7.2 RISK ASSESSMENT& DISASTER MANAGEMENT PLAN

7.2.1 INTRODUCTION

Mining is the process of extraction of mineral wealth from the bowl of the mother earth resulting to ever changing environmental condition and give rise to many hazards. High risk accidents are not anticipated in the area because the mining in not hazardous. Risk is chance or probability of danger, loss, injury or other adverse consequences. To avert risk, the hazards must be identified. The hazard is therefore an implied threat or danger to any stable system causing possible harm and jeopardizing its function. In the mining industry, the types of hazards can be categorized as follows:-

Geological and climatic hazards such as landslides, floods, fire, cyclonic storms, earth quakes etc. This happens almost sudden without predicting any advance indication.

Environmental hazards such as deforestation, pollution of air, water etc. This is having long term effect. Mining operations are carried out by taking all the safety measures, but there is always some element of danger or risk in it. Due to deployment of heavy machineries and large scale workings, there are a few chance of un-avoidable accident likely to occur for this, Safety Engineer's regular inspection may avoid the same.

It is therefore, customary for the mine management to develop management policies, procedure and practices to different methodology for controlling the risk and minimize hazards. In this chapter, efforts have been made to deal only with those aspects of hazards based on which the present design of the mines have been made and such other factors which is assisting the management to implement a scientific and result oriented approach to safety.

7.2.2 MAJOR RISKS IN MINING PROJECT

Major risks likely to occur in a mining project are as under:

1. Failure of slopes
2. Inundation
3. Fire
4. Natural Calamity like Storm, Earth-quake etc.

a. Failure of slopes

As explained earlier, geologically the Lanjiberna Limestone belongs to Birmitrapur stage of Gangpur series is massive, compact and hard limestone occurring in flat country. Though the chances of landslides in the present case do not exist, but for mining of limestone at greater depth requires long term stability of faces to prevent from any fall of sides.

Height and Slope of mining benches:

Mining benches of 8 m are proposed to be worked at an angle of 85^0 from horizontal to keep a bench width of not less than 4.0 m in final stage at every bench level. These parameters will result in an ultimate pit slope of $65^0$from horizontal as per the permission from DGMS.

This shall provide a safe pit slope for the present type of steeply dipping, hard limestone deposit which is at present being proposed to be worked at a depth of 94 m to 100 m from the surface. Thus it becomes necessary to slope the individual benches at 85^0 from horizontal as per CIMFR guide lines to work safely at such depth and give a cushion for safety when at a later stage it is proposed to go to the lower bench level than the present envisaged level of 166 m RL.

b. Inundation

Inundation in opencast mines is broadly caused due to the following reason:-

Water Table

The natural underground water tables become a source of inundation when the working crosses the water table level at a depth or reaches even very close to it. The severity of inundation depends on :-

a) The structure and size of water table reservoir

b) Permeability and the structure of the formation which are being subjected to excavation in mining.

As explained above, the water table is existing far below 120 m. Therefore, in this case, there is no chance of inundation caused by puncturing of water table.

• Adjoining the water sources-such as Reservoir, Water Pools, and Perennial River etc.

Here again, the permeability of the strata and their structure become important and the inundation is caused when the barriers in between the working get bursted or when the impermeable barriers are removed.

As explained above, no water reservoir, water pool, perennial river etc. exist in the vicinity of the working quarry. The river SANKH is about 6.5 km away from the working quarry. Therefore, in this case, there is no chance of inundation on this account.

Rain Water

With regard to the above mentioned two causes, if existing anywhere, necessary provisions can be made in the design parameters of the mines, but in case of rains, atleast the area of operation which is open to sky cannot be saved from receiving rain water and thus the inundation problem due to rain is directly related to the surface area under excavation, its topographical position and relation to adjoining area and the intensity of the rain experienced by the region. However, for the last 20 years, it has been observed that the rain fall in this area during the calendar year is ranging from 1000 mm to 1500 mm (maximum). Sufficient no. of dewatering pumps have been installed in the quarry for pumping out the accumulated rain water on regular basis. Moreover, by proper maintenance of garland drains, inrush of rain water from outside is being restricted. Hence, during the progress of the mining operation, inundation of working pit does not arise.

