

## CHAPTER-6 ADDITIONAL STUDIES

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### 6.1 RISK ASSESSMENT & DISASTER MANAGEMENT:

M/s. Super Smelters Ltd. Jamuria Industrial Estate, WB has been granted EC vide J-11011/86/2008-IA II(I), 1<sup>st</sup> Aug.2008, for certain facilities.

Out of these facilities the company has commissioned a part and has been granted extension of EC validity to complete the rest as granted in EC.

Mean while as company faced problem to get DRI grade Hematite ores to the requirement and miss match of configuration and taken ToR for modification of certain facilities granted in EC and expansion to meet requirement. The configuration after modification and expansion will be as follows on which Risk & disaster management has been planned.

- 0.9 MTPA Coal Washery,
- 0.5 MTPA Non-recovery Coke Oven Plant
- 2x0.6 MTPA Pellet Plant
- 1x60 & 1x15 m<sup>2</sup> Sinter Plant
- 2x100, 3x300 & 2x500 TPD DRI kiln,
- 1x120 TPD Oxygen Plant
- 1x1200 TPD Lime Calcination Plan,
- 1x380 & 1x65 m<sup>3</sup> MBF
- 4x25 & 4x20T IF
- 6x9 MVA Ferro-Alloy Plant
- 0.85 MTPA Rolling mill &
- 187 MW Captive Power Plant
- 2 MTPA Iron Ore beneficiation Plant

#### Inventory of Raw material for Modification cum Expansion Project

1) Iron ore fine dust for beneficiation plant	20,00,000 TPA
2) Lime stone/Dolomite for 2x500 TPD DRI	10,000 TPA
3) LDO	1,500 KLPA
4) Iron ore fines for Sinter Plant	6,70,000TPA
5) Indigenous Coal	14,00,000TPA
6) Imported Coal	7,70,000 TPA
7) Lime stone	1,90,000TPA
8) Dolomite	1,20,000 TPA
9) Mn ore	92,000TPA
10)Chromite ore	1,65,000TPA
11)Quartz	57,000TPA

There will be one month's stock at a time. Coal will be stocked in open yard and LDO in 150 KL above ground tank; these are combustible and Fire/ pool fire is anticipated from these materials .

It is presumed that the proposed steel plant would be designed and engineered with all possible safety measures and standard code of practices of engineering. In spite of this,

there may be some design deficiency or due to operation and maintenance fault which may lead to accidental events causing damage to the life and property. This chapter presents an overview of environmental risks associated with the production facilities, suggested remedial measures and a model outline of the emergency preparedness plan.

## **6.2 OBJECTIVES**

The objectives of environmental risk assessment are governed by the following, which excludes natural calamities:

- To identify the potential hazardous areas so that necessary design safety measures can be adopted to minimize the probability of accidental events.
- To identify the potential areas of environmental disaster which can be prevented by proper design of the installations and its controlled operation
- To manage the emergency situation or a disastrous event, if any, from the plant operation.

Managing a disastrous event will obviously require prompt action by the operators and the crisis management personnel using all their available resources like alerting the people and other plant personnel remaining inside, deployment of firefighting equipment, operation of emergency shut off valves, opening of the escape doors, rescue etc.

Minimizing the immediate consequences of a hazardous event include cordoning off, evacuation, medical assistance and giving correct information to the families of the affected persons and local public for avoiding rumors and panic.

Lastly, an expert committee is required to probe the cause of such events and the losses encountered and suggest remedial measures for implementation so that in future such events or similar events do not recur.

## **6.3 DEFINITION OF ENVIRONMENTAL RISK**

The following terms related to environmental risks are defined before reviewing the environmental risks:

- **Harm** :Damage to the person, property or environment.
- **Hazard**:Something with the potential to cause harm; this could be a Characteristic of material being processed or malfunctioning of the equipment. An environmental hazard is thus going to be a set of circumstances, which leads to the direct or indirect degradation of environment and damage to the life and property.
- **Risk** :The probability of the harm or likelihood of harmful occurrence being released and its severity. Environmental risk is a measure of the potential threat to the environment, life and property.
- **Consequence**: Effect due to occurrence of the event, which may endanger the Environment permanently or temporarily and, or, loss of life and property.

- Environmental : The consequence is so severe that it can extensively damage a
- Disaster : one or all the four components of the environment, namely, (i) Physico-chemical, (ii) biological, (iii) human and (iv) aesthetics.

#### 6.4 IDENTIFICATION OF HAZARDS

The hazards are attributable due to raw materials and chemicals used in steel making and the plant operation. A list of major raw materials used in the plant and the process units with their hazard potential is presented in Table below.

