



भारत सरकार/Govt. of India
श्रम एवं रोजगार मंत्रालय
Ministry of Labour & Employment
खान सुरक्षा महानिदेशालय
Directorate General of Mines Safety
बल्लारी क्षेत्र/Ballari Region



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No.BLR-BL/IO-40/P-106/2018/

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Ballari, dated the 05.04. 2018

प्रेषक/From

खान सुरक्षा निदेशक / Director of Mines Safety,
बल्लारी क्षेत्र, बल्लारी / Ballari Region, Ballari.

सेवा में/To

Sri B. P. Pandey, Agent,
Nandi Iron Ore Mine of
M/s. JSW Steel Limited,
JSW Mining Office, Near Talur Cross,
Vidya Nagar Post, Toranagallu, Sandur Taluka,
Ballari District, Karnataka State, Pin Code: 583 275.

विषय / Sub: Conditions governing the use of Heavy Earth Moving Machinery (HEMM) with deep hole drilling and blasting under Regulation 106(2)(b) of the Metalliferous Mines Regulations, 1961, at Nandi Iron Ore Mine, M. L. No. 0005, Malagolla (S. M. Block) Village, Sandur Taluka, Ballari District, Karnataka State of M/s JSW Steel Limited.

महोदय / Dear Sir,

Please refer to your application submitted vide letter No.JSW/Mines/Nandi/DGMS/2017-18/10, dated 21.03.2018 on the above subject along with surface plan No. JSWSL/ NIOM/ SP/2017-18/01, dated 19.03.2018 enclosed therewith.

The matter has since been examined in the light of what has been stated in your application. In exercise of the powers conferred on the Chief Inspector of Mines (also designated as Director-General of Mines Safety) under the provisions of Regulation 106(2)(b) of the Metalliferous Mines Regulations, 1961 and by virtue of the authorization granted to me by the Chief Inspector of Mines (also designated as Director-General of Mines Safety) under Section 6(1) of the Mines Act, 1952, I hereby specify following conditions governing the use of Heavy Earth Moving Machinery (HEMM) with deep hole drilling and blasting under Regulation 106(2)(b) of the Metalliferous Mines Regulations, 1961 to form benches in overburden & ore body at Nandi Iron Ore Mine, ML No. 0005, Malagolla (S. M. Block) Village, Sandur Taluka, Ballari District, Karnataka State of M/s JSW Steel Limited:

1.0 General:

1.1 Except where otherwise provided, all applicable provisions of the Metalliferous Mines Regulations, 1961 shall be strictly complied with.

2.0 **Opencast Working:**

2.1 **Height and Width of Benches:**

- 2.1.1 The height of benches in overburden, ore body or other rock formation shall not be more than 8.0m or maximum digging height of the machine used for digging, excavation or removal, whichever is less.
- 2.1.2 Width of any bench shall not be less than -
(a) width of the widest machine plying on the bench plus 2m, or
(b) if dumpers ply on the bench, 3 times the width of the dumper, or
(c) the height of the bench, whichever is more.
- 2.1.3 When persons are employed at the working face, adequate precautions shall be taken to ensure their safety by dressing the sides of the bench.
- 2.1.4 Formation of benches shall be done from top downwards.

2.2 **Roads for Trucks and Dumpers etc:**

- 2.2.1 All roads for trucks, dumpers or other mobile machinery shall be maintained in good condition.
- 2.2.2 Wherever practicable, all roads from the opencast workings shall be arranged to provide one-way traffic. Where one-way traffic it is not practicable, no road shall be of width less than three times plus 5m width of the largest vehicle plying on road.
- 2.2.3 All corner and bends shall be made in such a way that operator of vehicle have clear view of distance of not less than 3 times the braking distance of largest HEMM working at 40Km/hour.
- 2.2.4 Where it is not possible to ensure a visibility for a distance as mentioned in clause (2.2.3), there shall be provided with two roads of width not less than 2 times plus 3m of largest vehicle plying on the road with a strong road divider at centre with adequate lighting and reflector along the divider.
- 2.2.5 Where any road existing above level of surrounding area it shall be provided with strong parapet wall/embankment of following dimensions:
(a) Width at top-not less than 1 m.
(a) Width at bottom-not less than 2.5 m.
(b) The height not less than the diameter of tyre of largest vehicle plying on road.
It may be noted that just dumping of mud or OB shall not be treated as strong parapet wall.
- 2.2.6 No road shall have gradient more than 1 in 16. However, the ramps with 1 in 10 gradient shall not be for more than 100m at one stretch.