As explained above at the time of closure of the mine, the precautionary measures such as fencing on the top of the quarry to restrict unauthorized entry, keeping intact of garland drains maintained during mining operation to restrict inrush of rain water from outside, will be taken. In addition, the State Fisheries Dept. for its Pisciculture and to Irrigation depth for pumping of water to nearby paddy field for irrigation purpose, will be approached.

c. Fire

Since the limestone is a hard compact rock & not a flammable substance, automatic catching of fire does not arise in this case.

However, in the organization of safety measures in progressive mine, against fire, careful consideration has been given for storage of materials in stores, material handling procedure, separate stacking for flammable materials like petroleum liquids, gases etc. and storage of explosives in the approved magazines. The following precautionary measures are taken in handling, storage and use of different flammable materials.

- Diesel Oil & Lubricating oils, if found on the floor of workshop, is being cleaned thoroughly before carrying out any welding works in the workshop floor as these flammable materials may catch fire.
- Heavy Machinery is being kept neat & clean to avoid fire due to short circuit.
- Fire extinguishers have been fitted in all HEMM equipments and kept in stores & at different places and training has been imparted to the employees.
- Fire extinguishers have been kept in all workshops and are being checked at regular intervals for their effectiveness. Necessary training has been imparted to the workmen.
- All the electrical equipments, transformers, motors & conveyor system in crushing plant is of explosion proof/ intrinsically safe type and the total conveyor system is placed in a closed structure.
- Three explosives magazines with total capacity of 10.1 tonnes have been constructed in Japti jungle area for storage of explosives. Handling of explosives and blasting operations are done by qualified blasters and blaster helpers under the supervision of an Asst. Manager. The Asst. Manager is assisted with a qualified foreman to have effective supervision. To control fly rock fragments during blasting in creating problems to nearby men and machinery precautionary measures are being adopted and shall be continued in future which are as below.
  - Proper blast design results in lower ground vibrations and avoids the fly rock.
  - Controlled blasting technique with SME/SMS (Nonel system of initiation).
  - Drill holes will be located in weaker planes.
  - No loose materials will be kept on the bench floors during blasting.
  - Optimum stemming length and stemming material will be chosen.
  - Safe ratio (stemming length to burden of hole) shall be kept at more than 0.6.
  - Proper compaction of the stemming material will be undertaken before blasting.
- Safety Precautions are being practiced and area also proposed Boards displaying (in Odiya& English) blasting time are kept at the places where required. Blasting time are fixed and intimated to all concerned. At the time of blasting, security guards are deployed in order to block the vehicle movement on the public road. In order to indicate the blasting operation, red flags are kept where ever required. A Siren is blown at the beginning and end of the blasting operation.

d. Natural Calamity like Storm, Earth-quake etc.

Natural calamity like Storms, Earth-quake etc. has not been experienced in this area. However to take care of any eventuality, the following facilities are available in the Mines Office, headed by the Mines Manager with staff -

- Transport/conveyance facility through 4 nos. Jeeps & a Minibus.
- Availability of One Ambulance and One Ambulance Van (Big)
- Land Line Telephone of both BSNL & company's own telephone exchange for better communication. In addition, wireless communication with Rajgangpur
- For dealing with fire, a 10 KL Water tank with spray arrangement
- First Aid Materials/kits with First Aiders
- 2 nos. Diesel Generator sets for power supply during emergency
- Public hearing system & a siren for alerting the public.

The different outside organization from which help can be taken such as Fire Brigade at factory/ outside, Medical Facilities at Government Hospital, shortest routes to different hospitals, phone no. of different welfare organization etc. have been recorded and can be informed in case of any help required from them. In addition, continuous information system would be there in case of any emergency.

7.2.3 EMERGENCY ACTION PLAN IN CASE OF FIRE

7.2.3.1 FIRE SENSITIVE AREAS:

- Diesel dispensing Pump
- Loco Garage
- Mine Stores
- Mine Office
- Computer Room
- Vocational Training Centre
- Crushing Plant/Bunkers/Conveyor Belts
- Electrical Sub-Station
- Mine Magazine
- ANFO Mixing Shed
- All HEMM
- VHV Garage

All the above places have been identified as Fire Sensitive Areas at Lanjiberna Limestone & Dolomite Mines.

7.2.3.2 FIRE FIGHTING TEAM:

a. Security Officer - Overall In charge
b. Assistant Security Officer - 1
c. Assistant Havildar - 1
d. Security guards - 2

All the personnel are specially trained for fire fighting. In addition to the above personnel, together with the working personnel, at the fire location also come under fire fighting team.