**Table 6.1 Hazard Identification of the Proposed Steel Plant**

Sl. No.	Group	Item	Hazard Potential	Remarks
I	Raw materials and products	Iron ore	None	-
		Coal	Moderate	Fire
		Other fluxing minerals	None	-
		Product steel	None	-
		Acids/Alkalis	Major	Bio corrosive
		Lube oil	Moderate	Flammable
II	Processing			
	DRI Kilns	Dust	Moderate	Environmental
		DRI off gas	None	Pollution
	Coal washery	Dust	Moderate	Environmental Pollution
	Coke oven plant	Dusts and fumes	Moderate	Environmental Pollution
		Coke oven gas	major	Flammable and Toxic CO pollution
	Sintering	Dusts	Moderate	Environmental Pollution
	Iron making in BFs	BF gas	Major	Flammable and CO pollution
		Hot metal	Major	Personnel injury & Fire
		Molten slag	Major	Personnel injury & Fire
	Steel making in IF	Fume	None	
		Liquid steel	Major	Personnel injury & fire

		Molten slag	Major	Personnel injury
	Ferro alloys plant	Dust fume	None	
	Captive power plant	Fly ash Acid and alkali	Moderate Major	Environmental Pollution Highly corrosive & Personal injury
III	Utilities			
	Fuel gas Distribution	Gas leaks	Major	Fire and CO Pollution
	Electric power Supply	Short circuit	Major	Fire

From the Table, it may be observed that the major on-site emergency situation may occur from the organic coal chemicals storage and handling, fuel gas handling, molten metal and slag handling, acids and alkali storage and handling and electrical short-circuit. The off-site environmental disaster may occur if large-scale fire and explosion occurs, the effect of which extends beyond the plant boundary. The off-site environmental disaster may occur due to significant environmental degradation for a sustained period.

## 6.5 ENVIRONMENTAL RISK EVALUATION

From environmental hazards point of view for the raw materials and consumable chemicals and processing of the same in various production units, relative risk potential analysis is made on the following three factors:

- Likelihood of occurrence
- Likelihood of detection
- Severity of consequences

Each of these factors is graded and compiled to determine the risk potential. The factors governing the determination of relative risk potentials are presented in the Table 7-2.

**Table 6.2 – Determination of Risk Potential**

Likely hood of occurrence		Likelihood of detection		Severity of consequences	
Criteria (A)	Rank	Criteria (B)	Rank	Criteria (C)	Rank
Very High	5	Very High	1	None	2
High	4	High	2	Minor	4

Moderate	3	Moderate	3	Low	6
Low	2	Low	4	Moderate	8
Very low	1	Very low	5	High	10

RISK POTENTIAL (RP) = (A+B) X C

Based on the above stated criteria for assessing the risk, each probable event has been evaluated by addressing several questions on the probability of event occurrence in the view of the in-built design features detection response, operational practice and its likely consequence. A summarized list of environmental risk potential for the likely events is presented in Table 6-3

This evaluation has been done with the presumption of common events as observed from the past experience in the operation of an integrated iron and steel plant and best practicable designs for the proposed project. The present risk potential evaluation is primarily based on human errors or faulty operation or failure of the control systems.

**Table 6 .3: Environmental Risk Potential Evaluation**

Rank					
Sl No.	Event	Likelihood of Occurrence	Likelihood of detection	Severity of Consequence	Risk Potential
1	Fire at the coal Stockyard	Very low (1)	High (2)	High (10)	30
3	Fuel gas leaks from the Pipeline/valves	High (4)	Low (4)	High (10)	80
4	Collapsing of gas Holders	Very low (1)	High (2)	High (10)	30
5	Splashing of molten Metal and slag	Very low (1)	Very high (1)	High (10)	20
6	Uncontrolled dust emissions/failure of Emission control	High (4)	Moderate (3)	Moderate (8)	56
7	Release of untreated Waste water	Low (2)	Very low (1)	High (10)	30

