;
  - (iii) such instructions for the purposes of securing the safety of the persons as he may have given during his shift; and
  - (iv) the date and time of the inspections, the signature of the sirdar or other competent person, and the date and time when the report was written.
- (6) In the case of a shaft in the course of being sunk, the competent person or chargeman shall –
  - (a) have entire charge of the shaft bottom and shall, in his shift, remain in the shaft while persons are at work at the bottom of the shaft. He shall be the last person to ascend the shaft at the end of the shift and if his shift is succeeded immediately by another shift, he shall not leave the bottom of the shaft until after the descent of the chargeman of the succeeding shift; and
  - (b) after each round of shots, and at the beginning of every shift, and after every cessation of work in the shaft for a period exceeding two hours, shall examine the sides of the shaft and remove all loose pieces before persons are allowed to descend.

**133. Avoidance of dangers**– (1) If at any time it is found by a competent person in charge of a mine or district, that by reason of any cause whatsoever, the mine or district is dangerous, he shall immediately withdraw all persons from the mine or district; and the mine or district shall be fenced off so as to prevent persons inadvertently entering therein.

(2) The competent person shall also immediately inform the manager or assistant manager about the danger, and shall record the fact in the book kept under sub-regulation (3).

(3) The manager shall make, or cause to be made by a competent person, a careful examination of the mine or district; and no person shall, except in so far as is necessary for enquiring into the cause of the danger or for the removal thereof or for exploration, be re-admitted into the mine or district until the mine or district is reported to be safe. A report of every such examination shall be recorded without delay in a bound paged book kept for the purpose and shall be signed and dated by the person who made the examination.

(4) If the work of removing the danger is suspended before the danger is removed, the mine or district shall be securely fenced off effectively to prevent persons entering therein during the period of suspension.

(5) Notwithstanding anything contained in these regulations –

- (a) where the danger arises from the presence of inflammable or noxious gas, the provisions of regulation 169 shall apply; and
- (b) where the appearance in any part of a mine of smoke or other sign indicates that a fire or spontaneous heating has or may have broken out the provisions of regulation 140 shall apply.

**134. General precautions** – (1) No person shall cut or remove coal from or in the vicinity of any place unless it is his authorised working place.

(2) Every person shall carefully examine his working place before commencing work and also at intervals during the shift. If any dangerous conditions is observed, he shall cease all work at that place and shall either take immediate steps to remove such danger or inform an official or the competent person in charge of the mine or district. Where several persons are working together and one of them is in charge, the examination required by this sub-regulation shall be made by the person in charge.

(3) Every person cutting coal and every person operating a coal-cutting machine or any other cutting or loading machine in any place shall see that the dimensions of that place do not exceed the dimensions specified in that behalf by these regulations.

(4) No person shall work or travel on any ledge or footpath less than 1.5 metres wide, from which he will be likely to fall more than 1.8 metres, unless he is protected by guard rails, fence or rope suitably fixed and sufficiently strong to prevent him from falling.

(5) (a) No person shall carry or be permitted to carry any load along a road or footpath having an inclination of 30 degrees or more from the horizontal.

(7) Every road or footpath, along which loads are carried by human agency, shall comply with the following requirements –

- (i) its breadth shall not be less than one metre; and
- (ii) at every place where the inclination exceeds 15 degrees from the horizontal, level steps shall be provided such that the vertical height of every step does not exceed 0.18 metre and the distance from the edge to the back is not less than 0.35 metre.

Explanation – gang-planks used for loading purposes shall not be deemed to be part of a footpath for the purposes of this sub-regulation, provided that every gang-plank shall be so inclined or constructed as to give a secure foot-hold.

(6) No person shall be employed to lift, carry or move a load so heavy as is likely to cause bodily injury or injury to health of that person. In case of any doubt as to whether risk of bodily injury or injury to health is involved, it shall be referred to the Chief Inspector for decision.

(7) Every person shall ensure that tools, wood, stones, or other articles are not put down or allowed to remain, in or near a shaft or dip gallery where work is going on, in such position as may result in their falling into the shaft or gallery.

(8) No person shall work or be permitted to work alone in any remote part of a mine where, if any accident occurred he would not soon be discovered or assisted.

(9) No inexperienced person shall be employed in the mine for any work whereby he or other persons can be seriously endangered except under the supervision and guidance of an experienced person.

## **CHAPTER-XI : Precautions against Dangers from Fire, Dust, Gas and Water**

**135. Classification of Coal seams according to their degree of gassiness** – (1) All coal seams shall be classified into different degrees of gassiness by the Chief Inspector or an Inspector assisted by such assistants and after such investigation as he may consider necessary.

(2) If in a gassy seam the percentage of inflammable gas in the general body of air or the rate of emission of such gas increases so as to bring that seam into a higher degree of gassiness, the owner, agent or manager shall within 24 hours from his knowledge of such increase, inform the Regional Inspector and also observe all the precautions required to be taken under these regulations in respect of a gassy seam of that degree. The Regional Inspector shall within 30 days of the receipt of such information verify the degree of gassiness by suitable investigations and classify the seam into the appropriate degree of gassiness:

Provided that if it is not practicable to observe all the precautions required to be taken under these regulations within 24 hours stipulated in this sub-regulation, the Regional Inspector, on a request in writing by the owner, agent or manager, may defer the observance of the required precautions, subject to such conditions as he may specify, for a period not exceeding sixty days.

(3) If in a gassy seam the percentage of inflammable gas in the general body of air or the rate of emission of inflammable gas decreases so as to bring that seam to a lower degree of gassiness, the owner, agent or manager may inform the Regional Inspector of the same. The Regional Inspector shall within 30 days from the receipt of such information verify the degree of gassiness by suitable investigations and classify the same into appropriate degree of gassiness. Till such time as the Regional Inspector so classifies all the precautions required to be observed previously shall be observed.

(4) Notwithstanding anything contained in sub-regulation (2) or (3) the Regional Inspector may at any time make investigations and reclassify a gassy seam into the appropriate degree of gassiness.

(5) The owner, agent or manager shall at least once to every 30 days examine the rate of emission of inflammable gas in cubic metres per tonne of coal raised and the percentage of inflammable gas in the general body of air as laid down in regulation 172. The results of every such examination shall be recorded in a bound paged book kept for the purpose.

**136. General precautions against Fire** – (1) No oil, grease, canvas or other inflammable material shall be stored in any mine except in a fire-proof receptacle. Greasy or oily waste in workings belowground, shall be regularly removed to the surface. In case of opencast workings or workshops, greasy and oily wastes shall be disposed off regularly in a safe manner.

(2) No person shall place or throw, or cause or permit to be placed or thrown, any naked light or lamp on or near any timber, wooden structure or other combustible material.

(3) Adequate and sufficient arrangements shall be made in every mine for early detection, control and extinguishing any fire.

(4) The owner, agent and manager of every mine shall take measures and precautions appropriate to the nature of a mine operation to prevent, detect and combat the start and spread of mine fires.

(5) The owner, agent and manager of every mine shall ensure when there is serious danger due to fire, to the safety and health of workers, operations are stopped and workers are evacuated to a safe location.

**137. Surface precautions against fire** – (1) All surface structures and supports within a horizontal distance of 10 metres from all entrances to a mine shall be of incombustible material: Provided that this clause shall not apply to temporary structures, supports and coverings at the top of a shaft which is in the course of being sunk and to the small lid of a shaft-covering operated by the rope cappel.

(2) Shale or other carbonaceous material shall not be heaped or dumped, and dead leaves or dry vegetation shall not be allowed to accumulate or remain, and combustible materials other than materials required for use within a period of 24 hours, and inflammable materials, shall not be stored within a distance of 15 metres from any entrance to a mine, which is not effectively sealed off from the workings belowground:

Provided that nothing in this sub-regulation shall prevent the dumping of coal, raised from the mine, near the entrance to the mine.

(3) In opencast workings and, where possible, in any ground broken by extraction of coal, all wild or herbaceous plants shall be removed and all dead leaves and dry vegetation cleared as often as may be necessary to prevent an outbreak of fire.

(4) No person shall deposit any heated material or ashes on any outcrop of coal or in any opencast working or any ground broken by extraction of coal.

(5) No person shall light a fire or permit a fire to be lighted in any opencast working within a distance of 15 metres from any entrance to a mine, except by the permission in writing of the manager and only for a special purpose specified in such order. All such orders shall be recorded in a bound paged book kept for the purpose:

Provided that this clause shall not apply to boilers other than vertical boilers.

(6) A competent person shall, once at least in every seven days, inspect the top of all entrances to a mine, all opencast workings and any ground broken by extraction of coal in order to ascertain whether the precaution laid down in this regulation have been complied with, and for the presence of any fire that may have broken out or any indications thereof. A record of every such inspection shall be maintained in a bound paged book kept for the purpose, and shall be signed and dated by the person making the inspection.

**138. Underground precautions against fire** – (1)(a) No timber or other combustible material shall be used in the construction of, or in connection with, any shaft lining or any room housing any machinery or apparatus belowground.

(b) Wood cuttings shall not be left in any working belowground, but shall be removed to the surface at the end of every shift.

(2) No person shall light a fire or permit a fire to be lighted in any workings belowground :

Provided that –

- (i) in the case of a gassy seam of the first or second degree], flame or electric welding or repairing apparatus may be used belowground if permitted by an order in writing of the manager. Every such order shall specify person who shall be in charge of the apparatus; and it shall be the duty of such person to bring the apparatus back to the surface when no longer required belowground; and
- (ii) in the case of a gassy seam of third degree, a flame or electric welding or repairing apparatus may be used belowground if prior permission in writing has



been obtained from the Regional Inspector and subject to such conditions as he may specify therein.

(3)(a) No person shall leave a portable light or lamp belowground unless he has placed it in charge of some other person remaining therein.

(b) At the end of a shift, unless the mine is worked by a continuous succession of shifts, after all persons have left the mine, all lights shall be extinguished and all power cut off.

(4) Proper provisions shall be made to prevent an outbreak of the fire belowground or the spread of fire from any part of the same mine or from any adjoining mine, and adequate steps shall be taken to control or isolate any such fire or heating that may occur.

(5) All unused workings connected to the surface though a walkable entrance which is not permanently closed, shall once at least in every 30 days be inspected by a competent person for signs of illicit distillation of liquor. A report of every such inspection shall be recorded in a bound paged book kept for the purpose, and shall be signed and dated by the person making the inspection.

**139. Further precautions against spontaneous heating** – The following further precautions shall be taken against the danger of spontaneous heating:

(1)(a) The seam or section shall be worked in panels having independent ventilation in such a manner that it is possible to isolate one from another easily if necessary. Where development has already been made without regard to this factor, artificial panels shall be created by the construction of stoppings. In determining the size of the panel due consideration shall be given to the desirability of enabling complete extraction of the pillars therein within the incubation period of the coal.

(b) No coal, shale or other carbonaceous material shall be left or stacked belowground. Where removal of fallen coal out of the mine is not practicable, the area shall be effectively sealed off.

(c) Except where otherwise permitted by the Chief Inspector by an order in writing and subject to such conditions as he may specify therein, no extraction of pillars in any seam or section shall be commenced until fire dams or stoppings have been provided in all entrance to the panel, except that in the fire dams or stoppings built in entrances which are to be kept open for ventilation or haulage suitable doors or openings may be left and bricks and other suitable materials shall be kept readily available their vicinity. Shale or other carbonaceous material shall not be used in the construction of fire dams or stoppings;

(d) A panel shall be isolated by adequate stoppings as soon as it has been goaved out.

(2) Sufficient material for dealing with fire shall be kept in readiness at suitable places belowground for transport and use. A sufficient number of persons shall be trained in the use of this material.

(3)(a) In order that spontaneous heating is detected in early stages, the air in the return airway of every depillaring district, and of every goaf which has not been isolated, shall be;

(i) tested for percentage of carbon monoxide once at least in every seven days with an automatic detector of a type approved by the Chief Inspector; and

(ii) completely analysed once at least in every 30 days with a view to determining the ratio CO-formed/O<sub>2</sub>- absorbed.

The result of every such tests shall be recorded in a bound paged book kept for the purpose and shall be signed and dated by the person carrying out the test.

(b) If successive tests show any steady increase in the CO-formed O<sub>2</sub> – absorbed ratio, suitable measures shall be taken to determine the site of the heating and to deal with it.

(c) Every depillaring district shall be inspected on every idle day, and all unused workings which have not been sealed off shall be inspected once at least in every seven days, by a competent person for any fire risks. The isolation stoppings built around goaved out areas and unused workings shall be inspected at similar intervals. A report of every such inspection shall be recorded in a bound paged book kept for the purpose, and shall be signed and dated by the person making the inspection.

(4) Where at any mine or part special conditions exist which make compliance with any of the provisions of this regulation not necessary or reasonably practicable, the Regional Inspector may, by an order in writing and subject to such conditions as he may specify therein, grant a relaxation from the provision:

(5) Where coal is stacked on surface suitable arrangement shall be made for spraying of water on the coal stack at regular interval so as to prevent spontaneous heating.

(6) (a) Hydraulic fluid which is not fire resistant shall not be used belowground.

(b) Precautions shall be taken to minimize the possibility of hydraulic fluids or oils coming in contact with hot surface, electrical apparatus or cables.

(c) Combustible oils or material shall not be used for filling in electrical equipment.

**140. Precautions after a fire has broken out** – (1) (a) On the appearance in any part of a mine of smoke or other signs indicating that a fire or spontaneous heating has or may have broken out, all persons other than those whose presence in the mine is deemed necessary for dealing with the fire or heating shall be immediately withdrawn from the mine. No person, other than those required for dealing with or sealing off the fire or heating, shall be admitted in the mine until the fire or heating has been extinguished or effectively sealed off and an examination has been made by the manager or by the assistant manager or underground manager and the mine has been declared to be safe. A report of every such examination shall be recorded in a bound paged book kept for the purpose and shall be signed and dated by the person making the examination :

Provided that the Regional Inspector may, by an order in writing and subject to such conditions as he may specify therein, permit the employment in the mine, of persons other than those required to deal with the fire or heating.

1(b) The examination required by clause (a) shall be made with an approved flame safety lamp and other means of detecting carbon monoxide gas approved by the Chief Inspector.

(2) During the whole time that any work of dealing with or sealing off a fire or heating belowground is in progress –

(a) a competent person shall be present on the spot throughout.

(b) adequate precautions shall be taken to prevent danger to persons from any noxious, asphyxiating or inflammable gases, flame, steam and ejected or rolling down hot material ; explosion of water gas and falling into crevices, pot holes that may occur in the area on fire;

(c) there shall be kept available, at or near all places belowground:

(i) adequate number of self-rescuers and at least two smoke helmets or other suitable apparatus for use in emergency;

(ii) an apparatus for detecting carbon monoxide gas approved by the Chief Inspector; and

- (iii) a flame safety lamp or other means of detecting carbon dioxide gas and oxygen deficiency, approved by the Chief Inspector.

(3) The manager of every mine shall prepare and establish a detailed scheme for the provision and maintenance of suitable fire-fighting arrangements; for prevention, detection, dealing and control of any heating or fire; for the examination and maintenance of the protective measures taken to control or isolate a fire or heating and for ensuring safety of persons engaged in the said operations. The scheme shall be suitably modified and kept updated as the situation warrants.

**141. Equipment for fire-fighting – (1) In every mine:**

- (a) unless expressly exempted in writing by the Regional Inspector, effective means of delivering to all working places belowground and all other places of fire risk such as coal stocks, spoil heaps containing carbonaceous material and exposed coal surfaces liable to heating an adequate quantity of water at sufficient pressure for the purpose of efficient fire fighting shall be provided and kept maintained;
- (b) fire stations with a suitable supply of fire-fighting equipment shall be established and kept maintained at convenient points, both on surface and belowground; and
- (c) sufficient supply of sand or incombustible material and suitable portable fire extinguishers in sufficient quantity or automatically operated fire suppression devices shall be provided at:
  - (i) every entrance to a mine or district and at every landing and shaft bottom in use;
  - (ii) every place where timber, grease, oil or other inflammable material is stored;
  - (iii) every engine room, diesel engine maintenance workshop and filling station, storage battery charging station;
  - (iv) on each track and off-track locomotive, self propelled manriding car and personnel carrier.
  - (v) At each permanent and temporary electrical installation
  - (vi) At locations where welding, cutting or soldering with arc or flame is being done.
  - (vii) with every HEMM used in opencast workings;
  - (viii) such other special places of fire risk as may be specified by the manager
- (d) In conveyor belt installation specially designed water or foam spray or deluge systems or dry chemicals shall be installed above each belt drive, belt take up, electrical control, gear reducing unit and other strategic locations on the conveyor belt system.
- (e) Adequate number of suitable fire extinguishers or automatically operated fire suppression devices shall be provided on continuous mining machines, other face cutting machines, loading machines, roof bolting machines and other hauling machines

(2)(a) Soda-acid type extinguishers or water shall not be used for fighting oil or electrical fires.

(b) Foam type extinguishers shall not be used for fighting electrical fires.

(c) Fire-extinguishers containing chemicals which are liable, when operated, to give off poisonous noxious ashes shall not be provided or used belowground:

Provided that nothing in these clauses shall be declined to prohibit the use belowground fire-extinguishers giving off carbon dioxide when operated.

(3)(a) A competent person shall, once at least in every month, examine all the equipment, material and arrangements provided for fire-fighting and shall discharge and re-fill the fire-extinguishers as often as may be necessary to ensure that these are in proper working order.

(b) Any deficiency found during any such examination or otherwise shall be immediately remedied.

(c) A report of every such examination including discharge and re-filling of fire-extinguishers shall be made in a bound-paged book kept for the purpose and shall be signed and dated by the person making the examination.