7.2.3.3 FIRE FIGHTING TRAINING

Fire fighting training is being given regularly to the following personnel as part of Vocational Training:

- All HEMM operators
- All electrical department personnel, including Electrical supervisor, Electrician and helpers.
- All the officers and Mazdoors looking after diesel dispensing pumps.
- Workshop personnel, includes Welding section, Conveyor vulcanizing section, Auto electrician, All Jr. Mechanical engineers and In charges of every shift.
- All assistant Managers viz., Mining, Mechanical and Electrical.
- Mechanized Mining Section includes Mines Foremen, Mining Engineers, Mining Mate and Supervisors.

- Blasting Foremen and Blasters.
- All persons working in shifts in ore crushing and loading plant.
- Loco drivers and Points men.

7.2.3.4 FIRE FIGHTING MATERIALS

a. Clean sand (in buckets) already provided at-

i. Electrical sub-station
ii. Diesel dispensing pumps
iii. Mine Magazine
iv. Mine Stores

b. Water Supply:

i. Water pipe lines have already been laid down around the Mine Stores, Crusher, Diesel dispensing pump, Loco and VHV Garage, Mines Office, VTC, ANFO Mixing Shed areas.
ii. Over head tank connected with pipelines and taps are provided at specified places.
iii. Water sprinklers (2 nos of, 10 KL& 18 KL) are provided at the mines, primarily for dust suppression. In case of emergency, its services can be requisitioned to any place where fire erupts as it has got all the necessary fittings for fire fighting.

7.2.3.5 FIRE FIGHTING EQUIPMENT

The following fire fighting equipments should be provided, examined and tested in every quarter and refilling/maintenance to be carried out as per the following schedule:

CO2 Fire Extinguisher	After the cylinder is exhausted to be filled by the manufacturer
DCP	Refilled once in a year
ABC	Refilled once in a year
Foam	Refilled once in every 6 months
Soda Acid	As often as necessary

7.2.3.6 STANDING ORDER FOR IMMEDIATE ACTION TO BE TAKEN ON OCCURRENCE OF FIRE

Giving warning:

i. Any person who notices a fire in a mine shall take immediate step to extinguish it, using sand, waste or any type of suitable fire extinguisher, which is available at or near the site. Where more than one person is present; one of them shall proceed for getting further assistance and to give warning.
ii. Any person, who notices, a fire in a mine, which is too extensive to be tackled by him or when he fails to control the fire by taking action, shall proceed to give warning and forthwith inform to mining mate/mine foreman/Asst. manager by fastest means and inform the fire fighting team.
iii. Any person who notices the appearance in any part of the mine of smoke or other signs, indicating that a fire or heating gas or may have broken out, shall take action to give warning and inform the mining official on duty, who subsequently inform all concerned.

1. Duty of mine officials:

The Asst. manager, Mine Foreman, Mining Mate or any other official to whom the warning of the fire is given, shall send warning or information by wireless/walkie-talkie or telephone or if available by fastest possible means to;

- Mine Manager
- Manager (Engg.)
- Manager (Maint.)
- VTO / Safety officer
- Security officer

The mine officials shall arrange to withdraw the persons working near the fire areas in an orderly manner and without creating any panic and shall not allow any unauthorized person to remain or enter the mine as long the area, is declared to be safe by mine manager.

2. Duty of fire fighting personnel:

On getting the information about the occurrence of fire, the fire fighting personnel shall immediately assemble at the specified place irrespective of whether they are on duty or at rest in the colony and take necessary action to control fire.

All work of dealing with fire shall be conducted in accordance with the relevant statutory provisions and recommendations made in this regard.

3. Duty of VTO/safety officer:

On getting the information about the occurrence of fire in the mine premises, he shall immediately rush to the site and supervise the operation of the fire fighting team. He shall also arrange additional number of fire extinguisher of appropriate type to control the fire, co-ordinate with other departments for arrangement of other materials needed for fire fighting and conveyance of persons from one place to other.

4. Duty of store keeper:

On getting the information about the occurrence of fire in the mine premises, he shall immediately:

1. Proceed to the stores
2. Issue any material required for fire fighting purposes
3. Make arrangement to send the materials to the site of operation.
4. Arrange for procuring additional material from local market/other mines in consultation with the mine manager.

5. Duty of other mine officials:

The mine officials superior to mining mate/mine foreman/ Asst. Engineer shall exercise general supervision required for making arrangements for dealing with fire.