3.0 **Supervision :**

- 3.1 A person possessing First Class Mine Manager's Certificate of competency under Regulation MMR, 1961 shall be appointed as the manager of the mine to look after HEMM operation. This governing condition shall stand revoked as soon as the qualified manager ceases to work at the mine. Use of HEMM shall be suspended in the absence of manager with aforesaid qualification.

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- 3.2 During every production shift, the opencast workings shall be placed under the charge of an Assistant Manager and during maintenance shift, the workings shall be placed under the charge of a Foreman, who shall be responsible to see that all the regulations and orders made there under are strictly complied with.
- 3.3 Adequate number of supervisors including duly qualified Foremen and Mates shall be appointed in each working shift to assist the manager. Manager, Foreman and Mate shall be responsible to see that all the regulations and the orders made there under are strictly complied with.
- 3.4 The deep hole drilling and blasting shall be carried out under the personal supervision of the Assistant Manager. Blasting parameters of each blast with a sketch showing the drilling pattern and the holes charged shall be maintained in register kept for the purpose for each blast.

II- MACHINERY

4.0 DESIGN & MAINTENANCE OF MACHINERY & VEHICLES

- Every Heavy Earth Moving Machinery shall be maintained in good and safe working condition.
- 4.1 Every Heavy Earth Moving Machinery shall be provided with efficient warning devices, adequate front and rear lights and efficient brakes. Every Dumpers/Truck shall be provided with Audio-Visual warning device, which shall be actuated automatically to produce both audible and visual warning system during reversal of vehicle and any other advanced mechanism like rear view mirror shall be provided.
- 4.2 Every shovel shall be so designed as to afford the operator clear and uninterrupted vision all around.
- 4.3 Operators cabin of every machine or vehicle shall be well designed and substantially built so as to ensure adequate protection to the operator against heat, dust, noise etc., and at the same time provide adequate safety to the operator in the event of overturning of heavy earth moving machinery. A seat belt for the safety of the operator shall also be provided.
- 4.4 The code of instructions furnished by the manufacturers in the matter of maintenance of various machinery and vehicles and preventive maintenance schedules for each type of machinery and vehicle shall be strictly followed.
- 4.5 Every machine and vehicle shall be allocated at least one day in every week for maintenance. Before the machine or vehicle is sent out for work after maintenance, it shall be thoroughly inspected by the engineer, mechanical foreman or other competent person authorized by the Manager in writing, who shall satisfy himself that the machine or vehicle is mechanically sound and in efficient working order.
- 4.6 A report of every inspection made under clause (4.6) shall be recorded in a bound paged book kept for the purpose and shall be signed and dated by the person making the inspection and countersigned by the Engineer.
- 4.7 Every machine in use shall be thoroughly inspected once at least in every 24 hours by a competent person duly authorized by the Manager of the mine.

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- 4.8 If the Engineer, Mechanical Foreman or other competent person making inspection, notices any defect in any machinery or vehicle, the said machinery or vehicle shall not be used until the defect has been remedied.
- 4.9 Any defect in a machinery or vehicle reported by its operator shall be promptly attended to.
- 4.10 Any machine or vehicle found to be in an unsafe operating condition shall be tagged at the operator's position "OUT OF SERVICE, DO NOT USE" and its use shall be prohibited until the unsafe condition has been corrected.
- 4.11 All repair to machinery or vehicle shall be done at a location, which will provide a safe place for the persons engaged on repairs.
- 4.12 Except for testing, trial, or adjustment, which must necessarily be done while the machine or vehicle is in motion, every machine or vehicle shall be shut down and positive means taken to prevent its operation while any repair or manual lubrication is being done.
- 4.13 Any machinery, equipment or part thereof which is suspended or held apart by use of slings, hoists, jacks shall be substantially blocked or cribbed before men are permitted to work underneath or between such machinery, equipment or part thereof.
- 4.14 Power shall be disconnected when repairs are made to any electrical machinery.
- 4.15 While inflating tyres of transport vehicles, suitable protective cages shall be used. Tyres shall never be inflated by standing/sitting either in the front or on the top of the same.
- 4.16 Only such fitters or mechanics, who possesses driving license under Motor Vehicles Act shall be authorized by the manager to test-run the HEMM.
- 4.17 The Brakes of all trucks-dumpers and other transport vehicles shall be tested at least once in every fortnight by a competent person duly authorized by the Manager of the mine in manner detailed below:

Service Brake Test: The Service brake shall be tested with the vehicle is fully loaded condition on a specified gradient and speed. It shall stop within a specified distance by the manufacturer of the vehicle when the service brake is applied.

Parking Brake Test: The parking brake shall be capable of holding the truck/dumper/transport vehicle when is fully loaded and placed on maximum gradient of roadway which is permitted, for a period of at least ten minutes.

- 4.18 A record of all such test shall be maintained in a bound paged book kept for the purpose and shall be signed by the person carrying out the test and countersigned by the Engineer and Manager of the mine.
- 4.19 Every dumper/tipper/truck shall be provided with automatically operating audio-visual reversing alarm, which shall always be kept in working order.
- 4.20 No person shall be permitted to work on the chassis of truck or dumper with the body in a raised position until the truck or dumper body has been securely blocked in position. The mechanical hoist mechanism alone shall not be depended upon to hold the body of the truck or dumper in raised position.

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5.0 DAILY EXAMINATION OF MACHINERY AND VEHICLE:

- 5.1 At the commencement of every shift, the Engineer or Mechanic or Foreman or other authorized Competent persons shall personally inspect and test every machine and vehicle paying special attention to the following details:
 - 5.1.1 That the brakes and the horn or other warning devices are in working order;

if the vehicle or machine is required to work after day light hours that the lights are in working order.
 - 5.1.2 He shall not permit the vehicle or machine to be taken out for work nor shall he drive the vehicle unless he is satisfied that it is mechanically sound and in efficient working order.
 - 5.1.3 He shall also maintain a record of every 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.

6.0 OPERATION OF MACHINERY:

- 6.1.1 No person other than the operator or his helper if any or any person so authorized in writing by the manager shall ride on a Shovel or Excavator.
- 6.1.2 No shovel or excavator shall be operated in a position where any part of the machine, suspended loads or lines are brought closer than three meters to exposed high voltage lines, unless the current has been cut off and the line de-energized. A notice of this requirement shall be posted at the operator's control panel.
- 6.1.3 Electrical cables, if any shall be laid in such a manner that they are not endangered either by falling rocks or by mobile equipment.
- 6.2 If more than one stripping machine is in use in any area, either on the same bench or on different benches the machines shall be so spaced that there is no danger of accident from flying or falling objects etc. from one machine to the other.

7.0 DUTIES OF MACHINERY OPERATORS:

- 7.1
 - a) Every Heavy Earth Moving Machinery shall be under the charge of a competent person (herein called the 'operator') authorized in writing by the Manager.
 - b) Operator/driver of each HEMM shall be selected from amongst persons possessing requisite qualifications. The selection process shall comprise a test to check driving/operating skill, aptitude, health and oral examination of the candidate by a competent selection committee. The selected person shall be trained and their competency shall be evaluated by a board constituted by the mining company.
 - c) All operators of HEMM shall undergo regular checks to test their driving/operating skill, knowledge and health once in every five years.
 - d) To prevent unauthorized driving, a system shall be evolved whereby the ignition key and /or cabin key always remain with the driver/operator or with specifically designated competent person.
- 7.2 At the commencement of every shift, the operator shall personally inspect and test the machine, paying special attention to the following details:

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- 7.3.1 That the brakes and every warning device are in working order.
- 7.3.2 If it is required to work after the day light hours, all the lights on the vehicle are in working order.
- 7.3.3 Operator shall not take out the machine for work nor shall he work the machine unless he is satisfied that it is mechanically sound in efficient working order.
- 7.3.4 The operator shall not operate the machine when persons are in such proximity as to be endangered.
- 7.3.5 Operator shall not swing the bucket of a shovel over passing haulage units and other. While truck is 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.
- 7.3.6 The operator shall not allow any unauthorized person to ride on the machine.