**142. Organisation for fire fighting** - In order to prevent accidents due to fire:

(1) the owner, agent and manager of every mine shall establish a proper organisation for fighting shall exist in the mine. For this purpose fire stations shall be established at surface and also on every main haulage roadway belowground at suitable places in the intake airway near the main shaft. Adequate fire fighting equipment shall be kept in every such fire station;

(2) a sufficient number of plans showing the fire fighting equipment, the water mains, taps, fire-stations, pumping stations, ventilation system, escape route etc. maintained at the mine, and giving such other information as may be useful for the purpose of fighting fires shall be prepared, and up-to-date copies of these plans shall be kept available at suitable places both on the surface and belowground;

(3) adequate number of persons shall be trained in the use of fire-extinguishers and in fire fighting. Such persons shall be familiar with the position of all fire fighting equipments provided in the mine in general and near their places of work in particular; and

(4) the manager of every mine shall also draw up standing orders laying down the procedure to be adopted for giving warnings of fire for withdrawal of personnel from the mine and for the conduct of fire fighting operation. The standing order shall to Regional Inspector of mines for his approval.

**143. Apparatus for testing for Carbon Monoxide** - In every belowground mine there shall be kept at the mine constantly available for use suitable apparatus for detecting carbon monoxide gas approved by the Chief Inspector :

**144. Precautions when a fire exists** – (1) No person shall be employed in any seam –

(a) where a fire or spontaneous heating exists in a lower seam whether such fire has been sealed off by means of fire stoppings or not; or

(b) where the seam has a common ventilation system with another seam on fire; or

(c) where the outlets of openings of the seam are within 60 metres of an active fire or spontaneous heating in a higher seam or on the surface in any ash heap or spoil heap or in any other heap or place or any other fire or spontaneous heating which cannot be controlled immediately or where broken ground connected with the seam exists within 60 metres of such fire or spontaneous heating; or

(d) where the parting with an overlying seam on fire or in which spontaneous heating has taken place; or with surface containing an active fire or spontaneous heating in any spoil heap or ash heap or in any other heap or place; or any other fire or spontaneous heating which cannot be controlled immediately, consist of less than 10 metres of hard rock;

except with the permission in writing of the Chief Inspector and subject to such conditions as he may specify therein.

(2) In any working mine, in which a fire is known or believed to exist –

- (a) adequate precautions shall be taken to prevent the passage of air, from any part of the mine or from the surface, into the fire area through any broken strata.
- (b) No work other than the operations required by clause (a) shall be done in any part of the mine which is not effectively sealed off from any such goaf or broken strata.

(3) In every fiery seam or gassy seam of the second or third degree, arrangements shall be made once at least every 30 days to ascertain the atmospheric condition behind the stoppings built to sealed off the area of old workings or such goaf or a fire or spontaneous heating unless such stoppings are capable of resisting force of an explosion.

(4) (a) Every stopping erected to isolate or control a fire or spontaneous heating belowground or to seal off goaf or an area of old workings] shall be numbered, and shall be of adequate strength and so maintained as to prevent any leakage of air or gas through it. Where water is likely to accumulate behind any such stopping there shall be provided in the stopping a suitable pipe or other device to drain away the water without permitting any leakage of air or gas, etc.

(b) where in any mine or part thereof the provisions of clause (a) have not been complied with or where in the opinion of the Regional Inspector the steps so taken are inadequate, he may give notice in writing to the owner, agent or manager requiring him to take such protective measures, within such time, as he may specify therein. In case of non-compliance with the requirements of the notice, the Regional Inspector may, by an order in writing, prohibit until the requirements of the notice have been complied with to his satisfaction, the employment in the mine or part, of any person whose employment is not, in his opinion, necessary for the purpose of complying with the requirements aforesaid.

(5) A competent person shall, once at least in every seven days, inspect all stoppings erected to isolate or control a fire or spontaneous heating belowground. During every such inspection, he shall ascertain the general condition of every stopping, check it for leakage and presence of gas, and ascertain the temperature and humidity of the atmosphere outside the stopping. For every stopping, he shall place his signature, with date, on a check-board provided for the purpose at a suitable position on the stopping and this record shall be maintained for a period of not less than three months. A report of every such inspection shall also be recorded in a bound paged book kept for the purpose shall be signed and dated by the person making the inspection:

Provided that the Regional Inspector may, by an order in writing, require such inspection to be made at such shorter intervals as he may specify therein.

#### **145. Precautions against dust. –**

(1) The owner, agent or manager of every mine shall take such steps as are necessary for minimizing emissions of dust and for the suppression of dust which enters the air at any work place belowground or on surface and for ensuring that the exposure of workers to respirable dust is limited to an extent that is reasonably practicable but in any case not exceeding the limits that are harmful to the health of persons.

(2) For the purpose of this regulation, a place shall not be deemed to be in a harmless state for person to work or pass or be therein if the 8 hours time-weighted average concentration of airborne respirable dust in milligrams per cubic metre of air sampled by dust sampler of a type approved by and determined in accordance with the procedure as specified by the Chief Inspector by a general or special order, exceeds two where working is being made wholly in a coal seam or where free respirable silica is less than 5 percent and the value arrived at by dividing the figures of ten with the percentage of free respirable silica present in other cases; or

(3) (a) The owner, agent or manger of every mine shall, within six months of the coming into force of the regulation and once at least every six months thereafter or whenever the Regional

Inspector so requires by an order in writing, cause the air at every work place where airborne dust is generated to be sampled and the concentration of respirable dust therein determined:

Provided that, if any measurement at any workplace shows the concentration in excess of fifty percent or seventy five percent of the allowable concentration as specified in sub-regulation(2) (hereinafter referred to as 'permissible limit') the subsequent measurements shall be carried on at intervals not exceeding three months or one month respectively :

Provided further that, such measurements shall also be carried on immediately upon the commissioning of any plant, equipment or machinery or upon the introduction of any new work practice or upon any alteration therein that is likely to bring about any substantial change in the level of airborne respirable dust.

(b) The samples drawn shall as far as practicable, be representative of the levels of dust exposure of work-persons. For this purpose, the sampler shall be positioned on the return side of the point of dust generation and within 1 metre of the normal working position of but not behind the operator or other worker whose exposure is deemed to be maximum in his working group.

(c) Based on the results of static or personal sampling the representative dust exposure profiles for different categories of workers shall be estimated by "portal to portal monitoring" of selected workers whose exposure is deemed to be representative of their working groups.

(d) samples shall be taken by a person who has been specially trained for the purpose in the sampling equipment and accessories that have been checked to ensure correct maintenance and efficient operation thereof and examined, treated and calibrated on a date which is not earlier than one year.

Provided that if the dust sampling is carried out by a laboratory other than belonging to the mine such laboratory shall be approved in writing by the Chief Inspector in this behalf.

(e) Respirable dust content of the samples and in case of samples collected from a working other than the working being made wholly in a coal seam, quartz content shall be determined at a laboratory approved in writing by the Chief Inspector in that behalf.

(f) All result of measurements of airborne respirable dust and all other relevant particulars shall be systematically recorded within fourteen days of the date of collection of samples, in a bound paged book kept for the purpose and every entry in the book aforesaid shall be countersigned and dated by the manager within twenty four hours.

(4) When the dust monitoring results have established that the permissible limit of dust concentrations being exceeded at any place, immediate steps shall be taken to minimize the emission of dust and to notify the Regional Inspector. If however, the average concentration of respirable dust in a series of 5 samples taken in 7 successive normal working shifts during the subsequent month exceeds one and a half times the "permissible limits" the relevant operation or operations causing excessive dust shall cease. The operation or operations shall not be resumed and allowed to be carried on until improvements have been made in the prevention and suppression of dust and fresh sampling carried out immediately on resumption of the said operation or operations has established that such improvements have reduced the dust concentration below the "permissible limit".

Provided that if the dust prevention and suppression device of any machinery or equipment fails to operate efficiently the operation of the said machinery or equipment shall likewise cease and shall not be resumed until the defect therein has been rectified:

Provided further that, purely as a contingency measure or as a secondary means of protection in a work situation wherein it is technically not feasible to reduce the respirable dust concentration

below the 'permissible limit' or during the time period necessary to install and commission any device or to institute any new work practice for dust prevention or suppression, compliance with the permissible limit of dust may be achieved by remote operation or by job rotation and failing which by the use of suitable dust respirator.

(5) The owner, agent or manager or every mine where need of dust respirators might arise, shall provide dust respirators of approved type in sufficient number and at no cost to the concerned workpersons for their use; for the dust respirators to be regularly cleaned, disinfected and maintained in efficient working order; and for the proper fitting of and for thorough training of the concerned workers in the need for the correct use of respirators.

(6) To prevent the liberation and accumulation of dust and the propagation of airborne dust, the following provisions shall have effect namely :

- (a) dust shall be suppressed as close as possible to its source of formation;
- (b) during any operation of drilling or boring on surface or belowground -
  - (i) the production of dust shall be reduced by using bits which are sharp and of proper shape, by keeping suitable pressure on the bits and by keeping the holes clear of the cuttings;
  - (ii) except in naturally wet ground, a jet water shall be directed on to the cutting edge to wet the cuttings or other equally efficient device approved by the Chief Inspector shall be provided and kept in operation throughout the drilling or boring operation to prevent the atmosphere being charged with dust. Where pneumatic drilling is performed, water shall be turned on before turning on compressed air to the drill. When, however, drilling is done by hand, it shall be sufficient if holes are kept constantly moist during such drilling.
- (c) every roadways on surface or below ground where mobile mining machinery ply, shall be regularly wetted or shall be effectively treated with some other equally efficient agent to reduce dust being raised in the atmosphere to a minimum.
- (d) no plant for the screening or sorting of coal and as far as practicable, no heap of cinder, cement, sand, mortar or other dry and fine material shall be placed within 80 m. of the top of any down-cast shaft or other intake airway nor shall any such material be so handled as to make it air-borne and drawn into such shaft or airway.
- (e) In every working belowground –
  - (i) no machinery or equipment which is likely to emit dust in excess of 'permissible limit' shall be operated unless it is equipped with a suitable dust-prevention and suppression device and unless such device is operating efficiently ;
  - (ii) the design, arrangement, material and condition of picks on every mechanical coal cutter shall be such as to reduce the formation of dust to the minimum and no mechanical coal cutter shall be operated unless suitable water sprays or jets of water are directed on the cutting edges thereof so as to damp the cuttings as they are formed;
  - (iii) every working face and the floor, roof and sides of every roadway or airway within 50 metres thereof shall be, unless naturally wet throughout, regularly

washed down to prevent accumulation of dust and shall be kept thoroughly wetted during the work shifts;

- (iv) a current of air sufficient to clear away the dust emitted by any machinery or operation and to dilute the dust concentration below the 'permissible limit', shall be maintained by means of general ventilation and if necessary, by local ventilation, so however that, as far as practicable, the velocity of air in any roadway or workplace shall not be such as to raise dust in the atmosphere;
- (v) after blasting, working places shall not be entered unless sufficient time has elapsed for dust, smoke and fumes to be cleared by a current of air and the broken material shall not be moved unless it has been thoroughly wetted with water;
- (vi) vehicles, tubs and conveyors used for transport of coal shall be maintained in good condition so as to minimise spillage or leakage. Chutes, spiral conveyors, bins, tipplers conveyor discharge points and skip loading and unloading installations shall be so controlled as to reduce the formation of dust to the minimum. Such material shall be also thoroughly wetted with water unless it is already wet or other effective means of dust suppression are used; and
- (vii) unless, owing to special difficulties, exempted in writing by Regional Inspector in that behalf and subject to such conditions as he might specify therein, water in pipes in sufficient quantity and under adequate pressure and independent of any pumping system, shall be provided and maintained so as to get maximum efficiency in the laying of dust.

(f) no process of crushing, breaking, disintegrating, opening, grinding, screening or sieving of coal or any operation incidental thereto, shall be carried out at any mine unless efficient watering or other appropriate and effective dust control measures, such as, but not limited to isolation, enclosure, exhaust ventilation and dust collection are designed, provided, maintained and used.

(g) the exhausted air, belowground, which contains dust in excess of the 'permissible limit' shall be efficiently diluted and if necessary filtered so as to reduce the concentration of respirable dust therein below ten percent of the 'permissible limit' before being re-circulated into working places.

(h) every device used for the prevention and suppression of dust produced by any machinery, equipment or process as also for the filtering of the exhausted air and every dust respirator shall be inspected once at least in every seven days and shall be thoroughly examined and tested at least once in every period of six months and reports of the results of every such inspection, examination and test shall be recorded in the register maintained under clause (f) or sub-regulation (3).

(7) The manager of every mine where airborne dust is generated shall formulate and implement a scheme specifying –

- (a) the location, frequency, timing, duration and pattern of sampling;
- (b) the instruments and accessories to be used for sampling,
- (c) the laboratory at which respirable dust content of samples and quartz content shall be determined;



- (d) the format in which the results of measurements of dust concentration and other particulars are to be recorded;
  - (e) the organisation for dust monitoring and for the examination and maintenance of dust prevention and suppression measures and dust respirators; and
  - (f) the manner of making all persons concerned with the implementation of the dust control measures fully conversant with the nature of work to be performed by each in that behalf.
- (8) The Regional Inspector may, where special conditions exist, permit to require by an order in writing and subject to such conditions as he may specify therein, any variation in the foregoing provisions or in the manager's scheme.
- (9) If any doubt arises as to why matter referred to in this regulation, it shall be referred to the Chief Inspector for decision."

**146. Execution of measures for dust control** – (1) (a) These shall be maintained at every mine having working belowground a dust plan on a scale having representative factor of not less than 1/2000. The dust plan shall clearly show (by distinctive colours, code letter and/or numbers) the separate areas: -

- (i) which are naturally wet;
  - (ii) which require treatment with water indicating the system of water pipe lines laid down for the purpose; and
  - (iii) Which require treatment with incombustible dust at such intervals of 24 hours, 7 days, 14 days, 30 days three months or other specified period as the case may be (The intervals aforesaid shall be based on the results of analysis of routine mine dust samples collected from the areas concerned).
- (b) The areas aforesaid shall be clearly demarcated in the workings belowground by means of suitable notice boards or by other suitable means.

(2)(a) Every part of a mine which is not naturally wet throughout or which is not isolated by explosion-proof stoppings shall be treated –

- (i) with fine incombustible dust in such manner and at such intervals as will ensure that the dust on the floor, roof and sides and any support or structure shall always consist of a mixture containing not less than that 75% of incombustible matter in case of coal seams containing less than 30% volatile matter (on dry ash free basis) and 85% of incombustible matter in case of coal seams containing more than 30% of such volatile matter; or
  - (ii) with water in such manner and at such intervals as will ensure that the dust on the floor, roof and sides and or any support or structure is always combined with not less than 30% by weight of water in intimate mixture; or
  - (iii) in such manner as the Regional Inspector may approve by an order in writing.
- (b) The incombustible dust used for the purpose for this sub-regulation shall be :
- (i) such that it does not contain more than 5% of free silica;
  - (ii) of such fineness and character, that it is readily dispersible into the air and that, when used in places which are not directly wetted by water from the strata it does not cake but it is dispersed into the air, when blown upon with mouth or by a suitable appliance; and

(iii) as far as practicable light in colour.

(c) No such incombustible dust shall continue to be used if it is found by tests which shall be carried out once at least in every three months, not to comply with the foregoing requirements:

Provided that when the supply of incombustible dust used in a mine is not from a regular source, these tests shall be carried out whenever a fresh supply of incombustible dust is received.

(d) where any place or part of the mine is to be treated with incombustible dust :

- (i) before treating with incombustible dust, all coal dust shall be cleaned, as far as practicable, from the roof, sides, floor, props, cogs, bars, brattice cloth or any other objects or structure or place on which coal dust may deposit, and all dust so collected shall be removed to the surface within 24 hours.
- (ii) Incombustible dust shall be spread on the objects, structure and places aforesaid in adequate quantity and at such intervals as may be necessary to ensure compliance with the provisions of this sub-regulation.
- (iii) the cleaning of coal dust and spreading of incombustible dust shall be carried out in the direction of the flow of the air;
- (iv) a sufficient supply of incombustible dust shall be kept readily available at suitable places in the mine, and any deficiency in the supply of dust underground shall immediately be brought to the notice of the manager; and
- (v) incombustible dust stacked at different places and kept on pans or on dust barriers in the mine shall be changed whenever it is no longer readily dispersible or whenever it becomes coated with coal dust, such dust shall be removed.]

(3) A daily record of the areas cleaned of coal dust and of the areas treated with incombustible dust or with water and the amount of incombustible dust used shall be maintained in a bound paged book kept of the purpose. Every entry in this book shall be signed and dated by the dust in-charge, and countersigned by the manager or the ventilation officer.

(4) The dust control measures aforesaid shall be carried out under the supervision of a competent person holding a manager's or overman's certificate or a degree or diploma in mining or mining engineering from a university or institution approved by the Central Government for the purpose of proviso to Regulation 16(1). No duties with respect of sampling of dust under Regulation 147 shall be entrusted to this person who may be designated as the "Dust Incharge" nor any other duties shall be entrusted to such person except with the previous permission of the Regional Inspector:

Provided that in the case of a mine having an average monthly output of less than 5000 tonnes, the Dust Incharge referred to in this regulation can act as the Sampling Incharge referred to in regulation 147.

(5) The Dust Incharge shall see :

- (a) that every part of the mine which, under these regulations, requires treatment with water, is thoroughly drenched or sprayed with water immediately before firing shots and also at intervals during the working hours so as to strictly comply with the provisions of regulation 146(2)(a)(ii)

- (b) that every part of the mine which, under these regulations can be treated with incombustible dust, is so treated as to strictly comply with the provisions of regulation 146(2)(a)(ii); and
- (c) that the arrangements for treating with water or incombustible dust as aforesaid are maintained in good order.