6. Duty of mine manager:

On getting information about the occurrence of fire, the manager or in his absence the senior officer present the mine, shall either himself inform or take suitable action to inform the agent and senior officials of the Management.

In absence of VTO/S O, the mine manager shall either depute one senior mine official to supervise the operations of dealing with fire or he, himself will supervise the operations.

7. Duty of first-aiders:

All appointed first-aiders present in the mine premises shall collect at the site with first aid equipments and shall render first-aid if required.

8. Duty of person controlling transport:

On getting information about the occurrence of fire, the person in charge of vehicles shall immediately arrange transport for the fire fighting personnel and other mine officials.

9. Duty of electrical engineer:

If the occurrence of fire is due to short-circuiting of or bursting of cable or due to Non-performance of the protective/ safety devices or due to any other electrical fire, the electrical engineer shall immediately arrange to cut off the power from the source so that dealing with fire can be carried out safely.

10. Duty of departmental head:

After the fire is extinguished the departmental head shall not allow any person to resume work at that particular site unless the place is thoroughly examined and found safe in all respect.

11. Duty of nearby person

Any work person who notices any sign of slope failure shall immediately take steps to give warning by fastest possible means to the nearest available officials/ officers/ Sr. officers etc.

12. Duty of Superiors / Officials

The mine official/ officers/ Sr. officers receiving the warning shall forthwith reach the spot, remove men and machinery and take steps to tackle the problem of slope failure in accordance with the instructions provided by training & safety department and also simultaneously send information to the manager, attendance clerk/ siren men, & security guard. Walkie-talkie/ telephone may be used for communication.

Enforcement of the order:

A copy of these standing orders shall be pasted at the mines office, attendance room and every pit site office. It will be the duty of all mine officials and other concerned persons to make themselves thoroughly familiar with their duties in case of fire.

Mock-Rehearsal:

MOCK rehearsal shall be arranged quarterly to check the response time of the personnel in case of occurrence of fire.

After the fire has been totally extinguished, normal work may be resumed after inspection and permission by manager & getting clearance from the area where emergency occurred through a single short siren.

