

MODEL CODE OF PRACTICE



ODISHA MINING CORPORATION LTD.
KODINGAMALI BAUXITE MINE



Authorized By

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Operation and Maintenance of Excavators

1. All excavators shall be provided with (i) efficient warning device, (ii) adequate front and rear lights and (iii) efficient brakes.
2. Every excavator shall be so designed as to afford the operator clear and uninterrupted vision all around and shall be provided with fire extinguishers and a retractable ladder.
3. Every excavator shall be under the charge of a competent person, authorized in writing by the manager, herein called operator.
4. (a) No person other than the operator or his helper or the manager or any person authorized by the manager, shall ride on the excavator or even the operator's cabin.

(b) No person shall be permitted to ride in the bucket of a shovel.
5. No inflammable material shall be stored in the excavator housing or cab.
6. Shovel dippers shall be lowered to the ground during greasing operation,
7. When a shovel is moved from one point to another its boom shall be kept in strict alignment with the direction of travel while the dipper (or bucket) shall be held 0.5mmt above the ground,
8. (a) No shovel shall be operated in a position where any part of the machine, suspended loads or lines are brought closer than 3m to the exposed high voltage line unless the current has been cut off and positive means taken to prevent the lines from being energized. A notice of this requirement shall be posted at the operator's cabin.

(b) Electrical cables if any shall be laid in such a manner that they are not endangered either by the falling rock or by any mobile equipment,
9. Every movement of a shovel shall be preceded by a warning signal.
10. (a) The shovel/ bucket shall be pulled out of the bank as soon as it is full.
11. (a) When being operated in soft or unstable ground, every shovel shall be supported by mats, heavy planks or poles so as to distribute the load of the machine over a larger area and to prevent any danger of the machine overturning.

(b) When not in use the machine shall be moved to, and stood on stable ground, the bucket shall be kept resting on stable ground and shall never be left hanging,

12. When blast holes is to be fired, the machine shall be removed to a safe distance and the boom shall be turned in the direction opposite to the site of blasting,
13. The cabin of the machine should be well insulated against noise. In the cabin there shall be conveniently placed a device by which the power shall be, to all motors if possible, can be cut off quickly,
14. The machine shall be provided with audible signal for warning,
15. On electrical machine, all electrical circuits shall be properly insulated and earthed.
16. The following sign boards shall be curried in and about the machine.
 - (i) Warning - "Do not enter the working area of the machine".
 - (ii) "Lubricating prohibited while the machine is running".
 - (iii) "When working the bucket, Rest it on the Ground with all wires slackened".
17. The glass in the cabin shall be approved safety glass.
18. The cabin shall be provided with a door on each side and shall have hand holds and steps so located as to give convenient access.

Inspection, Maintenance and Repair of H.E.M.M

1. Scheme of Maintenance -

- 1) Every HEMM or equipment shall be maintained in good and safe working condition. 2) The engineer of the mine shall make and enforce a preventative maintenance schedule for every machine. The maintenance scheme shall specify clearly who will carry out such maintenance, at what intervals and type of records to be kept. Without prejudice to maintenance schedules laid down by the manufacture/supplier of the machine, the following shall be observed. (a) Every machine shall be allocated at least one shift in every week for maintenance. Before the machine is sent out for work after maintenance it shall be thoroughly inspected by the engineer or other competent person, who shall satisfy himself that the machine is mechanically sound and in efficient working condition. (b) A report of every inspection made under cl. (a) shall be maintained in a bound paged book kept for the purpose and shall be signed and dated by the person making the inspection.

2. Tasting of brakes

At least once in two weeks the brakes of every truck, dumper or any such other vehicle shall be tested as indicated below:

- a. **Service brake test** - The brake shall be tested on a specified gradient and speed when the vehicle is fully loaded. The vehicle should stop within a specified stopping distance which shall be obtained from manufacturer of the vehicle.
- b. **Parking brake test** - The parking brake should be capable to hold the Vehicle when it is fully loaded and placed at the maximum gradient of road way (which is permitted) for a period of at least ten minutes
- c. A record of such test shall be maintained in a bound paged book and shall be signed by the person carrying out the test. These records shall be countersigned by the engineer and the manager.

Daily inspection -

1. Every machine in use shall be thoroughly inspected once at least in every 24hrs by competent person and damage or worn-out cables shall be replaced immediately.
2. A report of every inspection under cl (I) shall be recorded in bound paged book kept for the purpose and shall be signed and dated by the person making the inspection.

3. If the engineer or other competent person making the inspection under cl. (1) above notices any defect in any machine it shall not be used until the defects has been remedied.

Repair of Machinery-

1. Any defect in a machine reported by its operator shall be promptly attended to
2. Any machine found to be in an unsafe operating condition shall be tagged at the operators position, "*Out of Service, Do Not Use*" and its use shall be prohibited until the unsafe condition has been corrected.
3. All repairs to a machine shall be done at a location which will provide a safe place for the persons engaged on repairs.
4. Except for testing, trial or adjustment, which must necessarily be done while the machine is in motion, every machine shall be shutdown and positive means adopted to prevent its operation while any repair or manual Lubrication is being done.
5. Power shall be disconnected when repairs are made to any electric machine,
6. Any machinery, equipment or part thereof, which is suspended or held apart by use of slings, hoists or jacks shall be substantially blocked or cribbed before men are permitted to work underneath or between the same.
7. The operator shall not leave the machine in the workshop or elsewhere, while its engine is running unless it is placed under the charge of a competent person
8. All repairs, lubrication adjustment to a dozer shall be performed with the machine level. As far as possible the engine shall be switched off and blade lowered to the ground before undertaking repair.
9. Where because of failure or defect, a dozer is stopped on a slope steps shall be taken to block the machine in position so as to avoid any downhill movement before repairs are attempted.
10. Excavator dippers or buckets etc, shall be lowered to ground during greasing operation and while not in use.

Structural stability of HEMM:-

1. Structural stability of HEMM shall be examined periodically by an independent team of experts.
2. Such on examination shall be invariably made after every major repair of the machine.
3. Suitable record of such examination shall be kept in a bound paged book.

Managers Scheme -

1. The manager shall see that the engineer prepares and implements a scheme' after its approval by the manager, with respect to every mechanical and electrical apparatus at the mine. The scheme shall cover:-
 - a. The examination and testing of all machinery before it is used after installation, re-installation or repair.
 - b. The systematic examination and testing of all machinery at the mine to ensure proper maintenance thereof.
 - c. The intervals, which may be different for different parts of apparatus, within which all apparatus must be examined and tested and the nature of examination and testing.
 - d. The manner in which the records of examination shall be maintained.

General precautions:-

- a. No person shall or shall be allowed to repair, adjust or clean or lubricate machinery in motion where there is a risk of injury.
- b. No person in close proximity of moving machinery shall wear or be permitted to wear loose outer clothing's.

Model Code of Traffic Rule

Rule. 1.
Procedure

- (a) A person shall not drive, nor operate a vehicle in or about the mine unless authorized to do so for the vehicle or class of vehicles by the mines manager.
- (b) A private vehicle shall not be driven within the mine premises unless authorized by the mines manager or the official for the time being in-charge of the mine.
- (c) Any driver not regularly working in or about the mine shall request and receive permission to enter the mine premises from mines manager or an official of the mine authorized for the purpose, prior to driving a vehicle within the mine premises, which shall be prominently delineated.