**147. Check on measures for dust control** – (1) For the purpose of ensuring adequate treatment of coal dust as required under regulations 145 and 146 systematic samples of mine dust shall be collected, tested and analysed at intervals and in the manner specified in this regulation.

(2)(a) Every return airway as lies within two hundred metres of the last working face and every haulage tramming or conveyor roadway which is not naturally wet throughout, shall be divided into ones not longer than one hundred and fifty metres each:

Provided that where in a mine some parts are being treated with water and others with incombustible dust the zones shall be so formed that in each zone only one system of treating coal dust is being followed.

(b) Every zone formed as aforesaid shall be divided into three equal sections, each not exceeding 50 metres in length.

(3)(a) Every zone shall be given a distinct number and every section the code letters a, b or c in a systematic manner. The zones and sections, with their numbers and code-letters, shall be clearly marked on a plan prepared on a scale having a representative factor of not less than 1/2000 hereinafter called the "sampling plan". The sampling plan shall clearly show the areas of the mine that are naturally wet throughout.

(b) Every zone and section shall also be distinctly demarcated in the workings below ground by means on suitable notice boards or by other suitable means.

(4)(a) Representative samples of dust shall be collected once in every 30 days from every zone, and for this purpose samples may be collected from different sections a, b or c in rotation such that, during every such period of 30 days, all samples are collected from the section a or section b or section c.

(b) Representative samples aforesaid shall be collected in a systematic manner irrespective of the cleaning and treating operations but shall in no case be collected with 20 hours of cleaning and treating of any zone, section or part thereof.

(c) If the representative sample of mine dust from any particular zone shows that the provisions of regulation 146(2)(a) have not been complied with, immediate steps shall be taken to clean and treat whole of the zone so as to comply with the provisions of regulation 146(2)(a)

(5) In every travelling roadway, and in every airway other than those specified in sub-regulation (2)(a) samples shall be taken in such a systematic manner and at such intervals (not exceeding three months) that a proper check is maintained on the efficiency of the treatment thereof in terms of regulation 146(2)(a)

(6)(a) Samples of dust shall be collected from roof, sides, and floor, and shall comprise of dust collected to a depth not exceeding five millimeters on the roof and sides, and to a depth not exceeding 10 millimeters on the floor.

(b) Where a zone is treated with incombustible dust, the samples shall be collected by a method of 'strip' sampling, the strips being as near as possible of equal width of not less than 10 centimetres, and a uniform intervals not exceeding five metres.

(c) Where a zone is treated with water the samples shall be collected by a method of "spot" sampling such that a spot-collection of dust is made for every metre of the length sampled, as nearly as possible at regularly spaced intervals along a zigzag path.

(d) In collecting the samples aforesaid, the strips shall be extended into or spot collection made from any cross galleries upto the air-stoppings, if any.

(e) Each sample shall be well-mixed and then reduced in bulk (by quartering) to a weight of not less than 30 grammes. Each sample so reduced shall be packed in a moisture-proof container which shall be suitably labeled or marked.

(7) The sampling operations aforesaid shall be carried out under the supervision of a competent person holding a manager's or overman's certificate or degree or diploma in mining or mining engineering from a university or institution approved for the purpose of regulation 16. He shall be designated as the "Sampling Incharge" and shall be different from Dust Incharge appointed under regulation 146. No other duties shall be entrusted to this person except with the previous permission of the Regional Inspector.

(8) Within seven days of taking of each sample, it shall be sent for analysis and the result of such analysis, immediately on its receipt, shall be recorded in a bound-paged book kept for the purpose. Every entry in the book aforesaid shall be signed and dated by the sampling incharge and be countersigned and dated by the manager.

Explanation – A place in a mine is considered "Naturally wet throughout" if it is moist enough to keep the coal dust present, at any time, on the roof, sides and floor and other objects at that place so that it is always combined with not less than 30 percent by weight of – was in intimate mixture.

**148. Stone dust barriers** – (1) In every gassy seam of the second or third degree or in the development working in a gassy seam of the first degree in which there is likelihood of occurrence of inflammable gas in dangerous quantities, additional precautions shall be taken by providing stone dust barriers to prevent an ignition or explosion from extending from one part of the mine to the other.

(2) Every such stone dust barrier shall be of such a type as may be approved by the Chief Inspector by a general or special order in writing and shall be maintained in such manner as may be specified in the said order :

Provided that the Chief Inspector may permit in any mine or part thereof may alternative precautionary measures to be taken in lieu of stone dust barriers.

(3) If any dispute arises as to whether stone dust barriers or other alternative precautionary measures are required to be provided in any part of a gassy seam of the first degree, under sub-regulation (1), the question shall be referred to the Chief Inspector or who shall decide the same.

**149. Precautions against irruption of gas** – (1) Where any working is extended to within 30 metres of any goaf or disused workings containing or likely to contain an accumulation of inflammable or noxious gases, there shall be maintained at least one bore-hole not less than 1.5 metres in advance of the working. The operation of drilling the bore hole shall be carried out under the supervision of a competent person, and no lamp or light other than an approved safety lamp or torch shall be used in any such working.

150. Recovery and exploratory work – (1) After an explosion of inflammable gas or coal dust has occurred in a mine, only such persons as are authorised by the manager or by the principal official present at the surface, shall be allowed to enter the mine.

(2) When it is intended of proposed to reopen a mine or part thereof, which has been isolated, sealed off or flooded with water to deal with a fire or spontaneous heating, the owner, agent or manager shall, not less than 30 days before the commencement of such work, give notice in writing of such intention or proposal to the Regional Inspector and the Chief Inspector.

(3) Where it is intended to carry out any exploratory work in a mine or part belowground likely to contain irrespirable atmosphere –

All work shall be done under rescue cover only.

- (a) no party of less than three persons shall be allowed to proceed to carry out such work; and
- (b) every such party shall carry a cage containing suitable birds or other means of detecting carbon monoxide gas approved by the Chief Inspector and also an approved flame safety lamp.

**151. Danger from surface water** – (1) (a) Where any mine or part thereof is so situated that there is any danger of inrush of surface water into the mine or part, adequate protection against such inrush shall be provided and maintained. Whether such protection is adequate or not can be determined by the Chief Inspector whose decision shall be final.

(b) Except with the permission of the Chief Inspector in writing and subject to such conditions as he may specify therein and subject to the provisions of clause (a), every entrance into a mine shall be so designed, constructed, and maintained that its lowest point (which means the point at which a body of rising water on surface can enter the mine) shall be not less than 1.5 metres above the highest flood level at that point.

(c) Every year, during the rains constant watch shall be kept on the floods levels on the surface of the mine and if at any time the levels cross the highest levels earlier recorded, such levels shall be marked by permanent posts along the edges of water. The new highest levels thus observed shall be recorded with the date of the highest flood level on the plans by an actual survey. Highest flood level shall not be plotted on plans by interpolations.

(d) If there are water dams or reservoirs built across rivers and water courses on the upstream side, arrangements shall be made for communication between appropriate authorities for the purpose of ascertaining the quantity and timing of water released from the dams which is like to endanger safety of the mine; arrangement for similar communication shall be made when water level rises on the upstream side which is likely to endanger any mine.

(e) In every mine which is likely to be endangered by surface water, the highest flood levels and danger levels atleast 1.2 metres or as required by the Regional Inspector below the highest flood level shall be permanently marked at appropriate places on the surface and whenever water rises towards the danger level at any place all persons shall be withdrawn from the mine sufficiently in advance; for this purpose adequate arrangements of quick communication to all parts of the mine by effective systems shall be provided and maintained.”

(2) No workings shall be made in any mine vertically below –

- (a) any part of any river, canal, lake, tank or other surface reservoir; or
- (b) any spot lying within a horizontal distance of 15 metres from either bank of a river or canal or from the boundary of a lake, tank or other surface reservoir;

except with the permission in writing of the Chief Inspector and subject to such conditions as he may specify therein.

(3) Every application for permission under sub-regulation (2) shall be accompanied by two copies of a plan and section showing the existing position of the workings of the mine, the proposed layout of workings, the depth of the surface, the position and depth of any goaves in every seam in the neighborhood, all faults, dikes and other geological disturbances and such other particulars as may affect the safety of the mine or of the persons employed therein.

Explanation. – Where sand or alluvium are lying in the course of a river, canal, lake, tank or reservoir, the depth from the surface shall be reckoned from the surface of hard ground underlying such sand or alluvium.

(4) All workings made under sub-regulation (2) shall be clearly demarcated belowground.

(5)(a) A competent person shall, once at least in every 14 days during the rainy season and once at least in every 30 days during other periods of the year, examine every protective measure provided under sub-regulation(1), whether in use or not, for their stability. A report of every such examination shall be recorded in a bound paged book kept for the purpose, and shall be signed and dated by the person making the examination and countersigned by the manager.

(b) The protective measure and workings aforesaid shall also inspected, once at least in every quarter by the manager personally.

**152. Danger from underground inundation** – (1) Proper provision shall be made in every mine to prevent irruption of water other liquid matter or any material that is likely to flow when wet from the workings of the mine the same mine or of an adjoining mine and to prevent accidents while drilling bore-holes for probe or release of a body of water or other liquid matter.

(2) Where work is being done in –

(a)(i) any seam a section below another seam or section; or

(ii) any place in a seam or section, which is at a lower level than any other place in a lower seam or section; or

(iii) any place in a seam approaching a fault passing through an upper seam or section, which contains or may contain an accumulation of water or other liquid matter or any material that is likely to flow when wet; or

(b) any water-bearing strata – all useful information including the position, extent and depth of the above mentioned features shall be acquired and kept recorded and a scheme of working designed to prevent irruption of water or other liquid matter or any material which flows when wet shall be prepared and put into operation.

(3) Without prejudice to the requirement of sub-regulation (1) and sub regulation (2), no working which has approached within a distance of 60 metres of any other working (not being the working which has been physically examined and found to be free from accumulation of water or other liquid matter or any material that is likely to flow when wet) and whether in the same mine or in an adjoining mine, shall be extended further except with the prior permission in writing of the Regional Inspector and subject to such conditions as he may specify therein.

Explanation – For the purpose of this sub-regulation, the distance between the said workings shall mean the shortest distance between the workings of the same seam or between any two seams or sections, as the case may be, measured in any direction whether horizontal, vertical or inclined.

(4)(a) Every application for permission to extend any working referred to in sub-regulation (3) shall be accompanied by two copies of the plan and section showing:

- (i) The outlines of all such disused or abandoned workings in relation to the working approaching them and also the depth of such disused or abandoned workings from the surface;
- (ii) The outlines, the lay out and the method of the proposed workings for which permission is sought;
- (iii) The faults, dykes and other geological disturbances in relation to working specified in clause (i) or (ii) of the sub-regulation; and
- (iv) Any other information that is available with the management and any other particulars or information that may be required by the Chief Inspector.

(b) When permission is granted to extend any working referred to in sub-regulation (3) or sub-regulation (5), it shall be extended strictly in accordance with the plan the method approved under, and the conditions specified in, such permission; and there shall be no variation therefrom unless such variation is again approved by the Chief Inspector.

(5) Whenever seepage of water, which is not normal to the seam is noticed at any place workings or if there be any such suspicion or doubt such working shall immediately be stopped and the Chief Inspector and the Regional Inspector shall forthwith be informed of such seepage. Such working shall not be extended further except with the prior permission in writing of the Chief Inspector and subject to such conditions as he may specify therein.

(6)(a) The height or width of any working referred to in sub-regulation (3) or sub-regulation (5) shall not exceed 2.4 metres and there shall be maintained at least one bore-hole near the centre of the working face, and sufficient flank bore-holes on each side; and, where necessary, bore-holes above and below the working to intervals of not more than five metres.

All such bore-holes shall be drilled sufficiently close to each other to ensure that the advancing face will not accidentally hole through into a working containing water or liquid matter or any material that is likely to flow when wet and shall be maintained and shall be constantly maintained at sufficient distance in advance of the working and such distance shall in no case be less than three metres. These precautions shall be carried out under the direct supervision of an official, having Manager's or Overman's certificate specially authorised for the purpose.

(b) A record showing the exact height and width of such working, the number of bore-holes driven, the length of each bore-hole, the places at which and the direction in which each bore-hole was driven, shall be maintained by the official referred to in clause (a) in a bound paged book kept for the purpose and the entries made therein shall be signed and dated by such competent person and shall be countersigned by the manager every day. Also a plan and section of such working showing the above particulars shall be prepared and maintained and they shall be brought upto date at least once in every fifteen days.

(7) Unless specific relaxation is granted by the Chief Inspector in writing under sub-regulation (8), all the provisions of sub-regulation (6) shall be strictly complied with while extending any working referred to in sub-regulation (3) or sub-regulation (5) whether or not the permission granted to extend such workings requires compliance with all or any of the provisions of sub-regulation (6).

(8) If the Chief Inspector is satisfied that the conditions in any mine or part thereof are such as to render compliance with all or any of the provisions specified in sub-regulation (6) unnecessary or impracticable, he may, by an order in writing and subject to such conditions as may be specified therein, relax, vary or dispense with all or any of the conditions and requirements contained in sub-regulation (6), and, if he is of the opinion that the conditions at any mine or part thereof are

such as to require additional precautions to be taken, he may by an order in writing require that such additional precautions besides those specified in sub-regulation (6) shall be taken.

**153. Intentional flooding** - (1) When the owner, agent or manager intends or proposed, by introducing water from the surface or from any other part of the mine or from an adjacent mine, to flood any part of the workings of his mine, he shall give, in writing, not less than 14 days' notice of such intention or proposal to the Chief Inspector and the Regional Inspector and to the management of all adjoining mines and of such other mines as might be affected by such flooding.

Provided that the Regional Inspector may, by an order in writing and subject to such conditions as he may specify therein, permit such operations to be commenced on any day prior to the expiry of the said 14 days:

Provided further that the Regional Inspector may, by an order in writing, either prohibit any such operation or require that such operation shall not be commenced until such precautions as he may specify therein, have been taken to his satisfaction.

Explanation. – For the purposes of this sub-regulation, a mine shall have the meaning assigned to it under regulation 27.

(2) If the operations in respect of which notice is given under sub-regulation (1), are not commenced within 60 days from the expiry of the said 14 days, the notice shall be deemed to have lapsed and the provision of the sub-regulation(1) shall apply as if no such notice had been given.

**154. Construction of a water dam, etc.** – (1) Where in any mine, it is intended to construct a reservoir, dam or other structure to withstand a pressure of water or other material which will flow when wet, or to control an inrush of water, the owner, agent or manager shall give in writing not less than 14 days notice of such intention to the Regional Inspector. Every such notice shall be accompanied by two copies of plans and sections showing the design and other details of the proposed construction.

Provided that where the safety of the mine or of the persons employed therein is seriously threatened, the provisions of this regulation shall be deemed to have been complied with if the said notice is given to the Regional Inspector as soon as the work of construction is commenced:

Provided further that where such a reservoir, dam or other structure was constructed before the coming into force of these regulations, the said copies of the plans and sections shall be submitted to the Regional Inspector within three months of the coming into force of these regulations. Where these details are not available, the Regional Inspector shall be informed of the fact within the aforesaid period.

(2) The Regional Inspector may, by an order in writing, require such modification or alternations to be made by the design of any such reservoir, dam or structure, as he may specify therein.



## CHAPTER – XII : Ventilation

**155. Standard of ventilation** – (1) It shall be the duty of the owner, agent or manager of every mine to take such steps as are necessary for securing that there is constantly produced in all parts of the mine belowground which are not sealed off, ventilation adequate to clear away smoke, steam and dust; to dilute gases that are inflammable or noxious so as to render them harmless; to provide air containing a sufficiency of oxygen; and to prevent such excessive rise of temperature or humidity as may be harmful to the health of persons.

(2) For the purpose of securing adequate ventilation as aforesaid, the owner, agent and manager shall ensure that :

- (i) in every ventilating district, not less than six cubic metres per minute of air per person employed in the district on the largest shift or not less than 2.5 cubic metres per minute of air per daily tonne output whichever is larger, passes along the last ventilation connection in the district which means the inbye-most gallery in the district along which the air passes;
- (ii) at every place in the mine where persons are required to work or pass, the air does not contain less than 19 percent of oxygen or more than 0.5 percent of carbon dioxide or any noxious gas in quantity likely to affect the health of any person;
- (iii) the percentage of inflammable gas does not exceed 0.75 in the general body of the return air of any ventilating district and 1.25 in any place in the mine;
- (iv) the wet bulb temperature in any working place does not exceed 33.5 degrees centigrade; and where the wet bulb temperature exceeds 30.5 degrees centigrade arrangements are made to ventilate the same with a current of air moving at a speed of not less than one metre per second; and
- (v) for ensuring compliance with the provisions of clauses (ii), (iii) and (iv) of this sub-regulation, air samples and temperature readings shall be taken at least once in 30 days and the result shall be recorded in a bound paged book kept for the purpose:

Provided that where at any mine or part, special conditions exist which make compliance with any of the above provisions not necessary or reasonably not practicable the Chief Inspector, may by an order in writing and subject to such conditions as he may specify therein, grant a relaxation from the provisions.

(3) In every mine, ventilation as specified in sub-regulation (2) shall be produced by a suitable mechanical ventilator :

(4) If with respect to any mine or part thereof the Regional Inspector is of the opinion that the ventilation is not adequate, he may, by an order in writing, require the installation and maintenance of such a mechanical ventilator as is capable of producing adequate ventilation in the mine or part.

**156. Main Mechanical Ventilator, its drive and fittings etc.** – (1) Every main mechanical ventilator in a mine shall be capable of producing adequate ventilation in the mine or part and shall be installed on the surface at a distance of not less than 10 metres from the opening of the shaft or incline at any point:

Provided that the provisions of this sub-regulation is so far as they require the installation of the main mechanical ventilator at a distance of not less than ten metres from the opening of the shaft or incline, shall not apply to a mechanical ventilator installed on the surface before this sub-regulation comes into force:

(2)(a) If electricity is used for driving the mechanical ventilator, electrical energy shall be supplied to the drive motor of the ventilator through a separate circuit from the main distribution point of the mine.