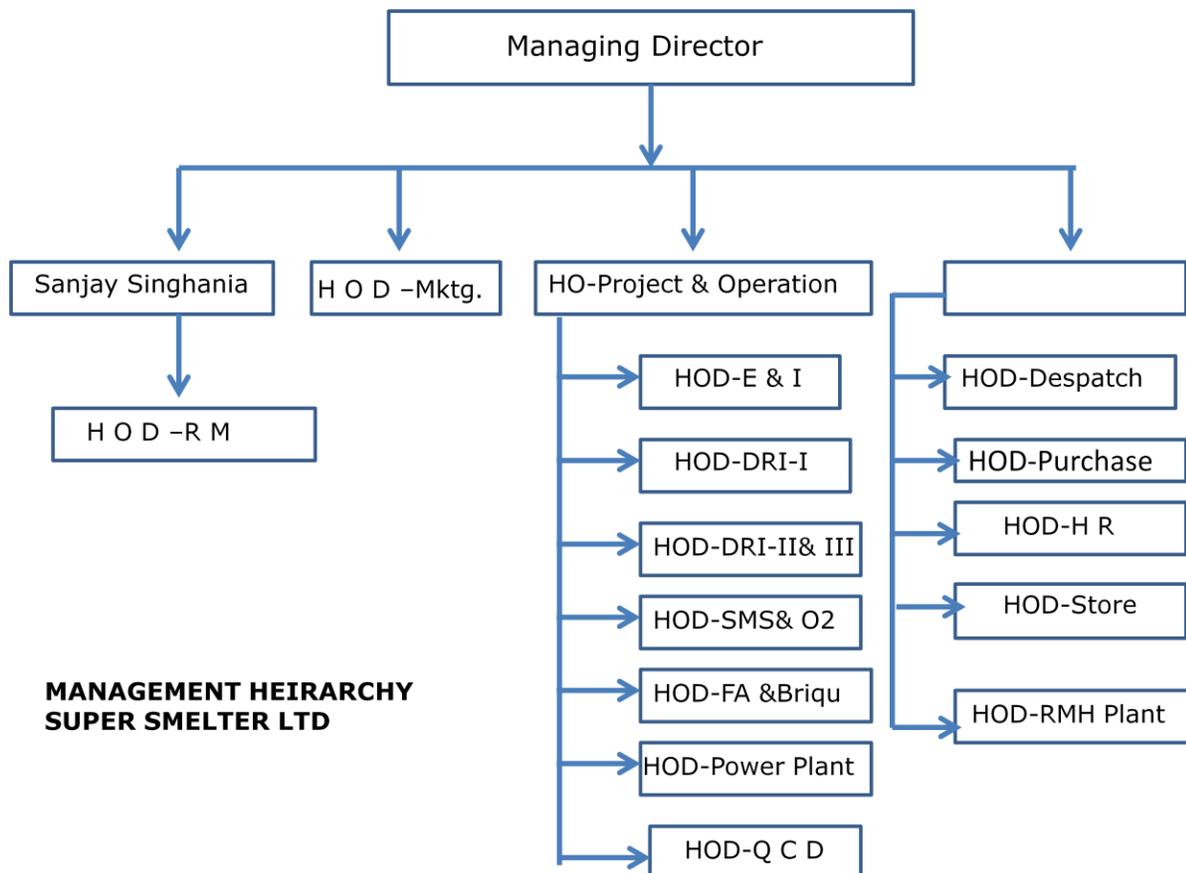
8	Collapsing of acid/ alkali storage tanks	Very low (1)	High (2)	High (10)	30
9	Leakage of acids/Alkalis	Low (2)	Very low (5)	Moderate (8)	56
10	Occurrence of static Electricity /electric spark In the Mill Cellar Room	Very low (1)	Very low (5)	High (10)	60
11	Failure of gas Cleaning Plant/Fume Extraction	Moderate (3)	Moderate (3)	Moderate (8)	48
12	Unsafe disposal of oily Wastes of Rolling Mills	High (4)	Low (4)	Moderate (8)	64
13	Wet scrubbers Running dry	Low (2)	Moderate (3)	High (10)	50
14	Oil wastes/ oil sludge Handling	Low (2)	High (2)	Moderate (8)	32

From the table 6.3, it appears that some events carry risk potential above 50. these vents will be considered as risk prone hazardous events and need adequate safe design operation and maintenance in order to reduce the risk.

### **Risk Management Measures**

The Risk management measures for the proposed project activities require adoption of best safety practice at the respective construction zones within the Works boundary. In addition, the design and engineering of the proposed facilities would take into consideration of the proposed protection measures for air and water environment. The Evaluation is given in the Table No. 6.3.

## 6.6 DISASTER MANAGEMENT PLAN



### Manpower

M/s Super Smelter Ltd will have 2000 direct employment. This manpower will be distributed in three shifts and in general shift. As the shifts A(6AM to 2PM, B(2PM to 10PM) & C(10PM to 6AM) will be rotating, there will be manpower of one shift availing their weekly off days.

**Table 6.4 Maximum number of persons available in the plant at any point of time is as follows**

Sl. No	Shift	Period	Manpower available
1	A	6 AM to 2 PM	350
2	B	2 PM to 10 PM	350
3	C	10 PM to 6AM	350
4	O	Off duty	350

4	General shift	9AM-1PM, 2PM -6 PM	600 (Sunday off)
	Total		2,000

Maximum 950 regular employees and contract labours about 400 will be available in plant whose safety will be at stake when some disaster occurs in side plant and whose rescue operation has to be planned.

In an integrated steel plant like this one, it is imperative that accidents occurring due to unforeseen acts and events will not affect the surrounding areas. Therefore an on site emergency plan for prevention and mitigations of accidents will be enough to cater for unforeseen acts and events that may occur.

#### Identification of most credible Hazard Scenarios

All the anticipated hazard scenarios associated with this integrated steel plant are critically examined and the following scenarios are identified as credible scenarios:

Credible scenario-A : Pool fire in 150 KL LDO tank

Credible scenario- B : Pool fire in FO tank

Credible scenario- C : Toxic release and fire due to CO from MBF

Credible scenario-D : Leakage of liquid Oxygen

Models done for this scenario show that credible hazard can occur in winter night time. In this case the significant heat levels of interest(SHL) for the pool fire as predicted by model shall be as per the following table.