Rule. 2.
Speed Limit

- (a) A permanent or temporary speed limit set by the mines manager for any area of the mine or any vehicle or class of vehicles shall be adhered to.
- (b) Where visibility or road conditions are poor, a driver shall reduce the speed of his vehicle to the extent necessary to maintain effective control.

Rule. 3.
Right of Way

- (a) At inter-sections which are not controlled by traffic signs all drivers should give way to the vehicles on the right, except as stated below,
 - i. All drivers shall give way to emergency vehicles showing a flashing red light.
 - ii. Vehicles being used for grading, rolling, watering and repair of roads have Right of way over all vehicles except in (i) above. These vehicles shall show an amber flashing light.
 - iii. Light vehicles shall at all times give way to haul trucks and other heavy vehicles.
- (b) The driver of a vehicle having right of way over another vehicle shall not endanger himself or others through insistence on that right if this is likely to cause a collision.

Rule. 4.
Parking and Standing

- (a) A driver shall not park or stand his vehicle in a position that will endanger other traffic on the mine premises,

- (b) A driver shall not park or stand a vehicle opposite another vehicle on a haul road.
- (c) A driver shall not park or stand his vehicle within 30mts of the working area of mobile equipment or where his vehicle cannot be observed.
- (d) A driver shall not park or stand his vehicle within the area of swing of dragline without first obtaining permission from the operator,
- (e) A driver, before learning his parked vehicle, shall ensure that the vehicle is secure, that parking brakes have been applied and that all implements have been lowered. If circumstance dictate that a heavy vehicle must be parked on a grade than the wheel should be chocked and the steering turned off center
- (f) A driver of a vehicle shall before working from a parked position ensure that his path is free from any obstruction and/or personnel.
- (g) A driver of a light vehicle shall observe the following rules while parking his vehicle.
 - stop engine
 - leave vehicle in first or reverse gear
 - Apply handbrake - not park in front of or behind a heavy vehicle
 - if for maintenance or operational reasons, it is essential to park adjacent and in closer proximity to a heavy unites level than allowed above, then the driver of the light vehicle shall ensure that the operator of the heavy unit or shovel is fully and clearly aware of his intention and his permission to proceed and
 - check the wheels, if parked facing up or down slope.

Rule. 5.

General

- (a) Vehicle shall not be driven over electric cable, air hoses or water line unless these are properly protected.
- (b) Seat belts are provided for the operator's personal safety. They are to be worn at all times while the vehicle is operating,
- (c) Passengers shall not be carried on any vehicle unless seated in approved seating or where authorized for training purpose by the MM.
- (d) A caution sign or hazard lights are to be placed at the front and rear on any vehicle which is being towed or which has broken down or obstructing roadway.
- (e) Operators and drivers are responsible for cleanliness, oil and water check, tyres and fuel of machines and vehicle under their control.
- (f) Operators and drivers are responsible for ensuring that their vehicle is correctly illuminated during hours of darkness.
- (g) Headlights are to be dipped when approaching other traffic or mobile equipment in working areas.

- (h) All earth moving equipment, sound one blast on horn before moving off from parking position.
- (i) No smoking or naked lights are permitted during refueling and checking of batteries
- (j) Trucks are loaded in such a manner that spillage is minimized. Loads should be centralized to maximize stability. Loads which have an overhang in excess of 1.2mts shall be clearly marked by a red flag during day and red light at night. All loads shall be made secure for travel.
- (k) The driver shall make sure that the vehicle has adequate clearance, particularly when reversing, parking, passing other vehicles and units or passing stationary and static equipment.

Rule. 6.

Overtaking

- (a) The driver of vehicle may overtake any other vehicle with caution provided that:-
 - i. The speed limit is not exceeded.
 - ii. There is sufficient visibility of the road ahead.
 - iii. The vehicles are clear of any road intersection or junction.
- (b) The driver of a heavy vehicle may not overtake another vehicle on an incline unless the overtaken vehicle is travelling at a speed less than 10km, and there is adequate visibility of the road ahead.
- (c) No overtaking is permitted in the vicinity of road dividers.
- (d) While driving behind a level truck the driver shall ensure that he is visible in the rear view mirror until he pulls out to overtake.

Rule. 7.

Signs

- (a) All signs are to be obeyed. If in doubt about the intent or validity of sign, contact an official of the mine, in charge of the part of the mine, where the sign is displayed.
- (b) Temporary signs shall be removed as soon as possible after need for them ceases to exist.
- (c) Warning signs are to be noted at all times.

Rule. 8.

Mechanical Condition of vehicles

- (a) The driver of each heavy vehicle in use shall at least daily examine his machine to ensure that it is in safe working order and make a written record of the results of such examination.
- (b) The driver of any vehicle shall report to his supervisor any defect in the vehicle as well as damage to the vehicle or injury to himself or passengers or near miss, arising out of vehicle incident on the mine.

Code of Practices during Waste Dumping

1. On entering a dumping area, the dumper operator should visually check the general area of the dump especially in their dumping area. All care must be taken regarding the positioning of the dumper's rear wheel at the dumping face. A dumper should not back up to an area, which has not been visually inspected by the operator.

Point to note are:

- a) Spillage
 - b) Spotter
 - c) Berms (Height)
 - d) Undertaking or Cracking
2. When dumping commence in a new or an area, where no berm is present, material should be dumped short of the dumping face and pushed up by a bulldozer to form a berm at the edge of the dump. This berm shall be formed: from the dumped material and have a height equivalent to half the wheel diameter of the dumper dumping. In any event, this berm should not be less than one meter in height.
 3. After positioning his equipment for dumping, the operator will raise the hoist with the equipment stationary. The hoist must be completely lowered after the operation of dumping. During these operations the operator will remain in the cabin.
 4. If at any time the operator considers the operation unsafe, this should be immediately reported to the Foreman/ Supervisor /Shift in-charge of the mine.

**Design Formation and Maintenance of Spoil
Banks or Dumps of a Mechanized Opencast Mine Using Shovel,
Dumper Combination.**

1. (a) The slope of a spoil bank face shall be determined by the natural angle of repose of the material being deposited but shall in no case exceed 37° from the horizontal.

(b) The spoil bank face shall not be retained by artificial means at an angle in excess of its natural angle of repose.
2. (a) The Toe of spoil bank shall not be permitted to approach a railway or other public roads or building or other permanent structure not belonging to the owner of the mine, closer than a distance equal to the vertical height of the face.

(b) A suitable fence shall be erected between any railway or public works or road or buildings or structure and the toe of an active spoil bank at a distance of not less than the height of the spoil bank so as to prevent unauthorized persons from approaching the spoil bank.
3. No person shall or shall be permitted to approach the toe of an active spoil bank where he may be endangered from materials rolling down the face.
4. The manager shall arrange for proper drainage of the dump to prevent water logging and instability of dump.
5. The manager shall appoint sufficient number of competent persons to supervise dumping operations, inspect and report upon the safety of the dump.
6. The manager shall prepare dumping rules which shall specify:
 - (a) The provision of system of drainage,
 - (b) System of Inspection,
 - (c) Maximum height of bench which shall not exceed 60m.
7. A notice of dangerous occurrence shall be given to the inspectorate if there is any indication of on stability of the dumps.