(b) In every gassy seam of second or third degree, two different sources of power to the mechanical ventilator shall be provided.

Provided that in case of gassy seam of second degree, this shall be complied within three years from the date of coming into force of this regulation.

(3) There shall be provided and maintained at every main mechanical ventilator, a recording instrument to continuously register the pressure developed.

(4) Every main mechanical ventilator shall be so designed installed and maintained that the current of air can be reversed when necessary.

(5) At every shaft or incline ordinarily used for lowering or raising of persons or materials where a mechanical ventilator is installed there shall be provided a properly constructed air lock:

**157. Restriction of installation of mechanical ventilator belowground** – In every gassy seam of the second or third degree the following provisions shall have effect in relation to the installation belowground of booster fans.

(1) No booster fan shall be installed belowground in the mine unless the manager is satisfied, as a result of a survey of the ventilation of every part of the mine liable to be affected, that such installation is necessary or expedient for the proper ventilation of the mine and that it should be installed. Seven days' prior notice of every such installation, together with particulars of the survey aforesaid, shall be sent to the Regional Inspector.

Explanation – The shifting of a booster fan from one place to another shall be deemed to be an installation of a booster fan for the purpose of this regulation.

(2) The Regional Inspector may at any time, by an order in writing, require the use of <sup>1</sup>[any booster fan installed belowground in the mine] to be discontinued.

**158. Installation and maintenance of mechanical ventilators** - (1) In every below ground coal mine where a booster or auxiliary fan is electrically driven, the drive motor, unless it is so constructed, installed, operated and maintained as to prevent the risk of open sparking, shall not be placed in a return airway.

2(a) The installation of every mechanical ventilator and booster fan shall be supervised and controlled by a competent person appointed for the purpose.

(b) A competent person appointed for maintenance of mechanical ventilator and booster fan shall once atleast in every seven days, examine every mechanical ventilator and booster fan in use and shall record the results of such inspection in a bound paged book kept for the purpose.

3(a) Except in an emergency, no person shall start, stop, restart, remove or in any way alter, repair or interfere with any ventilator or booster fan, except on the written authority of the manager or other official authorised in writing in this behalf.

(b) The written authority referred to under clause (a) shall clearly specify the conditions under which a ventilator or booster fan shall be started, stopped or restarted, the period for which it can be stopped and the procedure for removal, repair, alterations or interference with such fans.

(c) Particulars of every alteration and every stoppage including any stoppage beyond control together with the duration thereof, shall be recorded by the competent person appointed under sub-regulations (5), in a bound paged book kept under clause (b) of sub-regulation (2).

Provided that, whenever, a mechanical ventilator or a booster fan has been stopped for any reason whatsoever, the competent person shall immediately record the time of stoppage in the aforesaid book and send it to the manager or the person authorised in this behalf under clause (a), for his appraisal. The manager or the person or the official aforesaid, as the case may be, shall sign the entry in the aforesaid book in respect of the stoppage, put the date and time under signature, and return the book to the competent person.

Provided further that when the stoppage of mechanical ventilator or a booster fan has been brought to the notice of the official, other than the manager or person authorised in this behalf, the said official shall immediately inform the fact in writing to the manager or in his absence to any concerned person appointed under clause (a) of sub-regulation (2) or official superior to the manager, about such stoppage. The manager or such person or superior official, aforesaid, as the case may be, shall acknowledge in writing the receipt of such information sent to him and shall, without prejudice to the standing order under Regulation 134 take such action as may be expedited for the safety of persons employed in the mine. The details of every action thus taken by him shall be recorded in the aforesaid book.

(d) The manager or person or the senior official, referred to in the second proviso to clause (c), on being informed or coming to know of the stoppage of a mechanical ventilator or a booster fan, shall decide about disconnecting electric supply to the mine and the extent of such disconnection. Details of such disconnection shall be entered in the book kept under clause (b) of sub-regulation

(2). Provided that in the case of stoppage of the mechanical ventilator or the booster fan, the electrical supply or the other source of drive to any auxiliary fan, if installed, shall be disconnected immediately by an arrangement of sequence control, or other effective arrangement.”

(4)(a) In every mine in which a mechanical ventilator is in use, the quantity of air shall, once at least in every 14 days be measured –

- (i) in every main intake and return airway of every seam or section, as near as practicable to the entrance to the mine;
- (ii) in every split, as near as practicable to the point at which the split commences;
- (iii) in every ventilating district, as near as practicable to the point where the air is subdivided at the end of a split and also where it enters the first working place; and
- (iv) any other point the Regional Inspector may, by an order in writing, specify. The measurements shall be entered in a bound page book kept for the purpose :

Provided that in a non-fiery seam or a gassy seam of the first degree it shall be sufficient to take the air measurement once in every 30 days.

(b) The measurements referred to in clause (a) shall also be taken and recorded whenever the system of ventilation is so altered as to substantially affect or likely to affect the ventilation of the mine.

(5) Every such ventilator or fan shall be in charge of a competent person appointed for the purpose, who shall not be entrusted with any other additional duties which may interfere with his duties as in charge of the ventilator or fan, as the case may be.

**159. Standing Orders** – (1) The manager of every mine in which a mechanical ventilator other than an auxiliary fan is installed, shall submit to the Regional Inspector in the case of a new installation, within 30 days of the installation, Standing Orders specifying the action that shall be taken with respect to the withdrawal of persons from the mine or part thereof in the event of a stoppage of the ventilator.

(2) The Regional Inspector may, by an order in writing, approve of such Standing Orders, either in the form submitted to him or with such additions and alterations as he may think fit; and the Standing Orders so approved shall be enforced at the mine.

(3) A copy of the Standing Orders in English and other local language understood by majority of the persons employed in the mine shall be pasted at conspicuous places in the mine, both above and belowground.

**160. Splits and airways** – (1) For the purpose of ventilation, every mine shall be divided into such number of districts or splits as to ensure that separate current of fresh air is made available in every such district or split.

(2) The intake air shall be so arranged as to travel away from all stagnant water.

(3) In every ventilating district there shall be provided two main intake airways one of which shall be used as a travelling roadway:

Provided that if the Regional Inspector is satisfied that compliance with this regulation is not reasonably practicable, he may, by an order in writing and subject to such conditions as he may specify therein, grant exemption from the provisions thereof.

(4) Every connection between a main intake airway and a main return airway shall until it has ceased to be required and has been sealed off, be provided with at least two doors so spaced that whenever one door is opened, the other door can be kept closed. Steps shall be taken to ensure that at least once of the door is always closed. Any such connection which has ceased to be required shall be effectively sealed.

**161. Brattices, doors, stoppings and air-crossings** - (1) There shall be provided and maintained in every mine, such number of air-crossings, stoppings, doors and other devices as may be adequate to ensure compliance with the provision of regulations 155. If any doubt arises as to the adequacy of such ventilation devices, it shall be referred to the Chief Inspector for decision.

(2) (a) The space between the frame or every ventilation door and the roof and sides of the roadway, shall be built up with masonry or concrete, not less than 25 centimetres in thickness.

(b) Every such door shall be self-closing; and whenever opened, it shall be closed as soon as possible, and shall not be propped or fixed so as to remain open.

(c) If such door is required to be frequently kept open for the passage of men or material, there shall be, throughout every working shift, a door attendant at the door.

(d) If a door is not in use, it shall be taken off its hinges and placed in such a position that it shall not cause any obstruction to the air current.

(3)(a) Every stopping between the main intake and main return airways shall be constructed of masonry or brickwork or of concrete not properly reinforced not less than 25 centimetres in thickness, if constructed of properly reinforced concrete of 15 centimeter thickness or such greater thickness as may be required by the Regional Inspector, and shall be faced with a sufficient thickness of lime or cement plaster to prevent leakage of air.

(b) Every stopping in use shall be kept accessible for inspection.

(4) The partitions and walls of every air-crossing shall be not less than 25 centimetres in thickness if constructed of masonry or of concrete not properly reinforced, and not less than 15 centimeters in thickness if constructed of properly reinforced concrete.

(5) Every air-crossing, ventilation stopping, door or brattice shall be maintained in efficient working order and good repair.

(6) A competent person shall, once at least in every 14 days, examine every airway, air crossing, ventilation stopping and door in use, and shall record the result thereof in a bound page book kept for the purpose, and shall sign the same and date his signature.

**162. Velocity of Air Current** – The velocity of air current measured in metres per minute at the place shown in column (2) shall be not less than that shown in column (3) for the different seams shown in column (1) of the Table given below :

Degree of gassiness	Place where velocity of air is to be measured	Velocity of air
1	2	3
First, Second or Third degree	Immediate outbye ventilation connection from the face.	30
First or Second degree	(i) 4.5 metres from any face whether working or discontinued on the intake side of the brattice or partition;	30
	(ii) 7.5 metres outbye of the discharge end of an air pipe;	15
	(iii) at the maximum span of a longwall face.	60
Third degree	(i) 4.5 metres from any face whether working or discontinued on the intake side of the brattice or partition;	45
	(ii) 7.5 metres outbye of the discharge end of an air pipe;	25
	(iii) at the maximum span of a longwall face.	75

Provided that if in the opinion of the Chief Inspector or the Regional Inspector the compliance with the above provision is not practicable or not necessary, he may, by an order in writing and subject to the conditions specified therein exempt partially or totally any mine from the provisions of this regulation.

**163. Auxiliary fans** - (1) Every auxiliary fan :

- (a) shall be installed, located and worked in such a manner that-
  - (i) a sufficient quantity of air shall, at all times, reach it so as to ensure that it does not re-circulate air; and
  - (ii) there is no risk of the air which it circulates being contaminated by any substantial quantity of inflammable or noxious gases or dust; and
- (b) shall, whether driven electrically or otherwise, be efficiently connected with earth so as to avoid the accumulation of an electrostatic charge; and
- (c) shall have an approved type of air-duct for conducting the air to or from the face or blind end; and such air-duct shall be so maintained as to minimize any leakage or air and to ensure an adequate supply of air to within 3.0 metres of the face or blind end.

(2) No auxiliary fan shall be started, stopped, removed, replace or in any way altered or interfered with, except by or on the authority of an official.

(3) No person shall enter or remain in any place which is dependent for its ventilation on an auxiliary fan, unless such fan is operating efficiently. Whenever the ventilation of any such place has been interrupted, whether by the stoppage of the fan or otherwise, no person shall so enter or remain therein, except for the purpose of restoring the ventilation, unless the place has been examined by a competent person and declared safe.

- (4) In every gassy seam of the second or third degree -
- (a) two or more auxiliary fans shall not be installed in the same ventilating district or split, except with the permission in writing of the Regional Inspector and subject to such conditions as he may specify therein. The application made for any such installation shall be accompanied by a plan showing the general system of ventilation, the quantity of air flowing in the split and the proposed position of the fans; and
- (b) The Regional Inspector may at any time, by an order in writing require that the use of any auxiliary fan shall be discontinued.

**164. Conditions for installation and operation of two or more auxiliary fans -**

1. (a) Before any auxiliary fan is installed, and also, at least once every week thereafter, the quantity of air flowing in the airway at the point of its installation shall be measured by the Ventilation Officer. The fan shall not be installed or continued to be operated unless the measurement shows that sufficient quantity of air is available so that -

- (i) not more than 50% of total air passing in the roadway is taken by the auxiliary fan; and  
(ii) ventilation of the inbye faces when the fan is running is adequate.
- (b) Particulars of the quantities measured as at clause (a) shall be duly recorded in a bound paged book kept for the purpose.
- (c) there shall also be kept at the mine an accurate plan showing the general system of ventilation in the district and quantity of air in each air current therein.

2. (a) The auxiliary fans shall be installed, as forcing fan, on the intake side of the place to be ventilated by it.

(b) No auxiliary fan shall be installed at a point within or less than 4.5 m from the nearer side of the entrance to the place to be ventilated by it.

3 (a) Air entering any of the auxiliary fans in the district shall not contain:

- (i) more than 0.3% CH<sub>4</sub>; and  
(ii) excessive quantity of dust.

(b) The percentage of CH<sub>4</sub> in the return air in any heading ventilated by an auxiliary fan shall not exceed 0.5.

(c) The auxiliary fans in the district shall be electrically interlocked by a sequence control which ensures that unless the first fan is running the second fan cannot be started and so on.

4(a) No person shall start an auxiliary fan on any occasion unless the overman or a competent person authorized in this behalf considers that it is safe for the fan to be so started.

(b) An auxiliary fan on the return side shall not be started or re-started after stoppage of the auxiliary fan on its intake side due to power failure or otherwise, unless an overman or a competent person specially authorized by the manager for the purpose, has also satisfied himself that the condition at clause 3 above was fulfilled.

5(a) No workman shall enter or be allowed to enter in any heading ventilated by an auxiliary fan unless the overman or competent person has inspected the place and found it safe and the requirements at clause 3 above are also satisfied.

(b) In case of any interruption in the ventilation arrangements for working places, all persons shall be withdrawn from the area affected, with the exception of those required to rectify the situation.

6. (a) No person other than an official of the mine, ventilation officer or a person authorized by the manager to do so, shall regulate the quantity of air passing through or delivered by any auxiliary fan.

(b) If it is necessary to regulate an auxiliary fan, it shall be done in such a way as to prevent unauthorized or inadvertent alteration.

(c) Fans delivering air to flexible ducting shall not be regulated by constricting the ducting.

(d) Fans with rigid ductings shall not be regulated by placing loose obstruction such as bricks or stone in the ducting.

7.(a) The supply of electricity to the working place shall only be effected when the auxiliary fan is running satisfactorily; and

(b) On restarting the fan after a prolonged shutdown, sufficient time shall be allowed to elapse to clear any accumulation of gas or foul air before re-establishing the supply of electricity to the working place.

**165. Precautions against fire in ventilation appliances** - Every mechanical ventilator on the surface shall be installed in a suitable fire proof housing.

(2) In the case of every fan (other than an auxiliary fan) installed belowground the coal or other carbonaceous material exposed in the sides, roof and floor shall be covered with masonry or other adequate protection against fire, for a distance of not less than 5 metres in every direction from the fan.

(3)The covering of every shaft sealed off or covered for ventilation purposes, every fan drift, duct or casing and every part of a mechanical ventilator or fan within such drift, duct or casing, and every air-crossing and ventilation door shall be constructed of fire-proof material:

Provided that this regulation shall not apply to the small lid of a shaft-covering operated by the rope cappel.

**166. Ventilation plans to be brought up-to-date** – The manager shall ensure that, as soon as any alteration is made in the ventilation of a mine involving the erection or removal of an air-crossing or stopping or the alteration in the position of or installation of a ventilator or fan (other than an auxiliary fan) below ground, the erection, removal, alteration or installation, as the case may be, is notified to the surveyor who shall forthwith make necessary alterations on the ventilation plan maintained under regulation 66.

**167. Obstructions, interruptions and alterations-** (1) No material or debris shall be allowed to accumulate in any level, drive, crosscut or any other part of the working below ground so as to impede the ventilation.

(2) Every roadway in working below ground which is not adequately ventilated shall be fenced or barricaded so as to effectively prevent persons entering the same.

(3) If any person becomes aware of any obstruction in, or interference with, or deficiency of, ventilation in any mine or part thereof, he shall –

- (a) if it falls within his power to remedy such obstruction, interference or deficiency, immediately take steps to do so; or
- (b) cease all work at that place, and shall forthwith inform his superior official of such obstruction, interference or deficiency.

(4) Whenever there is any interruption of ventilation by the stoppage or any mechanical ventilator, including an auxiliary fan, installed below ground, the official in charge of the mine or part shall immediately take precautionary measures including withdrawal of men, if necessary against dangers that may arise out of non-compliance with the provisions of regulation 155, to restore the ventilation in the mine or part.

(5) No person shall alter the general system of ventilation in any mine or part except with the authority of the manager:

Provided that, in an emergency, an official or the mine may carry out such alteration as he may deem necessary for the safety of persons, but he shall as soon as possible inform his superior official or the manager about the same in writing.

**168. Precautions against gas during de-watering and re-opening-** (1) No disused mine or shaft shall be de-watered except under the constant supervision of a competent person and during such de-watering, approved safety lamps or torches shall be exclusively used, and there shall also be kept burning at every place where persons are at work at least one approved flame safety lamp.

(2) (a) The first inspection of a mine or part which is re-opened after a discontinuance of mining operations for a period exceeding seven days and of any part of a mine after being de-watered shall be made by a competent person with an approved flame safety lamp or other approved apparatus for determining presence of inflammable or noxious gases and deficiency of Oxygen and during such inspection, no additional light or lamp other than an approved electric torch or lamp shall be used.

(b) The result of every such inspection shall be recorded in a bound pagged book kept for the purpose, and shall be signed and dated by the persons making the inspection, and countersigned and dated by the manager.

**169. Precautions against inflammable and noxious gases** – (1) For the purpose of this regulation, inflammable gas shall be deemed to have been found or detected when it is indicated by the lowered flame of a flame safety lamp or, where methane indicators are used, they indicate one and a quarter percent, or more of inflammable gas.

(2) When any person detects the presence of inflammable gas, he shall not brush or waft it out, but shall immediately withdraw from the place and shall inform his superior official about the same.

(3) Where in any place in a mine, inflammable or noxious gas is detected, all persons shall be withdrawn from the place, and the place shall be immediately fenced off so as to prevent persons invariably entering the same. The competent person in charge shall, without delay, take steps to remove the gas by improving the ventilation.