There are three significant "Heat Levels" of interests which are as follows.

S H L	Value	Experience at distance pool A	Experience at Distance pool B	Indication
SHL-1	4.5 KW/m <sup>2</sup>	10.01m	9.57m	Causes pain if unable to cover the body within 20 seconds
SHL-2	12.5 KW/m <sup>2</sup>	6.19m	5.91m	Minimum energy for melting plastic
SHL-3	37.5 KW/m <sup>2</sup>	3.68m	3.51m	Sufficient to cause damage to equipments

As pool fire can cause damage to equipments within distance estimated, no such equipments to be constructed within that distance. This hazard is not considered as most credible scenario.

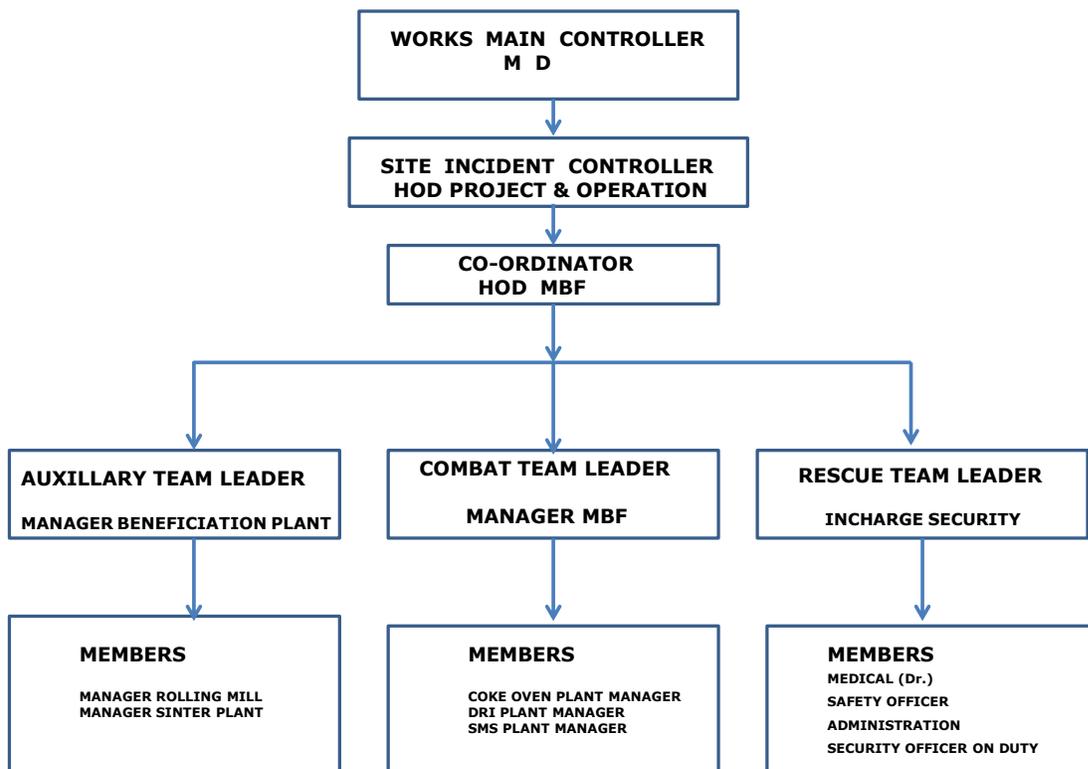
As to toxic release and fire due to CO release, BF gas contains about 25-30% CO. This considered as most credible scenario and for that on sight emergency plan has been made.

Leakage of liquid Oxygen from Oxygen storage tank will vigorously accelerate the combustion or initiate explosion of organic or oxidizable material. Many materials that are not combustible in air(20% Oxygen) can burn in oxygen rich atmosphere. Oxygen tank may vent rapidly or rupture violently from pressure when involved in a fire situation.

**Toxicological Information**

Oxygen is neither combustible nor acutely toxic under normal pressure but helps in combustion. So associated fire hazard due to leakage of Oxygen is rare and much less in magnitude as compared to fire from LDO or FO tanks. The coal storage area and LDO/FO storage tanks to be away from Oxygen storage tank.

**Emergency command structure**



**6.7 ROLE OF KEY PERSONS**

**6.7.1 WORKS MAIN CONTROLLER:**

He is the Managing Director of the unit and is generally available in the factory or in the colony nearby except on tours. On emergency, he can reach work site at any odd hour within 20 minutes time. In his absence, HOD project & co-ordination shall take up his charge as Works Main Controller (WMC).