Standard of illumination in large opencast mines

- Insufficient and ineffective illumination in opencast mines result in loss of productions, causes occupational hazard to the eye and working unsafe.
- As human being receives bulk of information visually, the quality and quantity of illumination produced by artificial lighting is critical to the safe and efficient performance of various jobs in mining, particularly when large number of heavy earth moving equipment is engaged.
- Unfortunately most of the Indian opencast mines are poorly illuminated, even though the statute provides a standard norm of lighting at various workplaces in an opencast mines.

In an opencast mine:

1. The haul roads should be lighted with 70W -125W sodium vapor at regular intervals.
2. The dumps must be well lighted by tower lights with high intensity sodium vapor lamps 400W.
3. The area where high capacity shovels and dozer etc. work floodlight by Halogen lamps 400W-1000 W are recommended.
4. On the equipments like shovels (on the roofs) and draglines 70-120W (on the boom) focused type flood lights with halogen lamps are recommended.
5. Where dumps are changed frequently trolley mounted, diesel engine operated telescopic lighting units (manufactured by Sigma Lights) with heights up to 20-30m should be advantageous.

Lights:

- It may be remembered that poor lighting effects worker's efficiency and hence loss of production and productivity.
- It has been observed that poor lighting has been the cause of many accidents in the mine.
- Working in poor lighting condition also may cause occupational damage the eye.
- Given below minimum recommended illumination standards for various points in opencast mines.

RECOMMENDED ILLUMINATION LEVELS IN
OPEN CAST MINES.

Place/area to be illuminated	Manner in which to be illuminated illumination (Lux)	Minimum standard of illumination be provided	Place/level at which
1	2	3	4
General working areas determined by the Manager in writing		0.2 Surface to be illuminated	At the level
Work place of heavy machinery	So as to cover the depth and height through which the machinery operators.	5.0 10.5	Horizontal Vertical
Area where drilling works	So as to illuminate the full Height of the rig.	10.0	Vertical
Area where bulldoze or Other tractor mounted Machine works.		10.0 Crawler tracks	At level of 1
Place where manual work is done.	To be provided at the level of the surface on which such work is done.	5.0 10.5	Horizontal Vertical
Place where bulldozer or transfer loading of dumpers, tracks or train is carried on.		3.0	Horizontal
Operator's cabin of machines or mechanism.	To be provided up to a height of 0.8 m from floor level.	30.0	Horizontal

**Drill Operator Excavator and Truck/
Dumper/Dozer Operator of Mechanized O/C Mines.**

1. Duties of drill operators:

At the beginning of his shift the drill operators shall examine the drilling equipment and satisfy himself that.

- a. Crown blocks are mounted securely.
- b. Where compressed air drills are used, all hoses connections are in order and.
- c. The drilling equipment is in safe working condition.

2. The drill operator shall ensure that:

- a. Work persons keep clear of auger and drill stem, while the drill is in motion.
 - b. Work persons do of work under suspended tools when tools are removed from the hole, these shall be lowered on the platform,
 - c. All finished drill holes are properly plugged so as to avoid possible leg injuries to any one accidentally stepping into the hole.
3. Drilling equipment shall be operated on level surface and if working on a bench, shall be so arranged that it is located at a distance of 3mtrs from the bench crest specially when drilling the nearest hole to the crest and in this case, the operator's end of the machine shall face the crest.
4. Whilst in operation, the drilling equipment shall be so arranged that its longitudinal axis is perpendicular to the bench crest.
5. When a drill is being moved from one drilling area to another, drill steels, tools and all other parts of the machine shall be secured and the mast placed in safe position.
6. If a drill helper assist the operator during the movement of the drill to new position, the helper shall be in sight or in communication with, the operator at all times.
7. When the rig mast is being raised or lowered no person shall be permitted to remain in front of or behind the drilling rig.
8. Tools or other objects which might cause injury to personnel shall not be left loose on the mast or drill platform.

Duties of excavator operator:-

1. a) At the commencement of every shift the operator shall personally inspect and test the machine paying special attention to the following defects.
 - i) The breaks and every working device are in working order and
 - ii) If the machine is required to work after day light hours, that lights are in working order. He 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.

b) The operator shall maintain a record of every inspection made under cl. (a) in a bound paged book kept for the purpose and shall sign every entry made therein.
2. a) The operator shall keep the cab window clean so as to ensure clear vision at all times.

b) Walk ways in or about the cab of any shovel shall be kept free of loose tools, grease containers or other materials that might fall or present a falling or tipping hazard.
3. a) The operator shall not operate the machine when persons are in such proximity to be endangered.

b) He shall not swing the bucket over the passing haulage units. While trucks/dumpers are being loaded, he shall swing over the body of the truck/dumper and not over the cab, unless the cab is protected by a substantially strong cover,
4. Before leaving the machine, the operator shall lower the bucket to the ground.
5. The operator shall not leave his machine during the shift, when he finishes his work he shall hand over the machine to his relief or lock the excavator cab.
6. The operator shall not allow any unauthorized person to ride on machine.

Duties of Truck/Dumper/Dozer operators:

1.

- a) Before commencement work the driver shall personally inspect and test the Vehicle with special attention to the following (i) Tyre pressure (ii) break (111) horn and (iv) lights (if the vehicle is required after day light hours. In case of any defect, report the same of competent authority and shall not operate until the defect is remedied, take out the vehicles for work nor shall be drive the vehicle unless he is satiated that it is mechanically sound and in efficient working order.
- b) The operator shall maintain the record of every inspection made under clause (a) in a bound paged book kept for the purpose and it shall be signed and dated by the person, making the inspection.

2. The operator shall keep the cabin window clear so as to ensure clear visibility at all times.

3.

(a) The operator shall not leave the machine while the engine is running. The operator shall before leaving the vehicle, place it in low gear and shall securely apply the hand breaks also.

(b) The operator shall handle the truck/ dumper carefully and keep it under control at all time. He shall negotiate downhill gradient in low gear so that minimum of braking, is required.

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

(d) When approaching a stripping equipment, the operator of the truck/ dumper shall sound the audible warning signal, and shall not attempt to pass the striping equipment until he has received a proper audible signal in replay,

(e) Before crossing a road or railway line, he shall reduce his speed, look in both directions along the road or 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 a blind corner or any other point from where persons may walk in front unexpectedly.

(g) The drive shall not operate truck/ dumper in reverse unless he has a clear view of the area behind the vehicle or he has the assistance of a spotter or Pitman duly authorized in writing for

the purpose by the Manager. He shall give an audible warning signal before reversing a truck/dumper.

(h) The driver shall be sure of the clearance before driving through tunnels, archways, plant structure etc.

(i) The driver shall not drive 'nose to tail' particularly behind a vehicle with twin rear wheels from which a stone piece wedged between the tyres may fly back into the wind screen of his vehicle.

4. The driver shall see that:

(i) The vehicle is not overloaded.

(ii) The material is not loaded in truck/ dumpers so as to project horizontally beyond the sides of its body, and.

(iii) Any material, projecting beyond the front or rear, is indicated by a red flag during the day and a red light after day light hours.

5. The driver shall not allow any unauthorized person to ride on the vehicle. He shall not allow more than the authorized number of persons to ride on the vehicle.

6. Whenever possible the driver shall vacate his cabin while the vehicle is being loaded by a power loader.

7. When there is a poor visibility, the speed of the vehicle shall be restricted in a manner that the breaking distance is maintained shorter than the distance of visibility. When the visibility is very bad, the vehicle movement must be stopped immediately.