(4) During the removal of such gas all persons except those necessary for such removal, shall be withdrawn from the return side of the ventilating district in which the gas has been detected unless the quantity of gas is, in the opinion of the competent persons, so small that such withdrawal is not necessary :

Provided that where the danger arises from the presence of inflammable gas, no naked light shall be used in the ventilating district in which the gas is detected.

(5) No person shall be re-admitted into the place where the gas was detected until a competent person has examined the place and has reported that the place is free from gas, Every such examination shall be made with an approved flame safety lamp and, in the case of noxious gas, also with other means of detecting carbon monoxide gas approved by the Chief Inspector.



(6) Particulars of every occurrence referred to in sub-regulation (2) and of every examination made under sub-regulation(5) together with a statement as to where and when the gas was found and when it was removed, and in case of inflammable gas, the percentage thereof, shall be recorded in a bound paged book kept for the purpose, Every such entry shall be signed and dated by the competent person making the report, and countersigned and dated by the manager.

**170. Inspection of unused workings for gas**– In any fiery seam or gassy seam of the second or third degree or where the Regional Inspector may require by an order in writing, all unused workings which have not been sealed off, shall, once at least in every seven days, be inspected by a competent person for the presence of inflammable or noxious gas. A report of every such inspection shall be recorded in a bound paged book kept for the purpose, and shall be signed and dated by the person who made the inspection.

**171. Safety lamps to be used in belowground mines** – No lamp or light other than an approved safety lamp or torch or other installation permitted under the Indian Electricity Rules, 1956 shall be used or permitted to be used below ground in any mine:

Provided that the Chief Inspector may, by an order in writing and subject to such condition as he may specify therein, exempt any mine or part thereof from the operation of this regulation on the ground that on account of its special character the use of safety lamps is not necessary therein.

**172. Determination of percentage of inflammable gas and of environmental conditions** – (1) Where electric energy is used in any ventilating district, determination shall be made of the percentage of inflammable gas present in the general body of air; and the following provisions shall apply in respect of such determinations, namely –

- (a) The determinations shall be made by a competent person, and either by means of an apparatus of a type approved for the purpose by the Chief Inspector, or by analysis of samples of air. If determinations are made by the analysis of air, the samples shall be analyzed within one day of the taking thereof.
- (b) The determinations shall be made or samples of air taken, as the case may be, at suitable point fixed by the manager, on the intake side of the first working place, and on the return side of the last working place in the district:

Provided that where the Regional Inspector is of the opinion that the location of any such point is unsuitable, he may, by an order in writing, require the manager to fix some other point or points in substitution thereof.

- (c) The determinations shall be made or samples of air taken, as the case may be, once at least in every seven days, so however that –
  - (i) if any determination shows the percentage of inflammable gas to exceed 0.8, determinations shall be made or samples of air taken, unless the Regional Inspector otherwise permits by an order in writing and subject to such conditions as he may specify therein at intervals not exceeding 24 hours for so long as such content exceeds that percentage and for the seven next following days; and
  - (ii) if the determinations made during the 30 days immediately preceding any day have shown the percentage of inflammable gas to be below 0.6, it shall be sufficient to make such determinations of take such samples, once in every 30 days for so long as such content does not exceed that percentage:

Provided that when any alteration is made in the system of ventilation so as to substantially affect or likely to affect the ventilation of the mine, such determination shall be made within 24 hours of such alteration.

- (d) Particulars of every such determination shall be recorded in a bound paged book kept for the purpose.
- (e) If any determination in any ventilating district shows the percentage of inflammable gas to exceed once and a quarter, the supply of electric energy shall be cut off immediately from all cables and apparatus in the district, and a written report thereof submitted to the Regional Inspector forthwith.

(2) If the Regional Inspector so requires by an order in writing in respect of any mine having workings belowground, determinations shall, once at least in every 30 days, be made of temperature, humidity and such other environmental conditions at such points as the Regional Inspector may specify in the order.

### **173. Monitoring devices -**

(1) The Chief Inspector may, if he considers necessary for the safety of persons, require by an order in writing that in any mine or any class of mines belowground, approved environmental monitoring devices to continuously record information regarding environmental conditions, to be installed belowground within such time and subject to such conditions as he may specify therein.

(2) The Chief Inspector may, if he considers necessary for the safety of persons, require by a general or special order in writing analysis of mine air samples by gas chromatographs

**174. General precautions in gassy mines** – In every mine the following provisions shall have effect, namely –

(1) No working or gallery shall be extended to a distance of more than 4.5 metres from the nearest ventilation connection unless the current of air is coursed upto a point within 4.5 metres of the face by means of fire resistant pipes, tubes, brattices or other material.

(2) No narrow 'main' or advance gallery shall be driven more than three metres ahead of the widened gallery.

(3) Every stopping between the main intake and the main return airways shall be substantially built and every air-crossing shall be constructed and maintained as to withstand the force of an explosion.

(4) The main air current shall be so split and coursed that an air current which ventilates a goaved out area, whether packed or unpacked, or any disused working shall not, except with the prior permission in writing of the Regional Inspector and subject to such conditions as he may specify therein, ventilate any workings where coal is being extracted.

(5) No major alteration shall be made in the system of ventilation except with the prior permission in writing of the Regional Inspector and subject to such conditions as he may specify therein:

Provided that where the safety of the mine or of the persons employed therein is seriously threatened the provision of this sub-regulation shall be deemed to have been complied with, if information of such alteration is sent to the Regional Inspector forthwith.

(6) Except in an emergency, when a major alteration is made in the system of ventilation, only such persons as are engaged in making the alteration shall be present belowground.

**175. Contrabands** – In every mine the following provisions shall have effect, namely–

- (1) No person shall have in his possession belowground any cigar, cigarette, biri, mobile phone or other smoking apparatus, or any match or other apparatus of any kind capable of producing a light, flame or spark :

Provided that nothing in this sub-regulation shall be deemed to prohibit the use belowground of any apparatus for the purpose of shot firing or of relighting safety lamps, of a type approved by the Chief Inspector.

- (2) For the purpose of ascertaining whether any person proceeding belowground has in his possession any article as aforesaid, a competent person other than the banksman, if any, shall be appointed to search every such person immediately before he enters the mine. The competent person shall be on duty throughout the shift, and no duties other than those under this regulation and regulation 182(2) shall be entrusted to him.
- (3) The competent person so appointed shall make a thorough search for the articles aforesaid and in particular shall –
  - (a) search or turn out all pockets;
  - (b) pass his hand over all clothing; and
  - (c) examine any article in the possession of the person searched.
- (4) If the competent person suspects that the person searched is concealing any articles as aforesaid, he shall detain him, and as soon as possible refer the matter to the manager or assistant manager or underground manager. No such person shall be allowed to enter the mine until the manager or other superior official is satisfied that the person has no such article in his possession.
- (5) Any person who refuses to allow himself to be so searched or who on being searched is found to have in his possession any of the article aforesaid, shall be guilty of an offence against this regulation.

**176. Underground relighting stations** – In every mine, lamp stations for relighting safety lamp may be fixed by the manager at suitable places belowground. Every such station shall be legibly marked 'RELIGHTING STATION', shall be situated in a main intake airway, and shall be placed in charge of a competent person. No person shall be appointed as a competent person under this regulation unless he holds a Gas testing Certificate.

## CHAPTER – XIII : Lighting and Safety Lamps

**177. Whitewashing** – The roof and sides of the following places belowground in a mine shall be kept effectively whitewashed –

- (a) every shaft inset and shaft bottom or siding and every by-pass which is in regular use;
- (b) the top and bottom of every haulage plane, every regular stopping place, siding, landing, by-pass, and junction, except within 100 metres of the face;
- (c) every travelling roadway;
- (d) every room and place containing any engine, motor or other apparatus; and
- (e) every first aid station belowground.

**178. General lighting** - (1) Adequate general lighting arrangements shall be provided during working hours –

- (a) on the surface where the natural light is insufficient : in every engine house, in the vicinity of every working shaft, at every open cast working, at every shunting or marshaling yard, and at every place where persons have to work; and
- (b) belowground –

- (i) at every shaft landing and shaft bottom or siding which is in regular use;
- (ii) in every traveling roadway normally used by 50 or more persons during any shift:

Provided that the provisions of this clause shall be deemed to have been complied with where electric lamps or lights are provided to every work person;

- (iii) at the top and bottom of every self-acting incline in regular use;
- (iv) at every place on a haulage roadway, at which tubs are regularly coupled or uncoupled or attached to or detached from a haulage rope;
- (v) at every place at which tubs are regularly filled mechanically;
- (vi) at every room and place containing any engine, motor or other apparatus;
- (vii) at every place where any pillar is under extraction; and
- (viii) at every first aid station below ground :

Provided that the lighting fixtures installed in a gassy seam of the second or third degree and in the blind ends of a gassy seam of the first degree which are not ventilated by a mechanical ventilator shall comply with the provisions of the Indian Electricity Rules, 1956.

(2) The lighting provided in a mine shall, as far as possible, be so arranged as to prevent glare or eye strain.

(3) Where electric energy is available at the mine, the lighting arrangement made under sub-regulation (1) shall be by electrical means.

(4) Where electric lighting is used, an additional light or lamp having no connection with electric supply shall be kept continuously burning –

- (i) belowground, in every shaft bottom or landing in regular use and in every engine room; and
- (ii) on the surface, after dark, at the top of every working shaft and in every engine room.

(5) Every electrical lamp-fitting shall be so constructed as to protect it from accidental damage; and adequate precautions shall be taken to prevent lamps being damaged from shot-firing.

**179. Electric lighting in gassy mines** – (1) Subject to the provisions of Indian Electricity Rules, 1956 relating to the use of electric energy in parts of mines in which inflammable gas is likely to occur in quantity sufficient to be indicative of danger, electric lighting from a source of supply external to the lighting unit may be used –

- (a) on any roadway or place ventilated by intake air; and
- (b) on any other roadway or place not within 270 metres of the nearest face.

(2) In every mine or part thereof to which regulation 171 applies, every electrical lighting apparatus shall be of a type approved by the Chief Inspector :

Provided that electric lighting from a source of electric power enclosed in the lighting unit, electric lights which are fittings or accessories to machinery or electrical plant (including signaling apparatus), and any other means of lighting not specifically mentioned in this regulation, may be used in the mine if so permitted by the Chief Inspector by an order in writing and subject to such conditions as he may specify therein.

**180. Every person to carry a light** – (1) The owner, agent or manager shall provide every person employed belowground with a light or lamp adequate to enable him to perform his duties in a proper and thorough manner and no such person shall proceed or remain belowground without such light or lamp. On his return to the surface, every such person shall, unless otherwise directed by the manager by a general or special order in writing immediately return his lamp to the lamp room.

(2) The number of safety lamps at every mine shall be adequate to permit thorough cleaning and checking before they are issued. If any doubt arises as to the sufficiency or otherwise of the safety lamps provided at a mine, it shall be referred to the Chief Inspector for decision.

**181. Standards of lighting** – (1) If any doubt arises as to whether any lamp or light is of adequate lighting performance or not, it shall be referred to the Chief Inspector for decision.

(2) The Chief Inspector may, from time to time, by notification in the Official Gazette, specify –

- (a) the type of lamp to be provided to specified categories of persons employed in a mine; or
- (b) the standard of lighting to be provided in specified areas or places in amine.

**182. Maintenance and examination of safety lamps.** – For ensuring proper maintenance of safety lamps in use in the mines the following provisions shall have effect, namely –

- (1) A competent person appointed for the purpose shall clean, trim, examine and lock securely all such lamps before they are issued for use, and no such lamp shall be issued for use unless it is in safe working order and securely locked.
- (2) A competent person appointed for the purpose shall examine every safety lamp at the surface immediately before it is taken belowground for use and shall assure himself, as far as practicable from external observation that such lamp is in safe working order and securely locked. The person so appointed shall not perform any other duties, other than those prescribed under regulation 175(2).
- (3) A competent person appointed for the purpose shall examine every safety lamp on its being returned after use. If on such examination, any lamp is found to be damaged or

misused, he shall record the nature of the damage or misuse in a bound paged book kept for the purpose every such entry shall be countersigned and dated by the manager.

- (4) The manager, assistant manager, underground manager or a competent person appointed for the purpose shall, once at least in every seven days, examine thoroughly every safety lamp in use, and shall record the result of examination of every such lamp in a bound paged book kept for the purpose.
- (5) No person shall be appointed as a competent person under this regulation unless he holds a Manager's, Overman's or Gas testing or Lamp-checker's Certificate.

**183. Use of safety lamps** – (1) Every safety lamp shall be numbered, and so long as the lamp is in use the number thereof shall be maintained in a legible condition.

(2) A competent person appointed for the purpose shall maintain a correct record of the lamps issued from and returned to the lamp-room, and in the record so maintained, the number of the lamp issued to and person shall be entered against his name.

(3) If any person returns to the lamp-room a lamp other than the one issued to him, he shall explain the cause and circumstances of the change.

(4) No unauthorized person shall either himself take or give out any safety lamp from the lamp-room.

(5) Every person who receives a lamp shall satisfy himself that it is complete and in good order; and should he find any defect therein, he shall immediately return it to the lamp-room.

(6) No person shall willfully damage or improperly use, or unlock or open, or attempt to unlock or open any safety lamp.

(7) Should any person find that the safety lamp in his possession has become defective, he shall at once carefully extinguish the flame, if any, and report the defect to his superior official.

**184. Maintenance and repairs of safety lamps & electric torch or lamp** – (1) Every approved safety lamp & electric torch or lamp shall be properly assembled and maintained in good order. If any such lamp or torch is found to be defective or damaged, it shall not be used or for use until the defect or damage has been remedied.

(2) If the wires of any gauge of a flame safety lamp & electric torch or lamp are broken or burnt away, the gauge shall not be reconditioned for further use.

(3) Damaged and defective gauges, glasses or other parts of a safety lamp shall not be kept or stored in the safety lamp-room.

(4) No glass of a safety lamp and no bulb of an electric safety lamp, shall be replaced except by a glass or bulb of such type as the Chief Inspector may, from time to time specify by notification in the Official Gazette; and no other part of a safety lamp (other than a wick or battery, as the case may be) shall be replaced except by a part manufactured by the manufacturers of the lamp to approved specifications. No repaired part shall be used in a safety lamp:

Provided that in the case of an imported safety lamp, a part manufactured indigenously may be used if it is of such design and make as is approved by the Chief Inspector.

(5) In every flame safety lamp kept for the purpose of inspection or of testing for or detecting the presence of inflammable gas, no oil other than an oil of a type approved by the Chief Inspector shall be used.

(6) No electric safety lamp shall be issued for use unless the covers of the battery and of the headpiece are properly assembled, securely locked and sealed, and the battery is properly charged.

(7) No electric safety lamp shall be hung or held by the cable.

**185. Precautions to be taken in safety lamp-rooms** – (1) No unauthorised person shall enter the safety lamp room.

(2) No person shall smoke in the safety lamp-room

(3) Where petrol, benzol, or any other highly volatile spirit is used in safety lamps, the following precautions shall be observed–

- (a) lamps shall be cleaned, refitted and refilled in a separate room;
- (b) only such quantity of volatile spirit as is required for one working day shall be kept in any such room;
- (c) internal relighters shall not be taken out of lamps and cleaned, repaired or refitted on the same table where lamps are cleaned, refitted or refilled; and
- (d) adequate number of suitable fire extinguishers shall be provided and kept ready for use in every such room.

## CHAPTER-XIV : Explosives an Shotfiring

**186. Type of Explosives to be used in mines**– (1) No explosive shall be used in a mine except that provided by the owner, agent or manager. The explosives provided for use shall be of good quality and, as far as can be known, in good condition.

(2) No explosive, other than a fuse, a detonator, site mixed slurry or emulsion shall be issued for use in mine, or taken into or used in any part of a mine, unless it is in the form of a cartridge. In belowground mines explosive cartridges shall be used only in the form in which they are received.

(3) No liquid oxygen explosives shall be used in any mine.

**187. Storage of explosives** – (1) No owner, agent or manager shall store, or knowingly allow any other person to store, within the premises of a mine any explosives otherwise than in accordance with the provisions of rules made under the Indian Explosives Act, 1884.

(2) Explosives shall not be taken into or kept in any building except a magazine duly approved by the Licensing Authority under the Indian Explosives Act, 1884 :

Provided that the Regional Inspector may, by an order in writing and subject to such conditions as he may specify therein, permit the use of any store or premises specially constructed at or near the entrance to a mine for the temporary storage of explosives intended for use in the mine or of surplus explosives brought out of the mine at the end of a shift.

(3) Explosives shall not be stored below ground in a mine except with the approval in writing of the Chief Inspector and subject to such conditions as he may specify therein. Such storage shall be done only in a magazine or magazines duly licensed in accordance with the provisions of rules made under the Indian Explosives Act, 1884.

(4) Every licence granted by the Licensing Authority under the Indian Explosives Act, 1884 for the storage of explosives, or a true copy thereof, shall be kept at the office of the mine.

**188. Magazines, stores and premises to store explosives** – (1) Every magazine, or store or premises, where explosives are stored shall be in charge of a competent person who shall be responsible for the proper receipt, storage and issue of explosives.

(2) Explosives shall not be issued from the magazine unless they are required for immediate use. If any explosives are returned to the magazine or store or premises, they shall be reissued before fresh stock is used.

(3) Explosives shall be issued only to competent persons upon written requisition signed by the blaster or by a official authorised for the purpose, and only against their signature or thumb impression. Such requisition shall be preserved by the person in charge of the magazine or store or premises.

(4) The person in charge of the magazine or store or premises shall maintain, in a bound paged book kept for the purpose, a clear and accurate record of explosives issued to each competent person and a similar record of explosives returned to the magazine or store or premises.