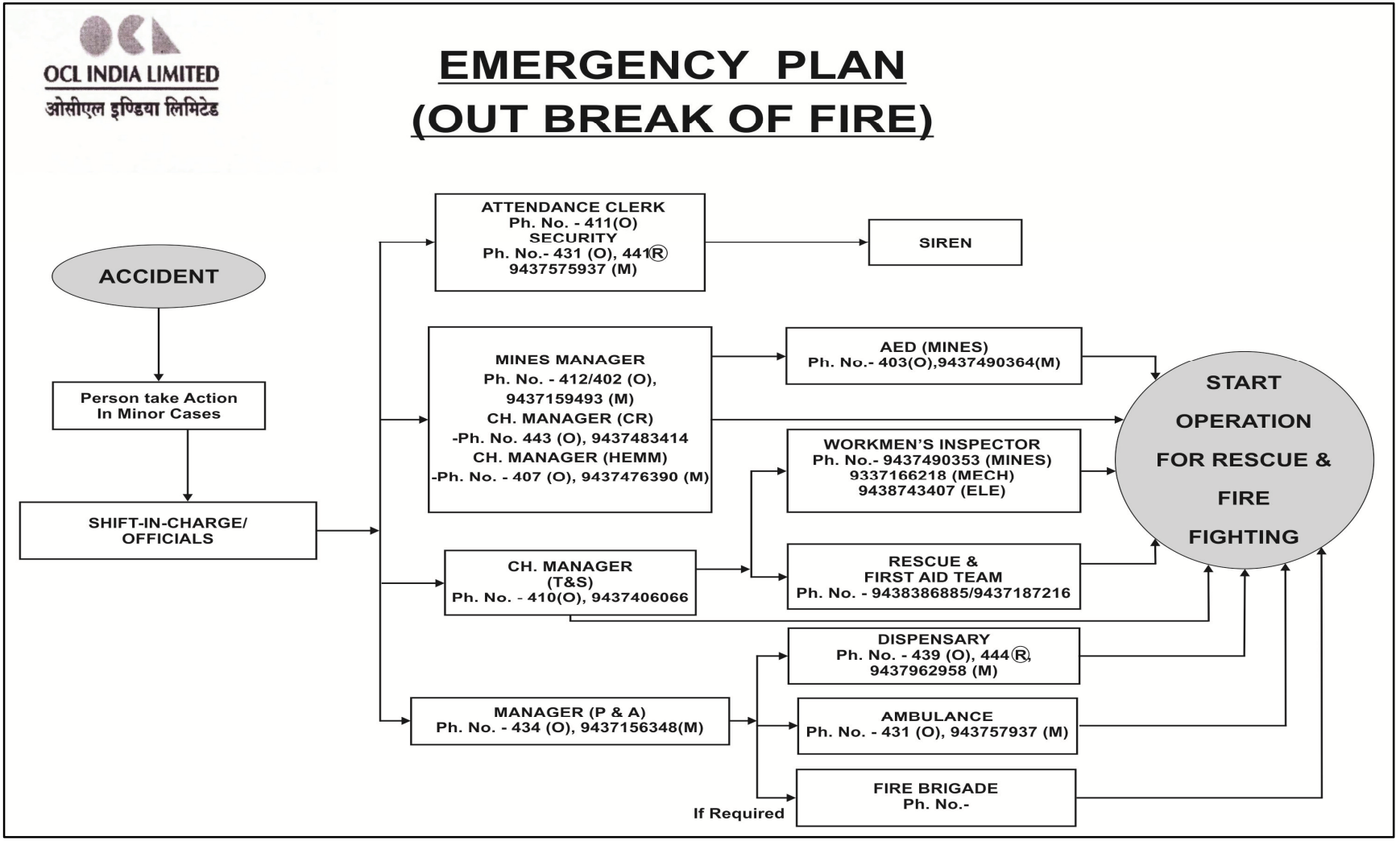

Figure 7.3 (Emergency Plan – Out Break of Fire)

7.2.3.7 ENQUIRY TO BE CONDUCTED

A detailed enquiry has to be conducted by a senior official next below the rank of mines manager and find out the causes and circumstances of outbreak of fire. Accordingly remedial measures should be chalked out for preventing the recurrence of fire.

7.2.3.8 CLASSIFICATION OF DIFFERENT TYPES OF FIRE

All general fires, such as fire on paper, wood, coal, straw etc, where water can be used to put off fire without any reaction are categorized as "A" Type fire. In this category all fires on oil & lubricants are kept because density of such liquids are less than water, in which, water is not used for extinguishing fire because water settle down and oil and lubricants come up termed as "B" type. Fires on gases are LPG, Propane and Acetylene etc. The fire fighting means, it should be such which, besides putting off fire of gases, able to reduce the volume of inflammable gas in the nearby areas. These gases are classed under "C" type fires and CO_2, DCP and CTC fire extinguishers to be used.

All fires due to short-circuiting or fire nearby electrical cable / line are kept under the category of electrical fire, grouped in "E" type. For controlling fire, only those types of fire extinguishers should be used which are non-conductor of electricity. Water should not be used under any circumstances. Fire on computer or computer house should be dealt with fire extinguishers filled with Hallon gas.

7.2.3.9 FIRE FIGHTING ARRANGEMENTS AT DIFFERENT LOCATIONS IN MINES:

Table no.7.1

Fire Fighting Arrangements at Different Locations In Mines

S.No.	Location	Sand/Water buckets
1	V T Center	-
2	VHV Garage	3 sand buckets, 3 Water buckets.
3.	Workshop (mechanical)	2 sand buckets, 2 water buckets.
4.	Mine office	-
5	Security office	-
6.	ANFO mixing shed	2 sand buckets, 2 Water buckets.
7.	Mine stores	4 sand buckets, 4 Water buckets.
8.	Crushing Plant/Bunkers/Conveyor belts.	2 sand buckets, 2 Water buckets.
9.	Electrical sub-station	2 sand buckets, 2 Water buckets.
10	HEMM (Dumpers)	-
11	Diesel dispensing pump	2 sand buckets, 2 Water buckets.
12	Loco Garage	-
13	Hospital	-
14	Explosive Van	-
15	Explosive Magazine	4 sand buckets, 4 Water buckets.
16	Dozer	-
17	Excavator	-