Code of Safety Practices for Use of Electricity

A | GENERAL CONDITIONS FOR MAINTENANCE

1. All electrical equipment should be installed and maintained so as to prevent electric shock and occurrence of fire and explosion.
2. All electrical equipment should be maintained reasonably free from dust and moisture and be kept clear of all obstruction.
3. Electrical maintenance shall be carried out only by authorized competent persons.
4. All electrical equipments other than portable and transportable apparatus shall be housed in a room; compartment or box made of incombustible material and so constructed as to protect from any damage by passing traffic and water.
5. Inflammable or explosives materials shall not be stored in any room, compartment or box containing electrical equipment or in the vicinity of any apparatus.
6. Should there be a fault in any circuit, the part affected shall be made without delay by discontinuing the supply and shall remain so until the fault has been rectified.
7. All equipments, including portable and transportable, shall be operated only by those persons, who are authorized for the purpose.
8. Before starting the electrical apparatus including portable, shall be operated only by those persons, who are authorized for the purpose.
9. Operator should not leave the electrically driven machine (including portable and transportable) while in operation.
10. Operator should ensure that power supply to flexible trailing cable is disconnected after operation before leaving the machine and area.
11. Flexible: trailing cable should not be dragged along with the machine.
12. Where: plug & socket coupling other than bolted type plug is used with flexible cable, an electrical interlock shall be provided to prevent the opening of coupling while in operation or cable is live.

13. All electrical equipment should be so installed, operated and maintained as to ensure that in no part, the permissible maximum temperature is exceed prevent damage of equipment's and cable etc.
14. All exposed live parts, shall be suitable guarded against accidental contact, unless the nature of the work require them to be bare.
15. Before taking up the repair/maintenance of electrical equipments and overhead line, it should be ensured that supply is disconnected, discharged and short-circulated with earth properly.
16. Always use safety equipments such as Head Gloves, insulated ladder, safety belt, discharging rods etc. and proper tools working for better safety & efficiency.
17. Protections provided in the circuit breakers for over current short circuit and earth leakage shall be maintained properly and efficiently. No protection should be by passed or tampered with which shall endanger the safety of equipment's & persons.
18. Do not use higher size fuses than the required one under any circumstances. Supply shall be disconnected at the time of change of fuse.
19. Guarding should be provided where overhead transmission line is crossing the road, working places, Guarding should be earthen at each point where its electrical continuity is broken.
20. Danger Board should be fixed at all places where electrical energy is transmitted, used such as I.I.T & L.T overhead transmission line, sub-station control rooms and other equipment's etc.
21. A Notice in Hindi, Oriya & English shall be exhibited at all places where electrical apparatus is in use to forbid the unauthorized persons to operate or otherwise interfere with such apparatus.
22. Sample code of "safety Rules" such as the 'permit to work systems are essential when undertaking repair & maintenance work. Shock treatment chart should be fixe near the electrical installations such as sub-station, control rooms, haulage rooms etc. all persons working on electrical installations, should have sufficient knowledge about treatment of persons after electric shock first aid.

23. Plug should not be taken out by pulling the cable.
24. Do not use unsafe hating domestic appliances. Remove plug from the Socket before taking up any repair work.
25. Coupling guards should be fixed in all couplings.
26. Do not wear loose clothes while working on machines or electrical instillations.

B| LAY-OUT

1. Due to the conditions of operations of electrical equipments inside mine. Special care has to taken to ensure that are place well clear of roadway traffic and well protected from water and falling materials.
2. Adequate space should be provided around apparatus to allow proper facilities for maintenance purpose.
3. All rooms designed to accommodate electrical equipments for example, sub-stations, control room, haulage rooms should be lined with fire proof materials.
4. No inflammable or combustibile material should be used in the construction of building in which electrical equipments are to be installed.
5. Meticulous care is required in the design and construction of all such housings in regard to freedom from dampness and water penetration, proper Ventilation, exit and passage ways to suit the equipment position.
6. Inflammable or explosive materials shall not be stored in any room, compartment or box containing any electrical apparatus in a mine or in the vicinity of any apparatus to avoid fire or explosion.
7. Suitable-type or firefighting equipment (approved type) shall be kept immediately adjacent to room or compartment where electrical equipments are installed. Such equipments shall be tested periodically for their effectiveness.

C | E ARTHING

1. The natural conductor of a three phase four wire system and the middle conductor of a two phase three wire system shall be earthen by not less than two separate and distinct connection with earth at the generating station/ sub-station. It may also be earthen at one or more points along the distribution system or service line in addition 10 sub-station' generating station for efficient earthing.
2. The connection with earth may include a link by means of which the Connection may be temporary interrupted for the purpose of testing or locating fault.
3. No switch, fuse or circuit breaker shall be inserted in any earthing system or earth conductor,
4. All metallic sheaths, coverings, handles, joint boxes, switch-gear frames, instrument covers, switch & fuse cover boxes, all lamp holder (unless efficiently protected by an insulated covering made of fire resisting materials) and frames and bed plants of generators, transformers and motors (including portable) shall be effectively and securely connected to earth.
5. All earthing system shall, before electric supply lines or apparatus are energized, be tested for electrical resistance to ensure efficient earthing.
6. All earthing system shall be tested resistance on any dry day, during dry Season not less than once every year.
7. Earthing system shall be effected by one or more of the followings:-
 - a) Conductive sheath where provided.
 - b) Armour cable.
 - c) Conductive sheath and armor of cable when both are provided.
 - d) Special conductors forming part of cables.
 - e) External earthing conductor which shall be easily visible.
 - f) Conducts, casing and pipes etc.

D | CABLES

1. Flexible cables shall not be used with apparatus other than portable or transportable apparatus.

2. Flexible cable connected to a portable and transportable machines shall be examined at least once in a shift by the apparatus of the machine.
Such examinations by the operator shall be supplemented by thorough examination by the authorized electrical supervisor at weekly interval. Those examinations shall be as detailed as practicable and cover all accessible parts of the cable such as plug 2 socket assembly at switch and machine end, surface Insulation of the cable and couplers user for joining etc. During examination, flexible cable found damaged or defective it shall be replaced with cable in good condition immediately.
3. Metallic armoring or screening of cable shall not be used as earth conductor but it may be used in conjunction with earth conductor. All such metallic armoring/screening shall be connected with earth properly.
4. All cable ends shall be efficiently sealed to prevent diminution of its insulating properties.
5. Flexible cable shall be properly supported and protected from mechanical injury.
6. Where flexible cable are used, they shall be detached or otherwise isolated from the source of supply when not in use and arrangement shall be made to prevent the energizing of such cable by unauthorized persons.

F. | BATTERIES (ACCUMULATOR)

1. Level of electrolyte (Battery water) should be checked twice a week and maintained at proper level.
2. Specific gravity of the electrolyte (water) should be checked periodically while charging and recharging batteries.
3. Apron should be used while working on the batteries such as pouring of electrolyte or checking.
4. Use correct size of battery wires and clamps for proper connection to battery.
5. If any leakage of electrolyte (water) is found from the casing or battery covers, it should be immediately stopped before put to use.
6. Battery shall be charged at a low Amp rates for better life. Only in case of emergency, higher
7. Amp charging may be adopted.

Code of practice for Fire Fighting

1. Fire Filling Team:

Security Incharge of the mine assisted by one leading Security personal and two Firemen are to be trained for firefighting together with the working personnel at Fire Location.