8.0 OPERATION OF THE TRUCKS-DUMPERS & OTHER TRANSPORT VEHICLES:

- 8.1 The Manager of the mine shall frame a Standard Operating Guidelines/Code of Practice for operation of trucks-dumpers and other vehicles on the following aspects and ensure its compliance.
- 8.2 No person shall be permitted to ride on the running board of a truck or dumper.
- 8.3 As far as possible, loaded dumpers or trucks shall not be reversed on gradients.
- 8.4 While reversing a vehicle at dump yard/stopping point suitable mechanism like stop blocks/earthen bund etc. shall be provided to prevent a vehicle from approaching towards edge of dump.
- 8.5 Standard traffic rules shall be framed and followed during movement of all trucks and dumpers. They shall be prominently displayed at the relevant places in the opencast workings and truck/dumper roads.
- 8.6 When not in use every truck or dumper or other transport vehicle shall be moved to and parked at proper parking places.
- 8.7 No unauthorized person shall be permitted to enter or remain in any dumping yard or turning points.
- 8.8 While vehicle is being loaded/unloaded on a gradient, the same shall be secured on a stationary position by parking brake and any other suitable mechanism.

9.0 DUTIES OF TRUCK/DUMPER OPERATORS:

- 9.1 At the commencement of every shift, the operator shall also personally inspect and test the machine, paying special attention to the following details:
 - (i) That brakes and every warning device are in working order; and
 - (ii) If the machine is required to work after day-light hours, that lights are in working order.

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(iii) He shall not take out the machine for work nor shall he operate the machine unless he is satisfied that it is mechanically sound and in efficient working order.

- 9.2.1 He 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 sure that he can pass it safely. He shall also sound the audible warning signal before overtaking.
- 9.2.2 When approaching stripping equipment, the driver of the dumper/truck shall sound the audible warning signal and shall not attempt to pass the stripping equipment until he has received a proper audible signal in reply.
- 9.2.3 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.
- 9.2.4 The operator shall sound the audible warning signal before while approaching 'blind' corners or any other points from where persons may walk in front unexpectedly.
- 9.2.5 The operator shall not operate the truck or dumper in reverse unless he has a clear view of the area behind the vehicle. He shall give an audible warning signal before reversing a truck or dumper.
- 9.2.6 The operator shall be sure of clearance before driving through tunnels, archways, plants, structures etc.
- 9.2.7 The operator shall see that the vehicle is not overloaded and that the material is not loaded in a dumper or 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 a red light after day light hours.
- 9.2.8 The operator shall not allow any unauthorized persons to ride on the vehicle. He shall also not allow more than authorized number of persons to ride on the vehicle.
- 9.2.9 As far as possible loaded trucks or dumper shall not be reversed on gradient
- 9.3 "The Code of Traffic Rules" framed by the Mines Manager for movement of all trucks, tippers and dumpers prominently displayed at the relevant places in the opencast workings of the mine shall be complied with .

10.0 SPOIL BANKS :

- 10.1 The spoil bank shall be designed and maintained scientifically.
- 10.2 The toe of the spoil bank shall not approach Railway or other public works, public road or building or other permanent structures not belonging to the owner of the mine closer than a distance equal to the vertical height of the spoil bank.
- 10.3 A suitable fence shall be provided between any railway or public works or road or building or structure and the toe of an active spoil-bank so as to prevent unauthorized persons from approaching the spoil bank.