On being informed of an incident, he has to:

- Rush to the emergency Site, collect all information from SIC.
- Decide if emergency is to be declared and advise Site incident Controller (SIC) accordingly and reach Emergency Control Room (ECR).
- Advise Rescue Team Leader (RTL)/ Security Gate to blow the siren with appropriate code for declaration of emergency.
- Two minutes with a pause of five seconds for 3 times for fire hazard.
- Three minutes with pause of five seconds for 5 times for Gas leakages.
- Advice (Auxiliary Team Leader) ATL for communication to statutory authorities and for mutual aid as required.
- Through (Auxiliary Team Leader) ATL ensure constant communication to statutory authorities and to mutual aid partners as required.
- Maintain continuous communication with Site Incident Controller (SIC) to review the situation and assess the possible course of action for emergency operations.
- To declare normalcy at the end of operation and advise Rescue team leader (RTL)/security Gate to blow "all clear siren" [for 1 minute continuously].
- Ensure the record keeping of emergency operations chronologically.

#### **6.7.2 SITE INCIDENT CONTROLLER:**

He is available at the factory or in the colony nearby. At any point of time and on being informed about an accident, he has to:

- Intimate the works main Controller (WMC) and proceed to the emergency site.
- Take the necessary instruction from Combat Team Leader (CTL), assess the situation and call Rescue Team Leader (RTL) and Auxiliary Team Leader (ATL).
- Inform Works Main Controller (WMC) regarding the situation.
- Take necessary steps and provide guidance to Combat Team, Rescue Team, and Auxiliary Team Leaders to mitigate the emergency situation.
- Examine for major emergency shut down operation activities, decide safe escape route and announce for evacuation to Assembly Point.
- Inform Works Main Controller (WMC) about the status of the situation at regular intervals.

### **6.7.3 COMBAT TEAM LEADER**

He is the leader to attend to the emergency and is available in the factory or in the colony at any instant.

On being informed about an accident, he has to:

- Immediately rush to the site and lead the team to control the situation.
- Inform Site incident controller (SIC) about the incident and request him to rush to the spot.
- Instruct the rescue Team leader (RTL) for fire fighting and medical assistance.
- Co-ordinate the activities of team members and combat the emergency, so as to eliminate the root cause of the hazard.
- Shut-down the plant if necessary to take up repair measures.
- To arrest the leakage and spillage from various equipments, shut down the concerned equipments.
- Take necessary action to remove unwanted persons from the site of the incident.
- Keep informed about the developments to Site incident Controller (SIC).

### **6.7.4 RESCUE TEAM LEADER**

He is the person who conducts rescue operations and should be available at any instant.

On receiving the information about the incident he has to:

- Rush to site of emergency through safe route.
- Ensure presence of all his team members, availability of fire fighting facilities and take necessary action to arrest the fires/leakage of gas.
- Arrange for safe escape of entrapped persons.
- Make necessary arrangements to send the affected persons for immediately medical attention through the medical officer.
- Search for the missing persons on the basis of role call taken by Auxiliary team leader (ATL).
- Give the feedback to the site incident controller (SIC) about the developments.

### **6.7.5 AUXILIARY TEAM LEADER**

He is the communication manager for the crisis management. On being informed of the emergency, he should proceed to Emergency Control Room (ECR) and:

- Keep in constant touch with works main controller (WMC) and Site Incident Controller (SIC).
- Inform the Statutory Authorities and District Administration.
- Communicate to mutual Aid Partners, Fire service stations at Jamuria.

- Send communications to District Hospital Jamuria Road for rendering services.
- Inform the relatives of casualties and send them to their residence or hospital as the case may be.
- Take care of visit of the authorities to the Emergency site.
- Give feed back to work main controller (WMC) about the status with respect to his areas of activities.

**Table 6.5 ACTION PLAN FOR ON-SITE EMERGENCY**

<b>STEP NO</b>	<b>INITIATOR</b>	<b>ACTION TO TAKE</b>
1.	The person noticing the emergency	<ul style="list-style-type: none"> <li>• Inform the Security Gate, Combat team leader and the concerned Shift-in -charge immediately.</li> </ul>
2.	Combat team Leader (CTL)	<ul style="list-style-type: none"> <li>• Inform site incident Controller (SIC) and rush to spot and organize his team.</li> <li>• Take charge of the situation, arrange for fire fighting and medical first-aid available at site.</li> <li>• To start combating, shut-down equipments, arrest the leakage of gas/fire.</li> </ul>
3.	Site Incident Controller (SIC)	<ul style="list-style-type: none"> <li>• Inform works main controller (WMC) and rush to emergency site.</li> <li>• Discuss with Combat Team Leader (CTL), assesses the situation and call the Rescue Team Leader (RTL) &amp; Auxiliary Team Leader (ATL).</li> <li>• Organize the Rescue Team and Auxiliary Team and send the rescue Team to site.</li> <li>• Arrange to evacuate the unwanted persons and call for additional help.</li> <li>• Pass information to the works main controller (WMC) periodically about the position at site.</li> </ul>
4.	Works main Controller (WMC)	<ul style="list-style-type: none"> <li>• Rush to emergency site and observe the ongoing activities.</li> <li>• Take stock of the situation in consultation with the SIC.</li> <li>• Move to Emergency Control Room.</li> <li>• Take decision on declaration of emergency.</li> <li>• Advise Auxiliary Team Leader to inform the statutory authorities and seek help of mutual aid from partners as required.</li> <li>• Decide on declaration of cessation of emergency.</li> <li>• Ensure that the emergency operations are recorded chronologically.</li> </ul>
5.	Rescue Team (RTL)	<ul style="list-style-type: none"> <li>• Consult with Site incident controller (SIC) and organize his team with amenities to arrest fire fighting and medical</li> </ul>