2. Fire Fighting Training:

- i. Fire Fighting Training shall be given regularly to the following Personnel as part of vocational training.
- ii. All the HEMM Operators
- iii. All Sub-station attendants.
- iv. All the clerical staff looking after diesel dispensing centers.
- v. Workshop personnel-welding section, Tyre vulcanizing section, Auto Electrical section and all the Mechanical Foremen/ Incharge of each shift
- vi. Unit Incharge of the Stores,
- vii. Mechanized mining Section - All Mines Foremen, Mining Assistants and Supervisors.
- viii. Blasting Foremen and Blasters.
- ix. All foremen working in shifts al loading & transporting section.

3. Fire Fighting Stations:

- a. Fire Stations should be located at the following points.
 - i) Mechanical Department (Equipment Garage)
 - ii) Electrical Sub-station and Welling Section,
 - iii) Central Stores.
 - iv) All Diesel & Lubricants Dispensing Centre.
 - v) Computer Room.

4. Fire Fighting Equipment's Maintenance:

Firefighting equipment to be examined and tested every quarter and refilling to be carried as per the following schedules:

- CO2 -Once the cylinder is exhausted to be filled by the manufacturer,
- DCP- Once a year
- Foam - Once in month
- Soda Acid- Once in 6 month
- Halon -To be procured for computer centre and refilling to be done by the Manufacturer.

5. Standing Order for immediate action:

- i. Giving warning. Any person, who notices a fire in a mine shall take immediate sop to extinguish it, using whatever material or appliances are available at or near the site where more than one person are present, one of them shall proceed for getting further assistance and to give warning.
- ii. Any person who notices fire in mine, which is too extensive to be tackled by him when he fails to control the fire by taking action, shall proceed to give warning
- iii. Any person who notices the appearance in any part of the mind of smoke on other signs, indicating that a sire or heating gas may have broken out, shall 1 take action to give warning
- iv. The person, detecting the fire shall take step to give Warning by the fastest means to use nearest available mining mate/foreman or any other mine official and inform the security control room.

DUTY OF THE MINE OFFICIAL

1. The Mining Mate/Foreman or other mine officials to whom the warning of the fire is given shall send warning by the fastest possible means to :
 - a) The surrounding area, so that persons may be withdrawn there from.
 - b) The site online, the Manager(Mines)
 - c) A senior official if he is in the mine at the time.
2. Where available: telephone or walkie-talkie shall be used to convey the same to the central lire station and Mines Manager.

3. When telephone or walkie-talkie is not available or if it is out of order a fire signal hooter may be used as per the code. The signal code in mines may be continuous hooping by siren till the fire is put off.
4. When the warning can neither be transmitted by telephone nor by wireless nor through hooter, warning shall be sent by special guards or messengers.
5. Whenever any fire extinguisher is used, the detail mentioning type, quantity etc. shall be intimated to Security Control at the earliest.

DUTY OF THE OFFICE CLERK:

On receiving information about the fire; he shall inform immediately to the Central Fire Station/Security Control Room about the exact location of fire through telephone or walkie-talkie. Security personnel on duty at the security control room shall immediately on receipt of the information about fire shall inform the Manager (Security).

DUTY OF FIRE FIGHTING PERSONNEL:

On hearing the fire signal or on being informed through any other means, the Mines Fire Fighting Team shall immediately present.

DUTY OF MANAGER:

On getting information about fire at the mine, the Manager or in his absence the principal official present at the mine, shall either himself inform or take suitable action to inform the agent (and senior officials of the Company)

WITHDRAWAL PERSONS:

Duty of Mine Manager/Foreman:

1. On appearance in any part of the mine of a fire or smoke or other signs, indicating that a fire or spontaneous heating has broken out or on getting information about fire in any other part of the mine shall withdraw from the mine or from the spot all the persons under their control except those persons whose presence in the mine is considered necessary for dealing with the fire and is trained in fire fighting.
2. The persons shall be withdrawn in an orderly manner and without creating any panic.

Duty of the Mine Officials

The Mine Officials (Asst. Manager, Dy. Manager (Mines)) shall exercise general supervision over the withdrawal of persons from the working sport.

ADMITTANCE OF PERSONS:

No persons other than those permitted by the Manager shall be allowed to remain in or enter the mine for the purpose of dealing with fire.

Every such authorization shall as far as possible be in writing.

CONDUCT OF FIRE FIGHTING OPERATION:

All work dealing with fire shall be conducted in accordance with the relevant statutory provisions and any recommendation made in this regard by the D.G.M.S. through circulars issued from time to time.

Fires which cannot be dealt with immediately and all spontaneous heating, shall be dealt with by fire fighting & rescue personnel specially trained for the job and in accordance with the instructions issued by the Manager.

RESUMPTION OF WORK:

Normal work shall not be resumed except with prior permission of the Manager.

ENFORCEMENT OF THE ORDER:

A copy of order shall be pasted at the mines office attendance room and Site office. It shall be the duty of all Mine officials and other concerned persons to make themselves thoroughly familiar with their duties in case of fire.

ENQUIRY TO BE CONDUCTED:

A detailed enquiry has to be conducted by a Senior Official just below the rank of Mine Manager and the reasons have to be found out. Accordingly, remedial measures should be chalked out for stopping the future occurrence of the same.

**Code of practice for tipping on stock piles dumping of
Overburden**

OBJECTIVES

To prevent accidents and injuries which might occur through the operation while dumping on stockpiles and dumping of overburden on dumps.

RESPONSIBILITY

1. Mines Manager/Assistant Manager

- a. Ensure that Drivers & Operators are trained in the procedure.
- b. Dumps and stock piles are properly sited and in stable condition.
- c. The employment or engagement of persons suitably qualified to ensure the requirement.
- d. Inspections of all dumps once in a week and just after long period of continuous rain or after torrential downpours of rain.

2. Foreman/Supervisor

- a. They shall inspect all active dumps/stock piles everyday and supervisor : the operation of dumping, dozing including creation of Berm at the edge and sporting if necessary,
- b. Report all unsafe condition or acts to the Mines Manager or Assistant Manager in writing.
- c. Unstable areas/edge shall be designated by Red Flags.

3. Employees. Operators/Contractors

They are responsible to comply the operating instructions and report any unsafe condition/act at the stock pile/dump/loading platform.

LOADING POINTS

The operator should:

1. Bring the dumper to loading area with utmost care and keep it at safe distance while another dumper ahead is being loaded.

2. Never drive on the unprotected HT Cable,
3. While approaching the loading equipment (Shovels) below the audible warning signal/horn and should not attempt to pass the machine until he also receives a proper signal in reply.
4. While approaching and leaving loading area watch for other vehicles and personnel in the vicinity.
5. At the time of placing the dumper under the excavator follow carefully the spatter's or shovel operator's signal/falling objects,
6. At the times of loading, stay in the cabin only so as to avoid any danger from flying materials.
7. Avoid over-loading of dumpers causing falling hazards during haul.
8. Not park the dumpers in haul road unless unavoidable and in such cases should set out red flags to warn other drivers.