7.2.3.10 LOCATION OF FIRE EXTINGUISHERS AT LQ – MINES

Table no. 7.2

Location of fire extinguishers at LQ – mines

Fire Extr. No.	Type	Capacity	Location	Fire Extr. No.	Type	Capacity	Location
FE-1	Mech. Foam	9 ltrs	HEMM garage	FE-40	Mech. Foam	9 ltrs	Crusher
FE-2	W.Co2	9 ltrs	HEMM garage	FE-41	Mech. Foam	9 ltrs	Loco garage
FE-3	Co2	9 ltrs	HEMM garage	FE-42	Mech. Foam	9 ltrs	Loco garage
FE-4	DryChemical Powder (DCP)	10 kg	HEMM garage	FE-43	Mech. Foam	9 ltrs	Loco garage
FE-5	DryChemical Powder (DCP)	10 kg	HEMM garage	FE-44	W.Co2	9 ltrs	Magazine
FE-6	DryChemical Powder (DCP)	10 kg	HEMM garage	FE-45	W.Co2	9 ltrs	Magazine
FE-7	DryChemical Powder (DCP)	10 kg	HEMM garage	FE-46	W.Co2	9 ltrs	Magazine
FE-8	DryChemical Powder (DCP)	5 kg	HEMM garage	FE-47	W.Co2	9 ltrs	Magazine
FE-9	DryChemical Powder (DCP)	5 kg	HEMM garage	FE-48	W.Co2	9 ltrs	Magazine
FE-10	DryChemical Powder (DCP)	5 kg	HEMM garage	FE-49	W.Co2	9 ltrs	Magazine
FE-11	DryChemical Powder (DCP)	5 kg	HEMM garage	FE-50	DryChemical Powder (DCP)	5 kg	Explosive van
FE-12	DryChemical Powder (DCP)	5 kg	HEMM garage	FE-51	DryChemical Powder (DCP)	5 kg	Blasting Office
FE-13	DryChemical Powder (DCP)	5 kg	HEMM garage	FE-52	Co2 gas	2 kg	Stores
FE-14	DryChemical Powder (DCP)	5 kg	HEMM garage	FE-53	Co2 gas	2 kg	Stores
FE-15	DryChemical Powder (DCP)	5 kg	HEMM garage	FE-54	Co2 gas	2 kg	HEMM garage
FE- 16	DryChemical Powder (DCP)	5 kg	HEMM garage	FE-55	Co2 gas	2 kg	HEMM garage
FE-17	DryChemical Powder (DCP)	5 kg	HEMM garage	FE-56	Co2 gas	2 kg	HEMM garage
FE-18	DryChemical Powder (DCP)	5 kg	HEMM garage	FE-57	Co2 gas	2 kg	HEMM garage
FE-19	DryChemical Powder (DCP)	5 kg	HEMM garage	FE-58	Co2 gas	2 kg	HEMM garage
FE-20	DryChemical Powder (DCP)	5 kg	HEMM garage	FE-59	Co2 gas	2 kg	Crusher
FE-21	DryChemical Powder (DCP)	5 kg	HEMM garage	FE-60	Co2 gas	2 kg	Crusher
FE-22	DryChemical Powder (DCP)	5 kg	HEMM garage	FE-61	Co2 gas	2 kg	Loco garage

Fire Extr. No.	Type	Capacity	Location	Fire Extr. No.	Type	Capacity	Location
FE-23	DryChemical Powder (DCP)	2 kg	HEMM garage	FE-62	Co2 gas	2 kg	Loco garage
FE-24	DryChemical Powder (DCP)	2 kg	Stores	FE-63	Co2 gas	2 kg	Adm. Office
FE-25	DryChemical Powder (DCP)	2 kg	Stores	FE-64	Mech. Foam	9 ltr	New Crusher
FE-26	Chemical Foam	9 ltrs	Stores	FE-65	DryChemical Powder (DCP)	5 kg	HEMM garage
FE-27	Mech. Foam	9 ltrs	Stores	FE-66	DryChemical Powder (DCP)	5 kg	HEMM garage
FE-28	Mech. Foam	9 ltrs	Stores	FE-67	DryChemical Powder (DCP)	5 kg	HEMM garage
FE-29	Mech. Foam	9 ltrs	Stores	FE-68	DryChemical Powder (DCP)	5 kg	HEMM garage
FE-30	Mech. Foam	9 ltrs	Stores	FE-69	DryChemical Powder (DCP)	5 kg	HEMM garage
FE-31	DryChemical Powder (DCP)		Crusher	FE-70	DryChemical Powder (DCP)	5 kg	HEMM garage
FE-32	Mech. Foam	9 ltrs	Crusher	FE-71	DryChemical Powder (DCP)	2 kg	HEMM garage
FE-33	Mech. Foam	9 ltrs	Crusher	FE-72	ABC type powder	5 kg	Loco garage
FE-34	DryChemical Powder (DCP)	5 kg	Electrical Section	FE-73	ABC type powder	5 kg	Loco garage
FE-35	DryChemical Powder (DCP)	5 kg	Electrical Section	FE-74	ABC type powder	5 kg	Loco garage
FE-36	DryChemical Powder (DCP)	5 kg	Electrical Section	FE-75	ABC type powder	5 kg	Loco garage
FE-37	DryChemical Powder (DCP)	5 kg	Electrical Section				
FE-38	W.Co2	9 ltrs	Electrical Section				
FE-39	DryChemical Powder (DCP)	5 kg	Electrical Section				