		<p>treatment.</p> <ul style="list-style-type: none"> <li>• Rush to Emergency Site through safe route along with the team members.</li> <li>• Arrange to set off the fire by fire fighting equipments and hydrant points to arrest the fire or to evacuate the area.</li> <li>• Shift the injured persons to hospital by ambulance after providing necessary first aid.</li> <li>• To inform the auxiliary team Leader for necessary help from mutual aid Partners.</li> </ul>
6.	Auxiliary Team (ATL)	<ul style="list-style-type: none"> <li>• On being directed by works main Controller (WMC) inform about the emergency to statutory authorities.</li> <li>• Seek help of Mutual Aid partners and Coordinate with Mutual Aid partners to render their services.</li> <li>• Arrange to inform the relatives of casualties.</li> <li>• Take care of visit of the authorities to the Emergency site.</li> </ul>
7.	Team members	<ul style="list-style-type: none"> <li>• Each of the team members should follow the instruction of concerned team leader to mitigate the emergency.</li> </ul>

## **6.8 SILENT HOUR COMMAND STRUCTURE**

- The Senior Officers/ Key Persons of the plant remain during day time i.e. 8am to 8 pm. Hence the timing of 8pm to 8am is considered as silent hour that to 10pm to 8am is the crucial time. Still each and every unit/section of the plant is headed by shift in charge in the rank of Officer, Engineer or Sr. Engineer or Asst. Manager, who shall be responsible for handling the emergency. The other supporting/services and emergency sections like Fire Service, Ambulance, Security, Personnel, Water Supply, Transport departments etc. are also running for 24 hours shift wise with shift in charge and crew to handle emergency during the silent hour till main command personnel arrive. However, most of the key persons of the main command structure reside in nearby area and can reach within minimum time.
- The command structure of the silent hour shall be same as during normal hour, however, during the silent hour, the operation Shift-in charge of the concerned area where the fire or leakage of gas has taken place, shall act as SIC-in -charge, till the arrival of actual designation members.
- Since WMC, SIC, CTL, RTL & ATL may not be available inside the plant; they shall be informed by the SIC-in-charge either by telephone or by sending special messengers to their residences.
- On receiving the information WMC, SIC, CTL, RTL & ATL shall reach the site immediately & simultaneously take actions to ensure the presence of their respective team members.

- Therefore the action plan as well as the role of key person shall be same as the normal hour execution of command structure.

## **6.9 ACTIVATION & CLOSING PROCEDURE FOR ON-SITE EMERGENCY**

### **6.9.1 ACTIVATION PROCEDURE**

The person noticing the incident of fire or leakage of gas, shall inform about the location & nature of fire to the combat team Leader (CTL), security Gate and concerned Shift-in-charge.

Combat team Leader (CTL) shall inform site incident controller (SIC) and shall rush to the site immediately. He shall arrange for fire fighting and first aid available at site. He shall arrange to take necessary steps to eliminate the root cause of fire.

Site incident controller (SIC) on getting information shall inform the WMC and reach the site at the earliest. He shall take over the charge and shall direct Rescue Team Leader (RTL) to carry out rescue operations including fire fighting and medical attention. Site incident controller (SIC) shall co-ordinate with Combat team leader (CTL) to eliminate the root cause of fire.

- Work main controller (WMC), on arrival at site shall take stock of the situation from site incident controller (SIC) and then rush to emergency control room (ECR) to declare emergency on the basis of assessment made by (Site incident controller (SIC). He shall give direction to the security gate/ (Rescue team Leader) RTL to activate siren.
- Two Minutes with a pause of five seconds for 3 times for fire Accident.
- Three Minutes with a pause of five seconds for 5 times for leakage of gas.
- Rescue Team Leader (RTL) shall mobilize fire fighting and medical resources to site and shall assist (Site incident Controller) SIC.
- Auxiliary Team Leader (ATL) shall take charge of Emergency Control Room (ECR), shall ensure smooth operation of ECR and shall inform relatives of casualties. Informs mutual Aid partners and ensures their arrival at site if required.
- Auxiliary Team Leader (ATL) informs statutory authorities and district administration regarding emergency suitably and coordinates their visit at site.
- Works main controller (WMC) coordinates and keeps the track of all the activities at site and off the site and arranges the recording of the activities in a chronological manner for review of the Onsite emergency Plan.