Unloading point at Dump yard/Stock pile

The operator should-

1. Ensure that the dumping area is firm & stable and provided with Berm having sufficient strength and height upto 1M or more than half the diameter of tyre.
2. Bring the Jumper/tipper to the desired dumping area/stock pile with utmost care and take the place for reversing towards the edge of the dump.
3. Visually check for any crack or under cutting at the start of work.
4. Dump material at a distance of about 3M from the edge and bulldozer/front end loader should push to the edge in care of initial tipping.
5. The Berm be prepared by the bulldozer operator.
6. Reverse squarely the dumper to position the tyres suitably at the edge of the Berm.
7. Not reverse if the AVA/ rear vision System is not functioning and back flood light is not giving a clear view of 10M at night except with guidance by a spotter.

8. After positioning for dumping, the operator will raise the hoist with the equipment stationery, the hoist must be completely lowered after the operation of tipping of dumping.
9. Do not reverse the vehicle if speed is more than 05 kmph.
10. Dump the material short of the edge if no Berm has been provided.
11. Do not take the help of a spotter unless it become essential and should not allow coming closure to the dumping area.

Instruction for Bulldozer/Front end Pay Loader Operator

The operator should-

1. Visually check the stability of the dump giving emphasis on any under culling on crack
2. Always make clearance for easy movement of dumpers/tippers.
3. Push the initial dumped materials to make an access ramp having sufficient width and completion for easy movement of dumpers.
4. Provide Berm at the access ramp having a minimum height of 1M and width 1 to 1.5 Mrs.
5. Provide Berm at the edge of the dump at least 1M width and 0.6 height.
6. Provide Berm of 2M height at the non-operational are.
7. Report unsafe condition of the dump to Foreman/Asst. Manager,

Duties and Responsibilities of Spotter at unloading point

1. He should perform all duties & responsibilities like a competent person.
2. He shall use whistle or flag to follow the signaling procedure.
3. He shall not pass behind a dumper at any point of time.
4. He shall not walk or stand on the cemented Berm at any point of time.
5. He shall not come close to the dumpers/tipper during the course of reversal dumping.
6. He shall use all PPE (Helmet, shoes etc.)
7. During night/dark hour he shall wear fluorescent jackets.

8. He shall place marks/identification on cemented Bern for proper positioning of dumper by the operator.
9. Use torch during dark hours.

Signaling procedure.

1. One whistle or red flag to stop the vehicle.
2. Double whistle or green flag for clearance of vehicle.
3. The trucks reporting for transport of mineral shall be allowed to park separately at an identified place.
4. Such area shall properly maintained and under the control of an authorized official/security Incharge.
5. The vehicle reporting for transport work shall be recorded in a bound page register indicating SI. No. Regd. No, of vehicle, time of arrival, Name of the driver, Road worthiness name of the driver with D.L. details etc.
6. The vehicle before allowing to enter in to mine premises shall be checked by the Mechanical Engineer of the mines regarding the standard of fitness, brake horn etc.
7. Only such no. of vehicles shall be allowed to enter in to mines premises on attendance seniority by way of established communication system in between ore stock yard gate I/c & parking area I/c.
8. The truck drivers should be briefed on the safely procedure and traffic rule to be observed in the mines before permitted to proceed from the truck parking area.
9. The driven shall be trained under Mine V.T. Rule, 1956.
10. No loaders laborers shall be allowed to ride on the trucks, whether loaded or empty.

Model Code of Precautions for Truck Transport in O/C Mines

Roads for Trucks:-

1. All roads for trucks or other mobile machinery referred to hereinafter as vehicle shall be maintained in good condition.
2. Where practicable all roads in and from the O/c. working shall be arranged to provide 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 playing on that road unless, definite turn outs and waiting points are designated.
3. All corners and bends in roads shall be made in such a way that the operators and drivers of vehicles have a clear view for a distance of not less than 30mts, along the road: whenever it is not possible to ensure visibility for a distance of 30mts, there shall be provided two roads for the up and down traffic.
4. Ordinarily, no road shall have a gradient steeper than 1 in 16 at any place provided that in case of Ramps over small stretches a gradient up to 1 in 10 may be permitted.
5. Where any road exists above the level of the surrounding area it shall be provided with strong parapet walls or embankment not less than 1mt in height to prevent any vehicle from getting off the road.
6. Road signs shall be provided on every turning point for the guidance of driver especially at night time.
7. At every curve, parapet walls or vertical posts with zebra line shall be provided to help the drivers to keep the vehicle, on the track especially at night time.

Maintenance of Vehicle:

1. The vehicle shall be maintained in good repair, and examined thoroughly once at least in very week by the engineer or the competent person appointed by the Manager in writing for the purpose.
2. The competent person shall maintain a record of every such inspection in a bound paged book kept for the purpose. Every entry in the book shall be signed and dated by the person making the inspection.
3. If the engineer or other competent person making an inspection, notices any defect in the vehicle the said vehicle shall not be used until the defect has been remedied.
4. Any defect in a vehicle reported by its driver shall be promptly attended to.

5. Any vehicle found to be in an unsafe operating condition shall be tagged at the drivers position *"out of service do not use"* and its use shall be prohibited until the unsafe condition has been corrected.
6. Every vehicle shall be regularly serviced and over hauled as per the recommendation of the manufacturer. A written record of each servicing and over hauling shall be maintained.
7. Except for testing trials adjustment which must necessarily be done, while the vehicle is in motion, every vehicle shall be shut down and positive means taken to prevent its operation while any repair or manual lubrication is being done.
8. Any vehicle equipment or part thereof which is suspended or held apart by use of slings, hoists or jacks shall be substantially blocked or cribbed before men are permitted to work underneath or between such vehicle, equipment or part thereof.

Daily Examination of Vehicle:

1.

(a) At Commencement of every shift, a mechanic or other competent person specially appointed in writing by the manager for the purpose shall personally inspect and test every vehicle paying special attention to the following details:-

- i) That the breaks and the horn or other, warning devices are in working order.
- ii) If the vehicle is required to work after day light hours (that is half-an-hour after sunset and half-an-hour before sunrise) that the lights are in working order.

The competent person shall not permit the vehicle to be taken out for work nor shall be drive the vehicle unless he is satisfied that it is mechanically sound and in efficient working order.

(b) The competent person shall maintain a record of every inspection in bound paged book kept for the purpose. Every entry in the book shall be signed and dated by the person making the inspection.

Operation of Vehicle:

1. No person shall be permitted to ride on the running board of a vehicle.
2. As far as possible, no loaders laborers, shall be allowed to ride trucks, whether loaded or empty. Where this cannot be avoided due to Practical Considerations, the body of the

trucks shall be re-designed to provide separate compartment at the back of the truck in which workers may take a seat.

3.
 - a) As far as possible loaded vehicles shall not be reversed on gradient.
 - b) Sufficient stop-blocks shall be provided at every tipping point and these shall be used on every occasion material is dumped from the vehicle.
 - c) Standard traffic rules shall be adopted and followed during movement of all vehicles. They shall be prominently displayed at the relevant place in the opencast workings and roads.
4. When not in use every vehicle shall be moved to and stood on proper parking places.
5. No person shall be permitted to work on the chases of a vehicle with the body in a raised position until after the body has been securely blocked in position. The mechanic hoist mechanism, if any, alone shall not be depended upon to hold the body of the vehicle in raised position.
6. No unauthorized person shall be permitted to enter or remain in any dumping yard or turning points.