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

11.0 ADDITIONAL DUTIES ENGINEER IN CHARGE OF MACHINES AND VEHICLES IN OPENCAST WORKINGS:

11.1 During each shift the machines and vehicles at work shall be placed under the charge of qualified and experienced Engineer to effect inspection, examination, safe operations and maintenance of the machines and vehicles. During his shift the competent shall;

- (a) inspect, examine machines, equipments and vehicles satisfy himself that they are in sound and safe working order;
- (b) not allow any machine and vehicles to be used, if it is found defective;
- (c) ensure that every machines and vehicles used is in a safe and efficient order;
- (d) ensure that each operation, activity is carried on in safe and efficient manner.

12.0 Precautions while Drilling:

12.1 The position of every shot - hole to be drilled shall be distinctly marked by the mine Foremen so as to be readily seen by the drillers.

12.2 No person shall be permitted to remain within a radius of 20m or within 60m on the same bench where charging of holes with explosives is being carried out.

13.0 Transport of Explosives:

13.1 Where explosives are transported in bulk, the following precautions shall be taken:

13.1.1 Transport of explosives from the magazine to the priming station or the site of blasting shall not be done except in original wooden or cardboard packing cases. The quantity or explosive transported at one time to the site of blasting shall not exceed the actual quantity required for use in one round of shots. Explosives shall be transported to the site of blasting not more than 90 minutes before the commencement of charging of the holes.

13.1.2 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.

13.1.3 Every vehicle used for transportation of explosive shall be marked or placarded on both sides and ends with the word 'Explosives' in white letters not less than 15 cm high on a red background.

13.1.4 Every mechanically propelled vehicle transporting explosives shall be provided with not less than two fire extinguishers (one of carbon tetrachloride type for petroleum fire and the other of carbon dioxide under pressure type for electrical fire) suitably placed for convenient use.

13.1.5 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.

13.1.6 Explosives and detonators shall not be transported in the same vehicle, at the same time.

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- 13.1.7 No persons other than the driver and his helper shall ride on a mechanically propelled vehicle used for transport of explosives.
- 13.1.8 A vehicle loaded with explosive shall not be left unattended.
- 13.1.9 Engine of a vehicle transporting explosives shall be stopped and the brakes set securely before it is unloaded or left standing.
- 13.1.10 A vehicle transporting explosives shall not be driven at a speed exceeding 25 kilometers per hour.
- 13.1.11 A vehicle loaded with explosives shall not be taken into garage or repair shop and shall not be parked in a congested place.
- 13.1.12 A vehicle transporting explosives shall not be re-fuelled except in emergencies and only when its engine is stopped and other precautions taken to prevent accidents.
- 13.1.13 No trailer shall be attached to a vehicle transporting explosives.
- 13.1.14 Every vehicle used for the transport of explosives shall be carefully inspected once in every 24 hours by a competent person to ensure that:
- (a) fire extinguishers are filled and in place;
 - (b) the electric wiring is well-insulated and firmly secured;
 - (c) the chassis, engine and body are clean and free from surplus oil and grease;
 - (d) the fuel tank and feed lines are not leaking; and
 - (e) lights, brakes and steering mechanism are in good working order.
- 13.1.15 Report of every inspection made under clause (13.1.14) shall be signed and dated by competent person making the inspection.
- 13.1.16 All operations connected with transport of explosives shall be conducted under the personal supervision of a Foreman in charge of blasting operations at the mine.
- 13.1.17 The blaster shall personally search every person engaged in the transport and use of explosives and shall satisfy himself that no person so engaged has in his possession any cigarette, 'biri' or other smoking apparatus, or any match or any other apparatus of any kind capable of producing a light, flame or spark.

14.0 Precaution during Firing:

- 14.1 Shots shall not be fired except during hours of day-light. All holes charged on any one day shall be fired on the same day.
- 14.2 As far as practicable, shot firing shall be carried out either between shifts or during the rest interval, or at the end of work for the day.
- 14.3 During the approach and progress of an electric storm, the following precautions shall be taken:
- (a) no explosive, particularly detonators, shall be handled;
 - (b) if charging operations have been commenced, the work shall be discontinued until the storm has passed;

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- (c) If the blast is to be fired electrically, all exposed wires shall be coiled up and if possible placed in the mouth of the holes, or kept covered by something other than a metal plate/conductive material;
- (d) all wires shall be removed from contact with the steel rails or a haulage track so as to prevent the charge being exploded prematurely by a local strike of the lightning.