**189. Cases and containers for carrying explosives** - (1) No explosive shall be issued from the magazine or taken into any mine except in a case or container of substantial construction and securely locked. Cases or containers made of iron or steel shall be heavily galvanised; and no case or container provided for carrying detonators shall be constructed of metal or other conductive material.



(2) No detonator shall be kept in a case or container which contains other explosives, materials or tools; and two or more types of detonators shall not be kept in the same case or container:

Provided that nothing in this sub-regulation shall restrict the conveyance of primer cartridges fitted with detonators in the same case or container for use in a wet working or in a sinking shaft.

(3) No detonator shall be taken out from a case or container unless it is required for immediate use.

(4) Except as otherwise provided for in regulation 191, no case or container] shall contain more than five kilogrammes or explosives, and no person shall have in his possession at one time in any place more than one such case or container :

Provided that the Chief Inspector may, by an order in writing and subject to such conditions as he may specify therein, permit the carrying of a larger quantity of explosives in a single case or container, or the use, at one time in one place, of more than one such case or container.

(5) Every case or container shall be numbered; and as far as practicable, the same case or container shall be issued to the same blaster or competent person, as the case may be, every day.

(6)The key of every case or container shall be retained by the blaster in his own possession throughout his shift.

**190. Transport of explosives–** (1) While explosives are being carried on a ladder, every case or container shall be securely fastened to the person carrying it.

(2) No person other than a shotfirer shall carry any priming cartridge into a shaft which is in the course of being sunk. No such cartridge shall be so carried except in a thick felt bag or other container sufficient to protect it from shock.

**191. Transport of explosives in bulk–** Where explosives are transported in bulk for deep-hole blasting the provisions of this regulation shall apply.

(1) Transport of explosives from the magazine to the priming station or the site of blasting shall not be done except in day light and in the original wooden or card board packing case. The quantity of explosive transported at one time to the site of blasting shall not exceed the actual quantity required for use in one round of shots. The explosives shall be transported to the site of blasting not more than 30 minutes before the commencement of charging of the holes .

(2)(a) No mechanically propelled vehicle shall be used for the transport of explosives unless it is of a type approved in writing by the Chief Inspector, provided that a Jeep or Land Rover or Sports Utility Vehicle may be used for the transport of detonators from magazines of priming stations' subject to all the following conditions :

- (i) not more than 200 detonators are transported in a vehicle at a time;
- (ii) the detonators are packed suitably in a wooden box;
- (iii) the wooden box containing detonators is placed inside an outer metal case of a construction approved by the Chief Inspector;
- (iv) the outer metal case shall be suitably bolted to the floor of the vehicle or otherwise fixed in a wooden frame so that the container is not displaced while the vehicle is in motion; and
- (v) no person shall ride on the rear portion of the vehicle.

(b) Every vehicle used for the transport of explosives shall be marked or placarded, on both sides and ends, with the word "EXPLOSIVES" in red letters not less than 15 centimetres high on a white background. All such vehicles shall be provided with red flashing beacon light.

(c) Every mechanically propelled vehicle transporting explosives shall be provided with not less than two fire extinguishers (one of Carbon Tetra Chloride type for petroleum fire and the other of Carbon Dioxide under pressure type for electrical fire) suitably placed for immediate use.

(3)(a) The vehicle used for transport of explosives shall not be overloaded, and in no case shall the explosive cases be piled higher than the sides of its body.

(b) Explosives and detonators shall not be transported in the same vehicle.

(4)(a) No person other than the driver and his helper (not below 18 years of age) shall ride on a mechanically propelled vehicle used for the transport of explosives.

(b) A vehicle loaded with explosives shall not be left unattended.

(c) The engine of a vehicle transporting explosives shall be stopped and the brakes set securely before it is loaded/or unloaded or left standing.

(d) A vehicle transporting explosives shall not be driven at a speed exceeding 25 Kilometres per hour.

(e) A vehicle loaded with explosives shall not be taken into garage or repair shop and shall not be parked in a congested place.

(f) A vehicle transporting explosives shall not be refueled except in emergencies even when its engine shall be stopped and other precautions taken to prevent accidents.

(g) No trailer shall be attached to a vehicle transporting explosives.

(5)(a) Every vehicle used for the transport of explosives shall be carefully inspected once in every 24 hours by a competent person, to ensure that :

- (i) fire extinguishers are filled and in place;
- (ii) the electric wiring is well insulated and firmly secured;
- (iii) the chassis, engine and body are clean and free from surplus oil and grease;
- (iv) the fuel tank and feed lines are not leaking; and
- (v) lights, brakes and steering mechanism are in good working order.

(b) A report of every inspection made under sub-clause (a) shall be recorded in a bound paged book kept for the purpose and shall be signed and dated by the competent persons making the inspection.

(6) All operations connected with the transport of explosives shall be conducted under the personal supervision of an overman solely placed in charge of blasting operations at the mine.

(7) The shotfirer shall personally search every persons engaged in the transport and use of explosives and shall satisfy himself that no person so engaged has in his possession any mobile phone, cigar, cigarette, 'biri' or other smoking materials or any match or any other apparatus of any kind capable of producing a light, flame or spark.

**192. Reserve Stations** – No case or container containing explosives shall be left or kept in a mine except in a place appointed by the manager or assistant manger for the purpose and so

situated that it is not frequented by workpersons. Every such place shall be kept clean, safe and adequately fenced and legibly marked 'RESERVE STATION'.

**193. Shotfirers** – (1) The preparation of charges and the charging and stemming of holes shall be carried out by or under the personal supervision of a competent person, in these regulations referred to as a 'shotfirer'. The shotfirer shall fire the shots himself.

(2) No person shall be appointed to be a shotfirer unless he holds :

- (a) a Manager's or Overman's Certificate or a Sirdar's Certificate together with a Gas-testing Certificate in case of belowground mines; and
- (b) a Manager's, Overman's or a Sirdar's Certificate in the case of open cast working.

(3) The competent person appointed as shot-firer shall not be given any other duty nor any one performing any other duty shall be allowed to perform shot-firing.

(4) No person whose wages depend on the amount of mineral, rock or debris obtained by firing shots, shall be appointed to perform the duties of a shot-firer.

(5) The manager shall fix, from time to time, the maximum number of shots that a shot-firer may fire in any one shift. Such number, however shall be based on:

- (i) the time normally required to prepare and fire a shot in accordance with the provisions of these regulations;
- (ii) the time required for that shot-firer to move between places where shots are fired;
- (iii) the assistance, if any, available to him in the performance of his said duties; and
- (iv) any other duties assigned to him, whether statutory or otherwise

and shall not in any case exceed :

- (a) in the case of a gassy seam of the second or third degree or a fiery seam, forty, if a single shot exploder is used and eighty, if a multi-shot exploder is used;
- (b) in the case of other seams fifty, if a single-shot exploder is used and hundred, if a multi-shot exploder is used; and
- (c) in the case of open cast mines sixty, if a single shot exploder is used or if blasting is done with ordinary detonators and one hundred and twenty, if a multi-shot exploder is used:

Provided that, if thirty or more persons are employed below ground at any one time in any mine or district under the charge of any official who is qualified to perform the duties of the shotfirer, such official shall not fire or be permitted to fire more than half the maximum number of shots specified in Clause (a), (b) and (c) depending on the category of the seam or mine specified therein:

Provided further that where special conditions exist, the Regional Inspector may by an order in writing and subject to such conditions as he may specify therein permit a larger maximum to be fixed:

Provided further that where the Regional Inspector is of the opinion that, for the proper observance of the provisions of these regulations the number of shots so fired shall be reduced, and if he so required by an order in writing, the manager shall fix a lower maximum number of shots as specified by the Regional Inspector.

(6) The number of detonators issued to, and in the possession of, a shot-firer during his shift shall not exceed the maximum number of shots that he is permitted to fire under sub-regulation (5).

**194. Shotfiring tools** - (1) Every shotfirer on duty shall be provided with –

- (a) a suitable shotfiring apparatus of approved type
- (b) suitable shotfiring cable of approved type
- (c) a suitable electric lamp or torch, a whistle and a stop watch;
- (d) a tool, made entirely of wood, suitable for charging and stemming shotholes;
- (e) a scraper made of brass or wood suitable for cleaning out shotholes;
- (f) where fuses are used, a knife for cutting off fuses and, unless machine-capped fuses are provided, also a pair of suitable crimpers for crimping detonators; and
- (g) where detonators are used, a pricker made of wood or a non-ferrous metal for priming cartridges.
- (f) a tool of a type approved by the Chief Inspector for detecting cracks.
- (h) an approved type of methanometer for detection of inflammable gas in case of solid blasting
- (i) a circuit tester for checking shotfiring circuits.

(2) No tool or appliance other than that provided as above shall be used by a shotfirer.

**195. Drilling, charging, stemming and firing of shotholes** – (1) No drill shall be used for drilling a shothole unless it allows a clearance of at least 0.3 centimetre over the diameter of the cartridge of explosive, which it is intended to use.

(2) No shothole shall be charged before it is thoroughly cleaned.

(3) Before any shothole is charged, the direction of the hole shall, where practicable, be distinctly marked on the roof or other convenient place.

(4) No detonator shall be inserted into a priming cartridge until immediately before it is to be used, however that in case of wet workings, priming cartridges may be prepared at the nearest convenient dry place; and such primed cartridges shall be carried to the working place in a securely closed case or container. Detonators once inserted into a priming cartridge shall not be taken out.

(5) (a) In belowground workings the explosive used in any shot-hole shall be of the same type.

(b) In opencast mines, to use two types of explosives in any shot-hole, the manager shall frame and enforce standing orders for the safe use of explosives and a copy of the same shall be submitted to the Regional Inspector.

6) The shotfirer shall, to the best of his judgment, ensure that no shothole is over-charged or under-charged, having regard to the task to be performed.

(7) Shot shall be fired electrically.

(8) Every shothole shall be stemmed with sufficient and suitable non-inflammable stemming so as to prevent the shot from blowing out. Only sand loosely filled in, or soft clay lightly pressed home, or a compact but not hard mixture of sand and clay or water shall be used as stemming.

(9) In charging or stemming a shothole, no metallic tool, scraper or rod shall be used; and no explosive shall be forcibly pressed into a hole of insufficient size.

(10) No shot shall be fired except in a properly drilled, charged and stemmed shothole.

(11) Blasting gelatin or other high explosives shall not be lighted in order to set fire to fuses.

(12) All surplus explosives shall be removed from the vicinity of a shothole before a light is brought near it for the purpose of lighting the fuse.

(13) As far as practicable, a shot shall be fired by the same blaster who charged it.

(15) Except in a stone drift or a sinking shaft not more than 16 shots shall be fired in any one round. Where more than six shots are to be fired in one round, they shall be fired electrically.

Provided that in the case of opencast working any number of shots can be fired in one round if they are fired electrically by an approved type of shotfiring device of adequate capacity.

(16) No shothole shall be charged except those which are to be fired in that round; and all shotholes which have been charged shall be fired in one round.

(17) Where a large number of shots have to be fired, shotfiring shall, as far as practicable, be carried out between shifts.

(18) No person shall remove any stemming, or pull out any detonator lead, or remove any explosive, from a shothole either before firing or after a misfire, or bore out a hole that has once been charged, or deepen or tamper with empty holes or sockets.

**196. Use of Ammonium Nitrate-Fuel Oil** - Where in any opencast workings a mixture of Ammonium Nitrate-Fuel Oil is used as explosive, the provision of this Regulation shall apply.

- (1) The Ammonium Nitrate-Fuel Oil mixture (hereinafter referred to as ANFO) shall not be used for firing without possessing a valid license for storage and preparation of ANFO explosives and also for transport of such explosives on surface from the licencing authority under the Explosives Act, 1884.
- (2)
  - (a) The mixing or impregnating of ammonium nitrate or a non-explosive mixture of ammonium nitrate with other substances with fuel oil shall be done in a special shed in the vicinity of the mine workings constructed from incombustible material and equipped with remote control water sprays to combat a fire in an emergency.
  - (b) If mechanical mixer is used, the machine in which the mixing takes place, shall be of a type approved by the licencing authority under the Explosives Act, 1884.
  - (c) The design of mixer shall be such as to minimise the possibility of frictional heating, compaction and confinement. Bearings and gears shall be protected against accumulation of product dusts and shall preferably be of outboard type.
  - (d) Persons employed on 'mixing' shall wear rubber gloves.
  - (e) The mixer shall be thoroughly cleaned after use.
- (3) Smoking, open flames or any other source of fire shall not be allowed when mixing, carrying or handling operations are being carried on.
- (4) When mixing, loading, charging or handling operations are being carried on, any naked light or fire shall not be allowed to be brought within 10 metres of the shot hole or the explosive.
- (5) The area surrounding the place of mixing for a distance of atleast 10 metres shall be kept free of rubbish, dry grass or other combustible materials.
- (6) The mixture shall be kept in water-proof bag until the time of use. The bags shall be kept separate from all other materials.
- (7) The mixture shall be carried only in containers of wooden or of similar materials or in polythene bags kept inside jute or rexin bags and not in a metallic container.
- (8) Only the necessary minimum number of person shall be allowed to be present at the premises where the process of mixing is being done.

- (9) Liquid fuels with a flash point lower than that of diesel fuel shall not be used. More volatile fuels such as gasoline, kerosene or number one diesel fuel oil shall not be used for mixing with ammonium nitrate.
- (10) Crude oil or crank case oil shall not be used for mixing with ammonium nitrate.
- (11) The cap sensitivity of a composition of ANFO shall be determined at a regular interval and after every change in proportion, and character of ingredients.
- (12) ANFO explosives shall be manufactured in quantities only immediately required for use. If for unforeseen circumstances, explosives in excess of immediate requirement is prepared it shall be packed in an inner package of polythene and outer package of wood or fire board and removed to the magazine licenced for storage of such mixture.
- (13) Persons engaged in the process of firing with ANFO explosive including the Shotfirer shall be previously trained in correct techniques of such blasting.
- (14) Adequate priming shall be done to guard against misfires, increased toxic fumes and poor performance. The kind and amount of primer used shall be governed by the sensitivity of the explosive, hole diameter and other factors.
- (15) If a pneumatic loader (hereinafter referred to as ANFO loader) is to be used, the following precautions shall be taken:
  - (a) The ANFO loader shall be regularly examined by a competent person appointed by the manager to ensure proper operation of the injector and other parts.
  - (b) Pneumatic equipment used for loading ANFO explosives shall be adequately grounded to dissipate any static charges that may be generated during the loading operation. Water lines, air-lines, rail, or any permanent electrical grounding system shall not be used to ground pneumatic loading equipment.
  - (c) The owner, agent or manager of the mine shall within 30 days of using ANFO explosives in the mine submit to the Regional Inspector a notice giving details of the method and the precautions to be taken during firing operations.

**197. Deep-hole blasting** - The blast holes made more than 3 metre in depth may be called deep-holes and where deep-holes are blasted in an opencast mine, the following provisions shall apply:

- (1) (a) The position of every deep-hole to be drilled, shall be distinctly marked by the overman so as to be readily identified by the driller.
  - (b) No drilling shall be commenced in an area where shots have been fired, until the shot-firer has made a thorough examination at all places, including the remaining portion of old blast holes for unexploded charges.
  - (c) No drill rod or pick shall be inserted in remaining portion of old blast holes.
  - (d) After completion of drilling the holes shall be kept plugged or covered till loading is commenced.
- (2) Notwithstanding anything contained in clause (b) of sub-regulation (2) of Regulation 193, the firing of deep-holes shall be done by a person holding a manager's or an overman's certificate.
- (3) (a) Shots shall not be fired except during the hours of day light or until adequate artificial light is provided.
  - (b) As far as practicable, the shotfiring shall be carried out either between the shifts or during rest interval or at the end of the work for the day.

- (c) All holes charged on any one day, shall be fired on the same day.

Provided that where special conditions exist, the Regional Inspector may, by an order in writing and subject to such conditions as he may specify therein, relax from the operation of this clause any working in case of which special difficulties exist which in his opinion make compliance with the provisions thereof not reasonably practicable or unnecessary.

- (4) During the approach and progress of an electric storm:
  - (a) No explosive or detonators shall be handled.
  - (b) If loading or charging operations have begun, the work shall be discontinued until the storm has passed.
  - (c) If the shots are to be fired electrically, all exposed wires shall be coiled up and if practicable, placed in the mouths of the holes or kept covered with non-metallic objects.
- (5) When detonating fuse is used for blasting, such fuse shall not be cut after it has been inserted into a shot hole.
- (6) No cartridge of any explosives shall be dumped freely into a shot hole. Proper lowering device shall be used for the purpose.
- (7) No person shall be allowed to possess or use any mobile phone or radio transmitters during transport and handling of explosives.

**198. Electric Shotfiring** – Where shots are fired electrically, the following provisions shall have effect, namely:

- (1)
  - (a) No shot shall be fired except by means of a suitable shotfiring apparatus of a type approved by the Chief Inspector of Mines; and the number of shots fired at any one time by the apparatus shall not exceed the number for which it is designed.
  - (b) Every electrical shotfiring apparatus shall be so constructed and used that –
    - (i) it can only be operated by a removable handle or plug. This handle or plug shall not be placed in position until a shot is about to be fired and shall be removed as soon as a shot has been fired; and
    - (ii) the firing circuit is made an broken either automatically or by means of a push-button switch.
  - (c)
    - (i) No apparatus shall be used which is defective; and every apparatus shall once at least in every three months, be cleaned and thoroughly overhauled by the manufacturer or his authorised representative.
      - (ii) If the apparatus fails to fire all the shots in a properly connected circuit, the blaster shall return the apparatus to the manger or assistant manager or underground manager as soon as possible, and it shall not be use again unless it has been tested on the surface and found to be in safe working order.
      - (iii) The result of every overhaul, test or repair as aforesaid shall be recorded in a bound paged book kept for the purpose and shall be signed and dated by the person making the overhaul, test or repair.
- (2) No current from a signaling, lighting or power circuit shall be used for firing shots.
- (3) The shotfirer shall –
  - (a) retain the key of the firing apparatus in his possession throughout his shift;

- (b) use a well-insulated cable of sufficient length to permit him to take proper shelter and in case of belowground working sufficient to take two right angle turns of pillar, and in no case, shall this cable be less than 50 meters in length;
- (c) before coupling the cable to the firing apparatus, couple up the cable itself to the detonator leads;
- (d) take care to prevent the cable from coming into contact with any power or lighting cable or other electrical apparatus;
- (e) take adequate precautions to protect electrical conductors and apparatus from injury;
- (f) himself couple the cable to the firing apparatus; and before doing so, see that all persons in the vicinity have taken proper shelter as provided under regulation 199; and
- (g) after firing the shots and before entering the place of firing, disconnect the cable from the firing apparatus.