Duties of Drivers:-

1. Before commencing work in a shift, the driver shall generally examine the vehicle for its road worthiness, and in particular check the tyre air pressure, brakes, horns and lights. If he finds any defect which will make the driving unsafe, he shall report the matter to the competent person and get the defect remedied before operating the vehicle.
2. The driver shall not drive too fast, shall avoid distraction and shall drive defensively. He shall not attempt to overtake another vehicle unless he can see clearly far enough ahead to be here that he can pass it safely. He shall also sound the audible warning signal before overtaking.
3. Before crossing a road or railway line, the driver shall reduce his speed, look in both directions along the road or line and shall proceed across the road or line only if it is safe to do so.

4. The driver shall sound the audible warning signal while approaching "blind" corners or any other points from where persons may walk in front unexpectedly.
5. The driver shall not operate the vehicle in reverse unless he has a clear views of the area behind the vehicle or he has an assistance of a spotter duly authorized in writing for the purpose by the manager. He shall give an audible working signal before reversing a vehicle.
6. The driver shall make sure of clearances before driving through tunnels, archways, plants, structures etc.
7. The drive shall not operate a vehicle in fog or mist without taking adequate precautions as may be specified by the manager.
8. The driver shall not operate the vehicle while being in a state of drunk ness and without due care and attention having regard to all circumstances including the nature, condition and use of the road or other place over which the vehicle is being driven and the visibility at the time.
9. The driver shall see that the vehicle is not overloaded and that the material is not loaded in a truck, so as to project horizontally beyond the sides of its body and that any material projecting beyond the front or rear is indicated by a red flag during day and red-light after day-light.
10. The driver shall not allow any unauthorized persons to ride on the vehicle. He shall not allow more than authorized number of persons to ride on the vehicle.

Duties of Manager:-

1. It shall be the duty of the manager:
 - (a) To ensure compliance with the aforesaid precautions.
 - (b) To determine and specify in respect of every maximum speed of the vehicle and cause notices specifying the same to be posted along the road at appropriate places.
 - (c) To cause warning notices (drawing attention to any necessary precautions) to be posted along the truck or haulage roads at appropriate places, like level crossing curves and turning points etc.
 - (d) To designate the persons authorized to ride on truck.

- (e) To give every truck driver directions in writing with respect to loads, speed, persons authorized to ride on trucks and precautions necessary for safe running.
- (f) To C/S entries in books and record to be maintained in pursuance of these precautions.
- (g) To take such other precautionary measures as may be necessary to ensure safe operation and maintenance of vehicles and for the safe.

Code of Practice for Dealing with Fires At
Different Locations in a Mechanized Open Cast Mine in or
around the Mines/Store/ Workshop & OHP.

- Any person on seeing an outbreak of fire in any part of the mine shall immediately announce the same on wireless or inform it to the Supervisor who is available in the nearest vicinity
- On information the Supervisor along with the rescue trained personnel shall arrange for fighting the fire.
- Meanwhile the area Supervisor shall do the fire fighting with the portable extinguishers available at site.
- For Electrical fires, only Co2 or Dry powder type of extinguishers shall be used. For other fires, any type of equipment can be used.
- Before fighting any fire, the electrical power to the equipment shall be put off.
- Any inflammable material around the fire zone shall be cleared immediately to see that it will not catch fire.
- In case the fire is of higher magnitude the fire service with water shall be alerted and the siren provided for the purpose shall be made on.
- On listening to the siren all the persons trained in fire fighting shall assemble at the control room and disperse quickly after getting instructions from the emergency response Supervisor.
- The persons not connected with rescue operations shall be evacuated from fire fighting zone, to avoid crowding.

Code of practice for prevention of fire in HEMM

1. Commutator and other Electrical parts shall be cleaned frequently with help of any air blower and cloth. Electrical joints should be checked regularly for tightness regularly.
2. Heating cable and burning smell are looked for immediate remedial action.
3. Air circuit breakers and contactors shall not be switched on without protective cover.
4. Isolation switch shall not be put off when M.G. Set is in running condition.
5. Turbo charger exhaust lines of dumpers shall be covered with glass wool/ asbestos lining.
6. Arrangement of fire fighting provided on HEMM and operate automatically on appearance of fire:-
 - Adequate number of portable fire Extinguisher of suitable size and type shall be provided at stating points in every Workshop, Dumper parking area, vehicle refilling point and at storage place of grease, oil etc.
 - A competent person at least once in every three months examines every fire Extinguisher for refilling and of proper working order.
 - He shall sign and date of his examination in a register maintained for the purpose.

Code of Practice for Blasting Operation

1. The Blasting Officer/ Asst. Manager shall be the overall In-charge of blasting The Blasting off operation and shall be responsible for compliance of all the statutory provision and quality and efficiency in blasting operation.
2. The blasting officer/ Asst. Manager shall be assisted by the blasting Foreman. Who shall be present at the spot during all operations of blasting and supervise the operations.
3. No person shall be deployed in blasting operation without authorization of the manager and they should use all the safety wear like safety shoes helmet gloves safety goggles etc while on duty.
4. No Explosive shall be used for blasting unless it is permitted by the DGMS for use in the mine and it fulfils all the conditions stipulated in the blasting permission.
5. SMS Explosive/ Emulsion Explosive Company allowed in the mine must have, trained personnel and will carry out the operations under the guidance of one Technical expert of the company.
6. No unauthorized person shall be allowed to be present or to pass beside the place where blasting operations are going on.
7. No other work like drilling and excavation shall be carried out on the same bench or other bench within a radius of 50 meter where charging & stemming is going on.
8. No priming station shall be located within 60mts from the site of blasting or within 15mts of any track, road or power cable.
9. Not more than one hole shall be in the process of being charged at anyone face at any one time.
10. All charging stemming and connecting up shall be done while standing on the solid that is to say, on the side of holes remote to quarry face.
11. No person other than the blaster or his assistant, if any shall be permitted to remain within a radius of 20mts within 30mts on the same bench where charging of holes with explosive is being carried out.
12. No fire or naked light or heating or other carbonaceous material shall be allowed in the vicinity of the blasting operations. Proper care shall be taken to clean the holes before blasting in rainy season.

13. During heavy rain & Lighting/thundering no charging and stemming of holes shall be carried out or continued. The end of the D-Fuse TLD & DTH of the Nonel/Raydet which have already been laid shall so covered with drill cuttings and withdrawn from the place to safely up to clearing of the electrical storm.
14. Before starting charging operation, the blasting officer and the technical expert of the SMS/ Emulsion explosive Company shall ensure that the blasting system/ blasting van and the instruments for measurement of the explosive quantity are in good working order.
15. During blasting operation the blasting overman shall ensure that all persons inside the danger zone have been withdrawn to safety and himself with his assistants shall remain with safety in the blasting shelter.
16. Ten-minutes before blasting, proper blasting signals by siren/whistle/red flag/walkie-talkies/loud speaker system shall be given for with drawl of persons and machineries. Firing shall be done only if it is found safe to do so. A clear signal shall be given after the blasting is over.
17. Shots if fired beyond day light hours be muffled so that flying fragments from blasting could not project beyond a distance of 10mts from the place of firing.
18. Sound vibration shall be measured with vibrometer regularly and their report shall be maintained in a bound paged register.
19. Proper weighment of SMS explosive shall be done and cross checked with the actual blast parameters.
20. All steps shall be taken to prevent any pilferage of explosives.
21. Blasting shall be done during 4.00PM to 5.30PM in the Mine/Blasting time fixed by the manager in writing during the hours of day light. All holes charged any one day shall be fired on the same day.
22. The blasting officer/blasting overman shall report to the manager if any defects found or difficulties arise in the implementation of the above.