7.2.3.11 SELECTION OF SUITABLE TYPE OF FIRE EXTINGUISHER

Table no. 7.3

Selection of Suitable type of Fire Extinguisher

Class Of Fire	Suitable In Fire Involving	Water CO_2 Fire Extinguisher (Water Cooling)	Mechanical Foam Fire Extinguisher (Foam Blanketing)	Dry Chemical Powder Fire Extinguisher (DCP Blanketing)	ABC Dry Chemical Powder Fire Extinguisher (ABC Powder Blanketing)	Carbon Dioxide Fire Extinguisher (CO_2 Gas Blanketing)
A	**Paper , wood, clothes, Plastics etc.**	√ Suitable	√ Suitable	× Unsuitable	√ Suitable	× Unsuitable
B.	**Petrol, Oil, Paints**	× Unsuitable	√ Suitable	√ Suitable	√ Suitable	√ Suitable
C.	**Flammable Gases & Electrical Fire etc.**	× Unsuitable	× Unsuitable	√ Suitable	√ Suitable	√ Suitable
D.	**Magnesium, Sodium, Potassium etc.**	× Unsuitable	× Unsuitable	√ Suitable	× Unsuitable	× Unsuitable
E.	**Electricity & Electrical Application**	× Unsuitable	× Unsuitable	√ Suitable	√ Suitable	√ Suitable

7.2.3.12 EMERGENCY ACTION PLAN IN CASE OF SERIOUS ACCIDENTS

Duty of nearby person

The person/s present at the place of accident shall immediately inform by fastest possible means to the nearest Superiors/Mines Foreman or any officers. If possible one shall forthwith take step to render assistance to the injured.

Duty of Superiors / Officials

On receiving the information about the accident, communicate the same to the attendance clerk, Mines Manager, Engineer, and other senior officers through walkie-talkie and visit forthwith spot and provide necessary assistance.

Duty of Attendance Clerk/Officer

Immediately after getting the information blow the siren with a special code (Long non- stop Siren) and at the same time send the information to rescue team, first-aid team and Mines Manager/ Personnel Department and other senior officers/ engineers/ VTO-SO/ through telephone or walkie-talkie.

Duty of Personnel Manager/Officer

As soon as the Personnel Manager gets the information, immediately with least possible delay, arrange to provide adequate transport facilities and ambulance along with rescue team and first- aid team to the place of accident and he himself rushes to the place.

Duty of Rescue and First- Aid team

On receiving the message on the accident, the rescue and first-aid team shall forthwith reach the spot with adequate necessary equipments for the purpose. They shall with the instruction/ direction of the Mines Manager or any Senior Officer carry out rescue operation in systematic way without raising any hue and cry. The first-aid team simultaneously shall start necessary first-aid to the injured person and send the serious injured person to the hospital by ambulance. Ensure that the patient should be transported in comfortable supine condition by the ambulance if necessary stretcher may be used.

Duty of Security

The security personnel shall maintain law and order for discipline. They shall not allow any unauthorized person to enter or be present at the site. They shall also control traffic at the spot.

Duty of Mines Manager/ HOD (HEMM)/HOD (CRUSHER)

Shall forthwith rush to place of accident. He shall ensure that all the rescue and first-aid operation are conducting as per his instructions. He shall at the same time arrange to provide other facilities as required by the team. After rescue and first-aid operation is over he shall ensure that the place of accident should not be disturbed.

Duty of Mines Manager and VTO-cum-SO

Depending upon the nature of the accident, classify it and if required, send intimation to respective statutory authorities and keep records. Follow applicable Act/Rule/Regulation.