### **6.9.2 FACILITIES AVAILABLE FOR ON-SITE EMERGENCY PLAN:**

- (a.) Assembly Point:
- In any emergency it will be necessary to evacuate people from affected zones or the zones likely to be affected, to a safer place. Safer places are identified and designated as Assembly Points. Taking the area and hazard zones into consideration two assembly points have been marked in two different areas i.e. one near administrative building (Assembly Point-1) and other near the SMS Area (Assembly

Point-2) Both the points are well connectable to the plant road and facilities like drinking water, temporary shelter and first aid is available there. This has been well marked in the lay out map as well as in the factory.

- (b.) Escape routes:
- Escape routes are those that, allow reasonably safe passage of persons from the work area to assembly point during emergency situation. These routes would be different depending on wind direction, Fire and explosion scenario. Escape routes are ear marked on the drawings as well as on the routes, which will facilitate all for safe evacuation.
- (c.) Emergency Control Room (ECR):
- The emergency Control Room is a place from which all emergency management operation are directed and coordinated. Also it is the place from where all communication will be established, with outside agencies and district authority also.
- Facilities Available at ECR:
- Plant general Layout, ear marked with hazard zone, Assembly points and escape routes.
- List of working personnel in various shifts and general shift.
- Mobile telephone Nos., of emergency command structure personnel.
- Emergency command structure.
- Rhythmical siren code for different emergency situation.
- Relevant material safety data sheet.
- Emergency Control Room Register.
- First Aid Box with antidotes.
- Required personal protective equipments with self carrying breathing app.
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- 6.10 FACILITIES AVAILABLE
- Fire Hydrant System
- Fire pumps are to be connected to main fire hydrant to maintain a pressure of 7Kg/cm<sup>2</sup>. In case of temporary power failure, the fire pumps are to run through DG. An underground tank supply water to the fire main. A security jeep is stationed at main gate (main control) to meet the emergency.
- Fire Extinguishers
- Required types of fire extinguishers are to be provided at different locations of the plant.
- Fire Buckets
- Fire buckets filled with dry sand must be provided in different locations of the plant.
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- Fire Tender
- The company may have a fire tender of its own for major fire fighting operations.
- Siren
- Company must have Siren/ hooter arrangement, which can be activated manually during fire related emergency.
- Communication
- Public address system and EPABX telephone is available for effective communication inside the plant. Telephone directory is available in the entire department.

- Dispensary
- A well organized First-aid centre with ambulance, stretchers, oxygen cylinder etc. shall be located inside the factory. The First-aid centre is manned by one doctor, 4nos. pharmacists, 4 nos. attendants, and one Ambulance with driver. The first-aid center is manned round the clock. In the event of emergency, the doctors and staff attend the first-aid centre. The existing first-aid centre is to be strengthened & well-equipped to meet the emergencies. In case of requirement outside ambulance services are to be contacted.
- First Aid Box
- Company has provided First Aid boxes with required first aid medicines at different locations inside the plant for any injury. First aid boxes are checked by the pharmacists once in a month & and medicines are filled/replaced. The first aid boxes are provided in the following locations:
  - Blast Furnace, DRI, Coke Oven, Ferro Chrome, Power Plant, Electrical Substation, DG room, Administrative building, SMS, Rolling Mill and Security Office.
- 6.10 OBJECTIVE OF ONSITE EMERGENCY PLAN
- The main objective of the plan is to take immediate actions to meet any emergency situation for speedy and efficient rescue and relief operations. The main steps in an onsite emergency plan is described below:
  - Cordon and isolate the affected area for smooth rescue operation.
  - Rescue and treat casualties and safeguards the rest.
  - Minimise damage to persons, property and surroundings.
  - Contain and ultimately bring the situation under control.
  - Secure and safe rehabilitation of the affected area.
  - Identify any dead and provide for the needs of the relatives.
  - Provide necessary information to statutory agencies.
  - Provide authoritative information to the news media.
  - Ward off unsocial elements and prying onlookers.
  - Counter rumour mongering and panic by relevant accurate information.
- Industrial Safety and Fire Fighting
- For protection of working personnel, equipment and machineries from any damage or loss and to ensure uninterrupted production, adequate safety and fire fighting measures have been planned for the proposed plant. Important provisions are as follows:
  - Provision of adequate personal safety appliances to workers engaged in hazardous installations
  - Provision of detection and alarm system to allow a developing fire to be detected at an early stage.
  - Provision of water spray fire extinguishing system and portable extinguishers using carbon dioxide or chemical powder.
- Portable Fire Extinguishers
- All plant units, office, buildings, stores, laboratories, etc. will be provided with adequate number of portable fire extinguishers to be used as first aid fire appliances. The distribution and selection of extinguishers will be done in accordance with the requirement of fire protection manual.