14.4 The danger zone shall be distinctly demarcated (by means of red flags properly arranged and supported) before charging of holes is to commence.

14.5 Before firing, a siren installed for the purpose shall be blown three times for one minute each at intervals of one minute; and no shots shall be fired unless the blasting foreman with assistance of sufficient number of persons appointed in writing by the manager for the purpose has ensured that all persons have left the danger zone or have taken adequate shelter.

14.6 No shot shall be fired when there is traffic on any road or railway track within the danger zone.

15.0 PRECAUTIONS AGAINST FIRE:

Arrangements for fighting fire shall be provided on all Heavy Earth Moving Machinery. Such arrangements shall, if possible, operate automatically on appearance of fire.

16.0 GENERAL LIGHTING:

Efficient lighting arrangements not below the standards prescribed in DGMS circulars/orders etc. shall be provided and maintained in the mine.

17.0 MISCELLANEOUS:

17.1 Tractor-trailer combination shall normally not be allowed on haul roads. (Where inevitable, only four wheeler trailers with separate brakes of their own shall be used.

17.2 Trucks, tippers and other heavy vehicles, not belonging to management shall not be allowed in the mine premises without a valid pass issued by the competent authority of the mine. Before the pass is issued the mine engineer/competent person shall check the roadworthiness of such vehicle. In order to check the entry of such vehicle in the mine premises, properly manned check gate shall be provided at the mine entrance where the record of entry & exit of each vehicle shall be maintained. At the check gate the license of the drivers shall also be checked for eliminating the possibility of unlicensed persons driving the vehicle.

17.3 Persons engaged in surface operation and in particular, the contractor's workers shall be provided closer and competent supervision.

17.4 All persons engaged at any work within the mine premises through the contractors shall be provided with relevant training and other job related briefings and it shall be ensured that the drivers of the vehicle belonging to contractors entering the mine premises have additionally been explained the salient provisions of "Traffic Rules".

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- 17.5 Each and every operation, including the operation carried out through contractor's worker or by outside agency, shall be placed under the charge of a competent supervisor, duly appointed and authorized by the manager.
- 17.6 Manager shall frame Safe Operating Procedure (SOP) for each operation/equipment and copy of it shall be handed over to all concerned. It shall be the duty of all statutory persons to enforce the SOPs so framed.
- 17.6.1 In case of "Dimensional Mining", Manager shall also frame safe operating procedure for use of Derrick Crane, Mobile Crane, Wire-Saw, use of expansion chemical/mortar along with use of excavators for handling of granite blocks and the copies of the same shall be handed over to all concerned including all statutory persons for enforcement.
- 17.7 All the precautions and directives given in DGMS circulars issued from time to time shall be compiled with.
- 17.8 The Owner, Agent and Manager shall ensure that the aforesaid conditions are made known to all concerned. They shall also ensure that every such person has fully understood the same and complies with them.
- 17.9 Please note that the above governing conditions are subject to the following additional conditions:
- 17.9.1 In the event of any change in the circumstances connected with the use of HEMMs which is likely to endanger the life of workmen employed in the mine, operations for which these conditions have been imposed shall be stopped forthwith and intimation thereof shall be sent to this Directorate. The said mining operation shall not be resumed without an express and fresh authority to that effect in writing from this Directorate.
- 17.9.2. The provisions of Regulation No.164 (1-A)(c) and 164 (1-B)(a) shall be strictly complied with.
- 17.9.3 These governing conditions may be amended or withdrawn at any time should it be considered necessary in the interest of safety.
- 17.9.4 These governing conditions are being issued specifically under the regulations mentioned above and without prejudice to any other provision of law, which may be or may become applicable at any time.

भव दी य / Yours faithfully,


(मनीष मुरकुटे / Manish Murkute)

खान सुरक्षा निदेशक / Director of Mines Safety,
बल्लारी क्षेत्र, बल्लारी / Ballari Region, Ballari.

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