(4) Where more than one shot are to be fire at the same time :

- (a) care shall be taken that all connections are properly made;
- (b) all shots if fired belowground shall be connected in series;
- (c) the circuit shall be tested either for electrical resistance or for continuity before connecting it to the firing apparatus. Such a test shall be made with an apparatus specifically designed for the purpose and only after all persons in the vicinity have taken proper shelter as provided under regulation 199
- (d) the cable to the shotfiring apparatus shall be connected last; and
- (e) detonators of the same electrical resistance shall only be used.

**199. Taking shelter etc.** – (1) The shot-firer shall, before a shot is charged, stemmed or fired, see that all persons other than his assistants, if any, in the vicinity, have taken proper shelter and he shall also take suitable steps to prevent any person approaching the shot and shall himself take adequate shelter, along with his assistants if any, before firing the shots.

- (2) In the case of an opencast working the shot-firer shall not charge or fire a shot –
  - (a) unless he has taken the precautions laid down in sub-regulation (1).
  - (b) unless sufficient warning, by efficient signals or other means approved by the manager, is given over the entire area falling within a radius of 500 metres from the place of firing (hereinafter referred to as the danger zone) and also he has ensured that all persons within such area have taken proper shelter, and
  - (c) Where any part of a public road or railway lies within the danger zone, unless two persons are posted, one in either direction at the two extreme points of such road or railway which fall within the danger zone who have, by an efficient system of telephonic communication or hooter or loudspeakers or other means approved by the Chief Inspector or Regional Inspector intimated clearance of traffic to the blaster and have also warned the passers by and whenever possible the vehicle also, if any, which have passed by such road or railway.

(3) (a) In the case of an opencast working, where any permanent building or structure of permanent nature, lies within the danger zone, the aggregate maximum charge per delay and per round shall be fixed by a scientific study and permission in writing for such blasting shall be obtained from the Chief Inspector of Mines. The Chief Inspector may specify the conditions for such blasting.

(b) Notwithstanding anything contained in clause (a) the Chief Inspector may, by an order in writing and subject to such conditions as he may specify, exempt any mine or part thereof from the operation of all or any of the provisions of clause (a) on the ground that the observance of its provisions is not necessary or reasonably practicable on account of the special conditions existing thereat.



(4) Where the workings, either above or belowground, offer insufficient protection against flying fragments or missiles, adequate shelter or other protection shall be provided.

(5) When two working places belowground have approached within 9 metres of each other, the blaster shall not fire any shot in any one of the said workings unless all persons have been withdrawn from the other working place and the same has been so fenced off as to prevent persons inadvertently coming in direct line of the shot.

**200. Precautions against dry coal dust-** No shots shall be fired at any place belowground unless the place itself and all accessible places, including roof and sides, within a distance of 18 metres have been treated in the manner specified in sub-clause (a)(ii) of clause (2) of regulation 146 unless such places are naturally wet as defined in regulation 146.

**201. Conditions requiring use of Permitted Explosives –** (1) Notwithstanding anything contained in the regulations, no shots shall be charged or fired in the belowground workings if the explosive used is not a Permitted Explosive, except in –

(a) a stone-drift, if it does not contain dry coal dust; and

(b) a shaft which is in the course of being sunk.

(2) In a gassy seam of the second or third degree no explosives other than the permitted sheathed explosives or other explosives equally safe or any device or apparatus for breaking coal approved by the Chief Inspector shall be used while in a gassy seam of the first degree permitted sheathed explosives or permitted explosives or any device for breaking coal approved by the Chief Inspector in writing may be used.

Provided that the Chief Inspector may by any order in writing and subject to such conditions as he may specify therein permit in any gassy seam of the first degree the use of any explosives other than the permitted explosives.

(3) Notwithstanding anything contained in sub-regulation (1), if blasting is done in any stone drift or sinking shaft within five metres of any coal seam or in coal measure drifts or staple shaft from one seam to another only permitted explosives of such types as may be required by the Chief Inspector of Mines shall be used.

Provided that in case of special difficulties, the Chief Inspector of Mines may exempt any stone drift or sinking shaft from the provisions of the sub-regulation subject to such conditions as he may specify therein.

**202. Precautions in the use of Permitted Explosives–**

(1) no detonator shall be used, unless it is of a type approved by the Chief Inspector of Mines;

(2) where more than one shot are charged for firing, the shots shall be fired simultaneously; and

(3) the aggregate charge in any shot to be fired in coal shall not exceed such permissible maximum charge, as the Chief Inspector may, by a notification in the Official Gazette, lay down for the kind of Permitted Explosives used.

**203. Approved shotfiring apparatus –**No shot shall be fired in a mine except by means of a shotfiring apparatus of a type approved by the Chief Inspector and subject to such conditions as he may from time to time lay down by notification in the Official Gazette:

Provided that where special conditions exist, the Chief Inspector may, by an order in writing and subject to such conditions as he may specify therein permit the use of any other shotfiring apparatus.

**204. Additional Precautions-** Following additional precautions shall be taken during blasting in belowground mines –

(1) If in a ventilating district, presence of inflammable gas is detected in any place, no shothole shall be charged, stemmed or fired in that place or in any other place situated on its return side till such place has been cleared of gas and declared safe.

(2) Immediately before charging a shothole or a round of shotholes, and again before firing the shots the shotfirer shall carefully test for inflammable gas at all places within a radius of 18 metres of the place of firing.

(3) No shothole shall be charged if any break is found therein, or if inflammable gas is found issuing therefrom.

(4) If after charging a shothole, inflammable gas is found in any place within the prescribed radius no shot shall be fired until the place has been cleared of gas and declared safe.

(5) No delay-action detonator shall be used, except with the previous permission in writing of the Chief Inspector and subject to such conditions as he may specify therein.

**205. Blasting in fire areas in opencast mines -** While blasting in hot strata (either in overburden or coal) in opencast mines, the following precautionary measures shall be adopted:

- (1)
  - (a) No explosive other than slurry and emulsion explosives shall be used;
  - (b) Blasting shall be done with detonating fuse down the hole
- (2) Temperature inside the blast holes shall be measured (before filling with water) and if the temperature exceeds 80°C, in any hole, such hole shall not be charged. Records of measurement of temperature in each hole shall be maintained in a bound paged book.
- (3) All blast holes shall be kept filled with water. When any hole is traversed by cracks or fissures, such holes shall not be charged unless it is lined with a suitable fire resistant casing and the hole filled with water. In addition, bentonite shall be used for sealing any cracks at the bottom of the holes.
- (4) Detonating fuse shall not be laid on hot ground without taking suitable precaution which will prevent it from coming in contact with strata.
- (5) The charging and firing of the holes in any one round shall be completed expeditiously and in any case within two hours.
- (6) Blasting operations shall be carried out under the direct supervision of an assistant manager.

**206. Inspections after shotfiring** – After a shot has been fired, no person other than the shotfirer or any other person enter the place until the area is free from dust, smoke or fumes. He shall, before any other person enters the place, make a careful examination and with his assistants, if any, make the place safe. No other person shall enter the place, and where guards have been posted, they shall not be withdrawn, until the examination has been made and the place has been declared safe in all respects. In the case of opencast workings, after shots have been fired, an all-clear signal shall be given except in the case of a misfire.

**207. Misfires**– (1) The number of shots which explode shall, unless shots are fired electrically, be counted by the shotfirer and any another competent person authorized for the purpose; and unless it is certain that all the shots have been exploded, no person shall re-enter or be permitted to re-enter the place until 30 minutes after the firing of shots :

Provided that where shots are fired electrically, this interval may be reduced to not less than five minutes after the source of electricity has been disconnected from the cable.

(2) In the event of a misfire, the entrance or entrances to the working place shall be fenced so as to prevent inadvertent access; and no work other than that of locating or relieving the misfire shall be done therein until the misfire has been located and relieved. In opencast workings, it shall be sufficient to mark the place of the misfire with a red flag.

(3) In the event of a misfire, a second charge shall not be placed in the same hole.

(4) If the misfire contains a detonator, the leads or fuse thereof shall be attached by a string to the shotfiring cable or some distinctive marker.

(5) Except where the misfire is due to faulty cable or a faulty connection, and the shot is fired as soon as practicable after the defect is remedied, another shot shall be fired in a relieving hole which shall be so placed and drilled in such a direction that at no point shall it be nearer than 30 centimetres from the misfired hole. The new hole shall be bored in the presence of a shotfirer, preferably the same person who fired the shot.

(6) After a relieving shot has been fired, a careful search for cartridges and detonators, if any, shall be made in the presence of the shotfirer, amongst the material brought down by the shot:

Provided that in the case of workings belowground if such cartridge or detonator is not recovered, the tubs into which the material is loaded shall be marked and a further search made on the surface. As far as possible, the search for the detonators and cartridges and the loading of any coal, stone or debris which may contain a detonator, shall be carried out without the aid of tools.

(7) If a misfired hole is not dislodged by a relieving shot, the procedure laid down in sub-regulation (5) and (6) shall be repeated. A misfired hole which cannot be dealt with in the manner so prescribed, shall be securely plugged with a wooden plug; and no person other than a shotfirer, an official or a person authorised for the purpose shall remove or attempt to remove such plug.

(8) When a misfired shot is not found, or when a misfired shot is not relieved, the shotfirer shall, before leaving the mine, give information of the failure to such shotfirer or official as may relieve or take over charge from him. He shall also record, in a bound page book kept for the purpose, a report on every misfire, whether suspected, and whether the shothole is relieved or not relieved. It shall be the responsibility of the relieving shotfirer or official also to sign the report and, to record in the said book the action taken for relieving the misfired shothole.

(9) The shotfirer of the next shifts shall locate and blast the misfired hole, but if after a thorough examination of the place, where the misfire was reported to have occurred he is satisfied that no misfire has actually occurred he may permit drilling in the place.

(10) In case of opencast mines the owner, agent and manager of a mine shall draw up a plan which shall instruct all shotfirers the detail procedure to be followed in the event of a misfired shot.

#### **208. Special precautions in stone drifts – In stone drifts –**

- (a) after shots have been fired, all loose rock shall be removed from the face, and the area lying within a distance of 1.2 metres from the face shall be thoroughly cleaned or washed down with water and carefully examined for the presence of misfires or sockets. Unless the precautions herein specified have been taken, the next round of shots shall not be fired; and
- (b) if any socket is found, it shall be dealt with in the manner prescribed in regulation 207.

**209. Duties of shotfirer at the end of his shift** - Immediately after the end of his shift, the shotfirer-

- (a) shall return all unused explosive to the magazine, or where a store or premises is provided under regulation 160, to such store or premises; and
- (b) shall record, in a bound paged book in the prescribed format, the quantity or explosive taken, used and returned, the places where shots were fired and the number of shots fired by him, and misfires, if any.

Every such entry shall be signed and dated by him.

**210. General precautions regarding explosives** (1) No person, whilst handling explosives or engaged or assisting in the preparation of charges or in the charging of holes, shall smoke or carry or use a light other than an enclosed light, electric torch or lamp :

Provided that nothing in this sub-regulation shall be deemed to prohibit the use of an open light for lighting fuses.

(2) No person shall take any light other than an electric torch or an enclosed electric lamp into any explosive magazine or store or premises.

(3)(a) The owner, agent, or manager shall take adequate steps to prevent pilferage of explosives during its storage, transport and use in the mine.

(b) No person shall have explosives in his possession except as provided for in these regulations, or hide or keep explosives in a dwelling house.

(4) Any person finding any explosives in or about a mine shall deposit the same in the magazine or store or premises. Every such occurrence shall report to the manager in writing.

(5) Shotfirers and their helpers shall not use, battery operated watches, synthetic cloths and shocks. They shall use only conducting type of foot-wears. In case of leather shoes or boots, the sole shall also be of leather and without hobnails.

## CHAPTER -XV : Machinery, Plant Equipment

**211. Use of certain machinery in coal mines** – (1) No internal combustion engine or steam boiler shall be used belowground in a mine except with the permission in writing of the Chief Inspector and subject to such conditions as he may specify therein.

(2) In every gassy seam of the second or third degree only flame proof electrical apparatus and equipment shall be used belowground unless otherwise provided for under the Indian Electricity Rules, 1956:

Provided that the Central Government or the Chief Inspector or an Inspector authorised by the Central Government may, subject to such conditions as may be specified, permit the continuance of the use of non-flame proof apparatus or equipment for a specified period, not exceeding one year, in any mine of the first degree gassiness, which has subsequently been classified as second or third degree gassiness.

(3) The Chief Inspector may, from time to time by notification in the Official Gazette, specify appliances, equipment, machinery, or other material, that are or may be used in a mine, which shall be of such type, standard and make as approved by the Chief Inspector by a general or special order, and where any such appliance, equipment, machinery or other material had been specified by the Chief Inspector any such appliance, equipment, machinery, or material, other than that approved by the Chief Inspector as aforesaid, shall not be used in any mine.

(4) Where in respect of any appliance, equipment, machinery or other material, the Chief Inspector has not made any notification under sub-regulation (3) and any such appliance, equipment machinery or material is used in any mine, the Chief Inspector or Regional Inspector may, if he is of the opinion that the use of such appliance, equipment, machinery, or material until the same is approved by the Chief Inspector.

**212. - Approved machinery, equipment and devices** - (1) The owner, agent or manager of a mine while acquiring any approved type of machinery, equipment, apparatus, device, lamp, light, materials, etc. shall ensure that they conform to approved specifications in all respects and shall also be responsible for maintaining them as per the approved standard.

(2) A copy of approval of every approved machinery, equipment and device being used shall be kept at the office of the mine.

(3) Where machinery is used for lifting, pulling, drilling (other than by hand held drill), dinting, ripping, cutting, loading, hauling, dumping, etc., safe code of practices separately for each type of machinery with respect to the method of work, shall be framed and enforced which shall include for the control and guidance of persons employed for the erection, installation, operation, repairs, maintenance, dismantling and transportation of such machinery and ancillary equipments as well as for the prevention of accident and to provide for the safety, health, convenience and discipline of the persons so employed. The engineer authorised for the purpose shall be responsible for the implementation of above safe code of practices.

(4) Where surface transportation and handling machinery including coal handling plants, repair sheds or workshops are provided, safe code of practices for their erection, installation, operation, repairs, maintenance, dismantling and transportation of such machinery, plants and ancillary equipments as well as for the prevention of accident and to provide for the safety, health, convenience and discipline of the persons so employed shall be framed and enforced. The engineer authorised for the purpose shall be responsible for the implementation of above safe code of practices.

**213. General provisions about construction and maintenance of machinery** – All parts and working gear whether fixed or movable, including the anchoring and fixing appliances, of all

machinery and apparatus used as or forming part of the equipment of a mine, and all foundations in or to which any such appliances are anchored or fixed shall be of good design, sound construction, suitable material, adequate strength and free from visible defect and shall be properly maintained.

**214. Apparatus under pressure** – (1) All apparatus, used as or forming part of the equipment of a mine, which contains or produces air, gas or steam at a pressure greater than atmospheric pressure shall be so designed, constructed, installed and maintained as to obviate any risk of fire, bursting, explosion or collapse or the production of noxious gases.

(2) Every air receiver forming part of a compressing plant shall be fitted with a safety valve and an air gauge which shows pressure in excess of the atmospheric pressure.

(3) Before an air-receiver is cased in or put in commission, the engineer or other competent person shall subject it to a hydraulic test at a pressure at least one-and-a-half times the maximum permissible working pressure. A similar test shall be made after every renewal or repair and in any case at intervals of not more than three years. The result of every such test shall be recorded in a bound paged book kept for the purpose and shall be signed and dated by the person carrying out the test.

(4) The supply of air for air-compressors shall be drawn from a source free from dust and fumes.

(5) All apparatus used as or forming part of the equipment of a mine which contains or produces hydraulic fluid or emulsion under pressure shall be so designed, constructed, installed and maintained as to obviate any risk of bursting and fire.

**215. Precautions regarding moving parts of machinery** – (1) Every winch or windlass shall be provided with a stopper, pawl or other reliable holder.

(2) (a) Every drums, fly-wheel and every other dangerous exposed part of any machinery used as, or forming part of, the equipment of a mine shall be adequately fenced by suitable guards of substantial construction to prevent danger; and such guards shall be kept in position while the parts of the machinery are in motion or in use, but they may be removed for carrying out any examination, adjustment or repair if adequate precautions are taken.

(b) It shall be the duty of the engineer in charge, the supervisory officials and other authorised persons to keep all guarding properly maintained in good condition and in the correct position.

(3) No person shall, or shall be allowed to, repair, adjust, clean or lubricate machinery in motion where there is risk of injury.

(4) No person shall, or shall be allowed to, shift or adjust a driving belt or rope while the machinery is in motion unless a proper mechanical appliance is provided and used for the purpose.

(5) No person in close proximity to moving machinery shall wear, or be permitted to wear, loose outer clothing.

(6) No unauthorised person shall enter any engine room or in any way interfere with the engine.