Mock-Rehearsal:

To make the plan effectively quarterly mock-rehearsal shall be organized to ensure the time response to attend the emergency. The record of such mock-rehearsal shall be maintained in the register.

The Mines Manager/HOD (CRUSHER) / HOD (HEMM), shall identify the unsafe condition and practices and take steps to rectify these. After ensuring the place safe in all respects he shall make permission to enter/ resume the work there.

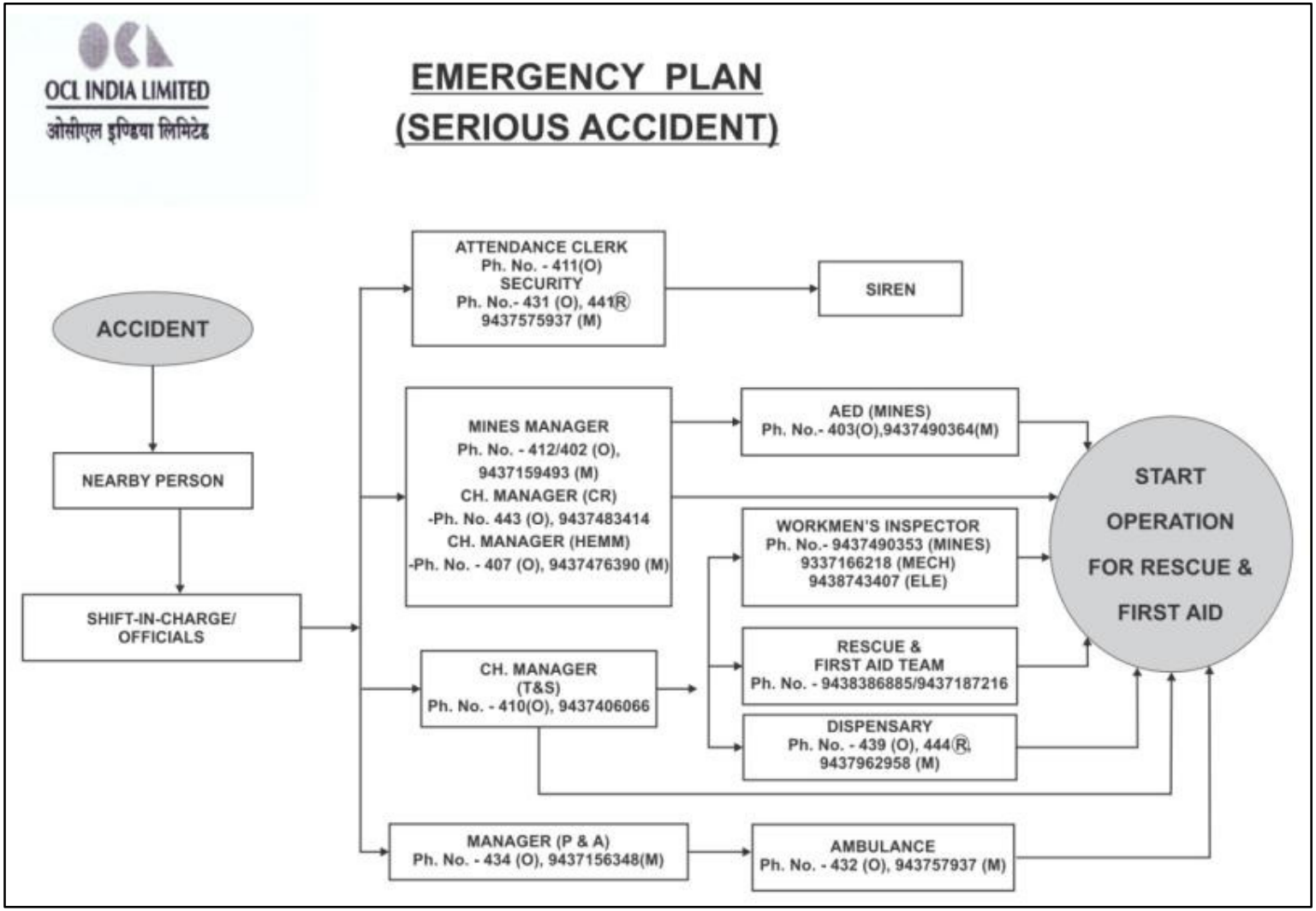

Figure 7.4 (Emergency Plan – Serious Accident)