Code of practice for Safe Road sale system

1. A Transport Manager/ Mining Foreman shall be deputed in road sale who shall be responsible for maintaining safety and discipline of the total system.
2. For parking of empty trucks, a special area should be demarcated (Parking area) outside the mine premises and the truck/ tippers should park in proper way.
3. Limited numbers of empty trucks/ tippers are to be allowed to the loading area and all such trucks/ tippers should be kept arranged in a proper way.
4. Loading in the stock yard into the trucks/ tippers will be done only on day light. If permitted by manager such loading time can be extended up to 8.00PM and for that sufficient lighting arrangement should be provided.
5. The driver and helper of the trucks/ tipper shall not come down from the truck/tipper as long as they are inside the stock yard.
6. The supervisor of the contractor, who has to lift the ore shall not be allowed to enter in to the loading area.
7. The C.S.O. shall control the entry of truck/ tippers in to the stock yard and he shall maintain a record of entry and exit.
8. No truck/ tippers shall be allowed to be overloaded.
9. For weighment, all loaded trucks shall be parked in a line and allowed for weighment one by one.
10. Loading both by machine and manual means shall not be allowed simultaneously.
11. In case of machine loading the pay loader operator who is engaged for loading shall be provided with helper.
12. For adjustment of loaded trucks/ tippers after first weighment (extra loading unloading of ore) a separate area should be demarcated.
13. To control the traffic at the stockyard a security guard should be posted who shall act as per the instruction of AM (M)/M.F present at the place.
14. It will be the responsibility of the AM (M)/ M.F to see that no unauthorized person enter in to ore stock yard.

Code of practice for persons at Loading and Unloading point

1. In the beginning of the shift the operator of loading machine shall see that the warning devices like break, AVA, indicators are in working order.
2. He shall see that the light is functioning properly, if it operates in night hours.
3. The operator shall keep the cabin window clean for a clear vision.
4. The Mining supervisor/Foreman deployed there shall not allow anybody to be present within the swing radius of the Dragline, shovel, pay loader or any other loading machine.
5. The operator of loading machine shall march the machine to the safe place and lower the bucket to the ground before leaving the machine.
6. The operator shall not allow any unauthorized person to ride and operate the machine.
7. There shall be a portable fire extinguisher within the reach of the operator in the cabin. The supervisor shall ensure this.
8. The operator of loading machine shall not over load the tipper/Dumper.
9. The supervisor present in the working face shall see that the tipper/Dumper shall maintain a queue during loading operation.
10. There will be no any maintenance of pay loader inside the mine premises. Maintenance of the pay loader of tipper shall be done only in presence of a competent person who has been duly authorized for the same.
11. The operator shall use all the Personal protective equipment & safety devices.
12. The operator shall see that the unloading point is stable

Code of Precaution for Use of Electricity in Mines

Sundry Precaution for mines:-

1. All apparatus shall be maintained reasonably free from dust, dirt and moisture and shall be kept clear of obstructions.
2. All apparatus other than portable and transportable apparatus shall be housed in a room, compartment or box so constructed as to protect the contents from damage occasioned by falling material or passing traffic.
3. Inflammable or explosive material shall not be stored in any room compartment or box, containing apparatus or in the vicinity of any apparatus.
4. Should there be a fault in the circuit the part affected shall be made dead without delay and shall remain so until the fault has been remediated.
5. The following notices in Hindi and local language of the district, shall be exhibited. (a) At place where electrical apparatus is in use a notice forbidding unauthorized person to operate or otherwise interfere with such apparatus.
6. All apparatus including portable and transportable apparatus, shall be operated only by persons authorized for the purpose.
7. Where a plug and socket coupling other than of bottled type is used with flexible cables, an electrical interlock or other approved device shall be provided to prevent the opening of the coupling while the conductors are live.

General Safety Precautions:

1.
 - a. All electric supply lines and apparatus shall be of sufficient size, insulation and Mechanical strength for its duty having B/S specification.
 - b. The supply lines and apparatus shall be constructed, installed, protected, worked and maintained in such a manner as to ensure safety of personal and property.
2. The supplier shall provide suitable cut-out on each conductor of supply line (other than the earthed neutral conductor) at consumer's premises in an accessible position in enclosed fire proof receptacle. The owner shall also protect supply line by his suitable cut-out.

3. Every earth conductor (in case of 2 wire system) or earthed neutral conductor (.. case of a multi wire system) shall be marked permanently to distinguish it from live conductor
No cut-out, link or switch shall be inserted in the earth conductor or earthed / neutral conductor.
4. The supplier shall provide and maintain on consumer's premises a suitable earthed terminal. In case of medium, higher extra high voltage installation (i.e. any installation at more than 250v), the consumer shall have his own earthing system with an in depended electrode and maintain the same,
5. The owner of every medium, high or extra high voltage installation shall affix danger notice in Hindi and local language and type approved by the inspector on (a) Every motor generator, transformer and other electrical plant and equipment, (b) All supports of O.H. lines which can be easily climbed upon without the aid of a ladder or special appliance.
6. No person shall work on a live electric supply lines or apparatus and no person shall assist such person on such work, unless he is authorized in this behalf and takes safety measure as approved by the inspector.

A telecom line supported on a high, extra high voltage line shall for the purpose of work thereon, be deemed to be high voltage line.

Before any conductor or apparatus is handled, adequate precautions shall be taken by earthing or other suitable mean's to discharge electrically such conductor or apparatus and any adjacent conductor or apparatus from being accidentally or inadvertently electrically charged where persons are working there on.

7. Flexible cable used for portable or transportable apparatus, motors, drill etc. shall be heavily insulated and adequately protected from mechanical injury.
Where protection is by metallic covering, the covering shall be in metallic connection with the frame of the apparatus and earth. The earth core shall be easily identifiable.
8. Different circuits (weather at the same voltage or at different voltages) shall be provided with indication of permanent nature to readily distinguish one from another,
9. Arrangements shall be made that there is no danger of any part becoming accidentally charged to a higher voltage.

10. Substation and switch stations shall be provided with the following inconvenient positions conspicuously marked.

- Buckets filled with clean dry sand.
- Fire extinguishers for electric fire.
- First aid boxes and cupboard.

11. Instructions for restoration of persons suffering from electric shock (in English or Hindi and the local language) shall be affixed in every enclosed sub-station and other premises where electricity is used persons authorized for rendering first-aid shall be acquainted with and competent to apply such instruction.

12. If any accident occurs in connection with the generation, transmission, supply or use of energy or in connection with any part of the supply lines or works, of any person and the accident results or is likely to result in loss of human being or an animal the owner, manger or engineer shall send to the inspector a telegraphic report within 24 hours of the occurrence of the fatal accident and a written report in form set out in Annexure-XIII of IER 1956 within 4hours of the knowledge of the occurrence of fatal and other accidents.

13. Any installation, repair or maintenance work on electrical installation shall be done only under the direct supervision of a person holding a certificate of competency (supervisor's certificate of competency).

14. It is desirable that light fittings are installed at least one meter below the bottom most conductor so that a person cannot come near the conductor even inadvertently.

15. The O/H line conductors have been discharged and earthed before commencing work.