**216. Engine rooms and their exits** – Every engine, motor, transformer and battery charging room, and every room in which highly inflammable materials are stored on the surface shall be kept clean, and be provided with at least two exits. Every such exit shall be properly maintained and kept free from obstruction.

**217. Working and examination of machinery** - (1) No machinery shall be operated otherwise than by or under the constant supervision of a competent person.

(2) In a gassy seam of the second or third degree no person shall be appointed to supervise or operate any electrical machinery, apparatus or appliance other than a telephone or signaling device or an electric lamp or light, unless he holds a Gas-testing Certificate. Every such person shall whilst on duty be provided with and carry an approved flame safety lamp or any other apparatus for determination of inflammable gas as approved by the Chief Inspector of Mines and check for presence of inflammable gas in the atmosphere.

(3) Every person in charge of any machinery, apparatus or appliance shall, before commencing work, see that it is in proper working order; and if he observes any defect therein, he shall immediately report the fact to the manager, engineer or other competent person.

(4) Every person in charge of an air-receiver shall see that no extra weight is added to the safety valves and that the permissible pressure of air is not exceeded.

(5) A competent person or persons appointed for the purpose shall, once at least in every seven days, make a thorough inspection of all machinery and plant in use, and shall record the result thereof in a bound paged book kept for the purpose. In respect of electrical machinery and plant, the competent person shall be an engineer or electrician holding qualifications specified in the Indian Electricity Rules, 1956.

**218. Belowground face equipment, continuous mining and coal cutting machines-** (1) All self propelled face equipments, including shuttle cars, which are used in belowground coal mines shall be equipped with substantially constructed canopies or cabs, located and installed in such a manner that when the operator is at the operating control of such equipment he shall be protected from falls of roof, face or side.

(2) Methane monitors shall be installed on all roof bolting machines and cutting machines, continuous miners, longwall face equipments, loading machines and other mechanized equipments used to extract or load coal.

(3) Roof bolting machines, continuous miners and coal loading equipments shall be equipped with adequate lighting to illuminate the workplace.

(4) All face equipments used to cut coal or drill holes for roof support shall be equipped with engineering controls such as water sprays, dust collector and air scrubber system to control respirable coal mine dust.

(5) Where remote controlled devices are used in belowground coal mines and on coal faces to operate continuous mining machines or other such equipment, the owner, agent and manager shall:

- (a) test the remote controlled devices to ensure they are all on separate frequencies and will not accidentally cause a machine not been intentionally operated to activate or move;
- (b) properly train all operators on the use of the remote control device; and
- (c) design a mining plan for the use of remote control mining equipment which include the safe location for the machine operators and any other workers in the area to prevent crushing accidents while the machine is in movement, and from respirable dust and noise hazard.

**219. Cranes and lifting Gears –** (1) All machinery used to lift and/or transport equipment and materials, shall be designed, constructed and erected, inspected, maintained and operated as specified by the manufacturer.

(2) The rated capacity and/or legible load chart, where appropriate, of a crane, hoist, grab or winch shall be permanently marked on the structure and clearly visible. The rated capacity shall not be exceeded in any case.

(3)(a) No person shall load any crane, grab or winch in excess of the safe working load except for the purpose of a test.

(b) This test shall be carried out by an authorized person only in a manner specified by the manufacturer.

(4) The rated capacity of a hoist shall not exceed the capacity of the structure supporting the hoist.

(5) Cranes and hoists shall be regularly inspected and maintained to ensure that every component is capable of carrying out its original design function, and records shall be kept thereof.

(6) A crane or hoist shall not be used until any condition that could endanger workers is remedied. All installations, modifications and repairs to load-bearing equipment shall be certified by a competent person or authorized organization in accordance with the original design and safety standard.

(7) All cranes or hoists with a boom that is movable in the vertical plane shall:

- (a) have a device that can be clearly read by the operator, to indicate the boom angle if the rated capacity is affected; and
- (b) be fitted with an automatic load indicator showing the safe working load.

(8) All modifications that affect the rated capacity of a crane or hoist shall be assessed, and the rated capacity adjusted by the original equipment manufacturer, a competent person or authorized organization.

(9) There shall be a safe means of access and egress to the operator's position and to maintenance locations for all cranes and hoists.

(10) If a normal means of egress is not always available to the operator, then an alternative safe means shall be provided to get from the operating position to a safe area in the event of a power failure or other emergency.

(11) Effective audible and visual communications devices shall be installed on a crane or hoist. The crane or hoist operator shall sound a warning signal when it is necessary to alert workers.

(12) All controls on a crane or hoist shall be clearly identified and shall return to neutral when released, and an automatic braking system shall be activated.

(13) The operator of a crane or hoist shall be protected against hazardous conditions such as airborne contaminants, falling or flying objects and excessive heat or cold.

(14) The operator's seat on a crane or hoist shall be of an ergonomic design that allows the operator to operate the equipment safely.

(15) All the hooks, hook guards/latches, wire ropes, chains and other attachments and fittings that may be safety critical shall be maintained and inspected on a regular basis.

(16) The operator of a crane or hoist shall perform a check at the start of each shift and test the limit switch and record of the check shall be kept.



(17) Transport routes for cranes shall be clear of obstructions. Transport routes for wheeled or tracked cranes shall, as far as practicable be level.

(18) Training shall be given for crane operators to ensure proper and safe operation of the crane and rigging loads.

220. General precautions – (1) All machinery and plant used in connection with working of a mine shall be of good design, sound construction, suitable material, adequate strength, free from patent defect and properly maintained.

(2) The owner, agent and manager shall provide adequate training facilities and training of an adequate number of persons to effectively fulfill the requirements of this chapter.

(3) No person except a qualified engineer/mechanic or a competent person under his supervision shall undertake any work on machinery and plant where technical knowledge or experience is required.

## CHAPTER-XVI : Miscellaneous

**221. Fences** - (1) Every tank or reservoir or other dangerous place in or about a mine, which has been formed as a result of, or is used in connection with, mining operations, shall be kept securely fenced.

(2) Every fence erected on the surface shall, once at least in every seven days, be examined by a competent person. A report or every such inspection shall be recorded in a bound paged book kept for the purpose, and shall be signed and dated by the person who made the examination.

(3) Any fence, gate or barricade may be temporarily removed for the purpose of repairs or other operations, if adequate precautions are taken.

(4) If any doubt arises as to whether any fence, guard, barrier or gate provided under these regulations is adequate, proper or secure, or as to whether the precautions taken under sub-regulation (3) are adequate, it shall be referred to the Chief Inspector for decision.

**222. Notices** – where at any place smoking or unauthorised entries prohibited, notices to that effect shall be posted at conspicuous places at every entrance to the place.

**223. General Safety** – No person shall negligently or willfully do anything likely to endanger life or limb in the mine, or negligently or willfully omit to do anything necessary for the safety of the mine or the persons employed therein.

**224. Use, Supply maintenance of protective footwear** – (1) No person shall go into, or work in, or be allowed to go into, or work in, a mine, unless he wears a protective footwear of such type as may be approved by the Chief Inspector by a general or special order in writing.

(2) The protective footwear referred to in sub-regulation (1) shall be supplied free of charge, at intervals not exceeding six months, by the owner, agent or manager of a mine who shall at all times maintain a sufficient stock of protective footwear in order to ensure immediate supply as and when need for the same arises.

(3) Where a footwear is provided otherwise than as aforesaid, the supply shall be made on payment of full cost.

(4) The owner, agent or manager of a mine shall provide at suitable places in the mine dubbing and revolving brushes or make other suitable alternative arrangements for the cleaning of protective footwear by the persons using them. It shall however be the responsibility of the person supplied with the protective footwear to arrange the repair of the same at his own cost.

**225. Use and supply of helmet** - (1) No person shall go into, or work, in or be allowed to go into or work in, a mine, other than the precincts of a mine occupied by an office building, canteen, crèche, rest shelter, first aid room or any other building of a similar type, unless he wears a helmet of such type as may be approved by the Chief Inspector by a general or special order in writing :

Provided that where the Chief Inspector is of the opinion that due to special circumstances it is not necessary or reasonably practicable for any person or class of persons going into, or working in, a mine to wear a helmet, he may, by a general or special order in writing and subject to such conditions as he may specify therein, exempt such person or class of persons, from the operation of the provisions of this sub-regulation.

(2) The helmet referred to in sub-regulation(1) shall be supplied free of charge, at intervals not exceeding three years or such other interval as the Chief Inspector may specify by a general or special order in writing by the owner, agent or manager of a mine, who shall at all times maintain

a sufficient stock thereof in order to ensure immediate supply as and when need for the same arises :

Provided that when a helmet is accidentally damaged during legitimate use, the owner, agent or manager shall immediately replace the damaged helmet free of cost.

(3) Where a helmet is provided otherwise than as aforesaid, the supply shall be made on payment of full cost.

**226. Supply of other protective equipment** – (1) Where it appears to the Regional Inspector or the Chief Inspector that any person or class of persons employed in a mine is exposed to undue hazard by reason of the nature of his employment, he may, by a general or special order in writing, require the owner, agent or manager of the mine to supply to such person or class of persons, free of charge, gloves, goggles, shin guards, respirator or such other protective equipment as may be specified in the order.

(2) The protective equipment provided under sub-regulation(1) shall be replaced free of charge by the owner, agent or manager whenever it is rendered unserviceable by legitimate use. In any other event, the replacement shall be made on payment of full cost.

(3) If any dispute arises as to the life of any protective equipment, it shall be referred to the Chief Inspector for decision.

**227. Use, supply and maintenance of self-rescuer** – (1) No person shall go into, work or be permitted to go into or work belowground in any mine unless he is provided with and carries with him a self-rescuer of such type as may be approved by the Chief Inspector by a general or special order in writing.

2) If such a self-rescuer is accidentally damaged during use or goes out of order or becomes unserviceable on having gained weight in excess of specified limits or having exceeded its specified life or has been used the owner, agent or manager shall immediately replace such self-rescuer.

(3) The owner, agent or manager of every mine where self-rescuers are to be used, shall -

- (a) at all times keep sufficient stock of self-rescuers so that they are readily available whenever needed;
- (b) provide, at the mine, adequate arrangements for cleaning, maintenance and inspection of self-rescuers;
- (c) ensure that every person who may be required to use self-rescuer under sub-regulation (1) undergoes a course of training in the use of self-rescuer, as may be specified by the Chief Inspector by a general or special order in writing.

**228. Obligation of persons provided with protective equipment** – Whenever any person is supplied by the owner, agent or manager of a mine with any protective equipment, he shall use the same while doing the work for which he is supplied with such protective equipment.

**229. Information about sickness** – Every official or competent person shall, in case of sickness or of absence, give early and sufficient notice thereof to his superior official or the underground manager or the assistant manager or the manager, as the case may be, so that a substitute may be arranged.

**230. Man power Distribution Plan** – During the first week of every month, a survey shall be made of the number of persons normally employed in every district and other places belowground in the mine; and a sketch plan showing the results of such a manpower survey, and signed and

dated by the manager, shall be kept in the office of the mine and a copy thereof shall be kept with the attendance clerk.

**231. Sirdars and Overmen** – (1) No person shall be appointed as a competent person under regulations 34, 76, 100, 139(3)(c), 140(2)(a), 141(3)(a), 144(5), 161(6), 163(3), 168(2), 170 and 172, unless he is the holder of either an Overman's or a Manager's Certificate.

(2) No person shall be appointed as a competent person under regulations 132, 133, 137(6), 149, 152(6), 168(1) and 198 unless he is the holder of either a Manager's or Overman's Certificate or a Sirdar's Certificate together with a gas testing certificate:

Provided that so much of this regulation as requires a person holding a Sirdar's Certificate to hold Gas testing Certificate also shall not apply to, persons employed aboveground, or in opencast workings, or competent persons under regulation 137(6) or 152(6).

(3) Notwithstanding anything contained in sub-regulation (2), the Chief Inspector may, where special conditions exist, permit or require appointment of any person, not necessarily holding either a manager's or an overman's or a sirdar's certificate as a competent person under Regulation 132, if such person possess otherwise a suitable qualification and experience for effective supervision of the working places.

**232. Officials to be literate** – After coming into force of these regulations, no person shall be appointed as an official of a mine unless he is literate and is conversant with the language of the district in which the mine is situated or with the language understood by a majority of the persons employed in the mine:

Provided that so much of this regulation as requires a person to be conversant with the language of the district or of the majority of persons shall not apply to managers, assistant managers, engineers and surveyors.

**233. Writing of reports** – If any person required to make any report is unable to write, he shall be present when his report is written for him, and shall have it read over to him, and shall then attach his thumb mark to it or sign it. The person writing the report shall certify that it has been read over to the person for whom it was written, and shall sign the certificate and date his signature.

**234. Payment of fees** – Any fees payable under these regulations shall be paid by means of a Crossed Indian Postal Order and any other means as prescribed from time to time.

**235. Place of accident not to be disturbed** – (1) Whenever an accident occurs in or about a mine causing loss of life or serious bodily injury to any person, the place of accident shall not be disturbed or altered before the arrival or without the consent of the Chief Inspector or the Inspector to whom notice of the accident is required to be given under sub-section (1) of section 23 of the Act unless such disturbance or alteration is necessary to prevent any further accident, to remove bodies of the deceased, or to rescue any person from danger, or unless discontinuance of work at the place of accident would seriously impede the working of the mine:

Provided that where the Chief Inspector or the said Inspector fails to inspect the place of accident within seventy-two hours of the time of the accident, work may be resumed at the place of accident.

(2) Before the place of accident involving a fatal or serious accident is disturbed or altered due to any reason whatsoever, a sketch of the site illustrating the accident and all relevant details shall be prepared (in duplicate) and such sketch shall be duly signed by the manager or assistant manager, safety officers, surveyor and the workmen's inspector or, where there is no workmen's

inspector by a work person present at the place of accident. Such sketch shall also be supported by the photographs of the place of accident:

Provided that, if the place is disturbed or altered to prevent further accident or rescue persons from danger before the sketch could be prepared, the same shall be prepared immediately thereafter giving all relevant details as existed before the place was disturbed or altered.

(3) One of the authenticated sketches shall be delivered or sent to the concerned inspector or Mines.

**236. Emergency response and evacuation plan** – (1) The owner, agent and manager of every mine shall have a comprehensive programme in place to respond to any injury, illness or mine emergency that may occur at each mine including foreseeable industrial and natural disasters. These shall include: immediate first-aid treatment, medical treatment, transportation and evacuation of injured persons; procedures to respond to emergencies that arise at the mine; and arrangements for the rescue of persons incapacitated or trapped in coal mines.

This plan shall cover mine evacuations and include :

- (a) establishment of individual responsibilities for administering actions identified to implement an emergency response.
- (b) establishment of emergency communication systems, procedures and individual responsibilities for carrying out emergency communications;
- (c) a system in place to provide immediate notification to all persons affected by the emergency, including alarms in place which shall be capable of being seen and heard by everyone affected.
- (d) a procedure to allow for the safe, orderly and immediate withdrawal of persons from the mine or area of danger, including training on emergency escape routes and procedures.
- (e) procedures in place to be followed by workers who remain to perform critical operations before they evacuate, which include:
  - (i) the selection of only those personnel who have received special training to respond to critical operations and mine emergencies, including mine fires and explosions;
  - (ii) having procedures in place to ensure the locations are safe for persons who would not be immediately withdrawn; and
  - (iii) having the personnel equipped with the necessary gas-detection equipment and other equipment or tools necessary to respond to the critical operation at hand ;
- (f) providing persons with particular risks with the equipment necessary for escape, such as self-contained self-breathing devices etc.;
- (g) a response team that is trained and equipped and immediately available to respond to fires or other hazards that create mine emergencies;
- (h) procedures to account for all workers after the emergency evacuation is complete; and
- (i) providing relevant information and training to all personnel, at all levels, including regular exercises in emergency prevention, preparedness and response procedures and periodic emergency drills.

(2) The owner, agent and manager shall submit a copy of the aforesaid emergency plan prepared by him to the regional inspector. The regional inspector may, by an order in writing approve of

such action plan, either in the Form submitted to him or with such additions and alterations as he may think fit, and the action plan so approved shall be enforced at the mine.

(3) On receiving information of any emergency, the owner, agent and manager and in his absence the principal official present at the surface, shall immediately put emergency action plan in operation.

**237. Taking samples from mine** – Where for official purposes, an Inspector considers it necessary to take samples of any coal, rope or other material, the owner, agent or manager shall make over to him such samples in such quantities as he may require.

**238. Chief Inspector etc. to exercise powers of the Regional Inspector** – Any power granted under these regulations to the Regional Inspector may be exercised by the Chief Inspector or any other Inspector authorised in writing in this behalf by the Chief Inspector.

**239. Appeals to the Chief Inspector-** Against an order made by the Regional Inspector under any of these regulations, an appeal shall lie to the Chief Inspector who may confirm, modify or cancel the order. Every such appeal shall be preferred within 15 days of the receipt of the order by the appellant.

**240. Appeals to committee** – (1) Against any original order made by the Chief Inspector under any of these regulations or against any order passed under regulation 239 by the Chief Inspector on an appeal against Regional Inspector's order an appeal shall lie within 20 days of the receipt of the order by the appellant to the Committee constituted under section 12 of the Act

(2) Every order of the Chief Inspector, against which an appeal is preferred under sub-regulation (1) shall be complied with pending the receipt at the mine of the decision of the committee

Provided that the committee may, on application by the appellant, suspend the operation of the order appealed against pending the disposal of the appeal.

**241. Repeal and Saving** – The Coal Mines Regulations, 1957 is hereby repealed:

Provided that all acts done or orders issued or certificates, authorization or permits granted or renewed under any of the said regulations shall be deemed to have been done, issued, granted or renewed under the corresponding provisions of these regulations.