- Fire Hydrant System
- Internal hydrants will be provided in all major plant units at suitable locations and in different levels inside the plant buildings. Yard hydrants will be provided in the vicinity of each plant unit, normally along the road to meet the additional requirement of water to extinguish fire. The pressure of water in the hydrant network of the road level will be maintained at 7Kg/sq.cm.
- Automatic Fire Detection System
- Unattended vulnerable premises like electrical control rooms, cable tunnels, MCC rooms, oil cellars etc. will be provided with automatic fire detection and alarm system.
- Manual Call Point Systems
- All major units and welfare / administrative buildings will be provided with manual call points for summoning the nearest fire station for necessary assistance.
- Fire Station
- There will be one central fire station extend the necessary assistance required for fighting fire in any of the plant units and associate premises with requisite augmentation. The equipment like, Water tender, Foam tender, portable pump, Wireless set, Hoses, Hot line telephone, etc. will be provided in fire station/fire posts. The safety appliances like, Industrial safety boots, Industrial helmets, Hand gloves, Ear muffs, Welder's screens and aprons etc. will be provided for the personnel exposed to the different types of hazards in various plant units.
- Fire Fighting Organization and Procedures.
- Overall control of the Fire fighting operations will rest with the senior most officers present at the scene of fire, who will be assisted by the operational and fire staff. Close coordination and planning for fire staff. Close coordination and planning for fire protection will be done between plant operations and fire service.
- While turning out for fire calls, the fire staff will be guided to the correct location immediately on their arrival.
- In charge of the section at shop floor shall explain special risks involved and guide the in charge of the Fire fighting crew. He will, however, not interfere in the method of fire fighting operations.
- Fire drills would be held in each zone periodically under the directions of the fire officer.
- Fire sirens will be tested by sounding straight for one minute on every Monday at 9AM for SMS and on every Wednesday at 9AM for Main Gate.
- Responsibilities of Fire Control Room operator.
- To take correct message regarding location, type of fire etc. from the caller.
- To repeat the message.
- To inform fire fighting personnel on duty immediately for turn out by sounding the bell.
- To ask the pump house operator to maintain adequate head in the fire water line.
- To inform telephone exchange.
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- Responsibilities of Fire fighting personnel.
- To report immediately at the scene of fire.
- To take instructions from fire officer.

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- Responsibilities of Fire officer.
- To direct the deployment of fire fighting personnel and fire fighting appliances.
- To organize additional fire fighting crew, if required, depending upon gravity of the situation.
- To guide plant employees in Fire fighting.
- To coordinate between different groups of fire fighting personnel and team of trained workers from the Department.
- To control the spread of fire and rescue operation, if necessary.
- To extinguished the fire.
- To replenish the required fire fighting materials / equipment.
- To arrange relievers wherever necessary.
- To assess the situation and arrange additional help if necessary in co-ordination on with disaster control room.
- To advise for all clear siren to be blown after the major fire emergency is over.
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- Responsibilities of security personal at the manned gate.
- To prevent entry of unauthorized persons.
- To keep the gate open for the emergency vehicles and officers and staff concerned with fire fighting and allied operations.
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- Responsibilities of Medical officer during major fire.
- To be available at the first- aid center for necessary medical advice.
- To depute one of the medical staff to the scene of fire to render any medical assistance required at site.
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- Responsibilities of Head of the Personal and Welfare Department during major fire.
- To arrange the transport of the fire fighting personal with minimum loss of time from township in consultation with the fire control room/fire officer.
- To make arrangement for the refreshment meals for persons engaged in fire fighting.
- To inform the fire officer regarding the actions taken.
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- Responsibilities of Head of the Maintenance Dept. during major fire.
- To report to Fire Chief and render all help that may be required from maintenance dept.
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- Responsibilities of Head of the Electrical Maintenance Dept. during major fire
- To report to fire officer and render assistance to be required from Electrical department such as installation of equipment provision of temporary lighting.
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- Responsibilities of Head of the Materials procurement Dept. during major fire
- To arrange to manage the stores for emergency issue of materials. If the materials are not available in the stores or are likely to be exhausted during fire fighting operations he would arrange for the same from neighboring industries or other sources.

- Mutual aid system
- At times the possibility of a major emergency a situation out of control of plant authority cannot be ruled out. In such a case, the plant authority would declare it to be a major emergency and total control would be transferred to the district level office of contingency plan committee. Necessary help would also be sought from neighboring industries having necessary infrastructure for dealing with disaster.

**ToR 11 Adequate funds(at least 2.5% of the project cost) shall be earmarked towards the Enterprise Social Commitment based on Public Hearing issues and item wise details along with time bound action plan shall be included. Social economic development activities need to be elaborated upon.**

### **6.11 CSR ACTIVITIES**

The Ministry of Corporate Affairs (MCA) had introduced the Corporate Social Responsibility Voluntary Guidelines in 2009. These guidelines have now been incorporated within the 2013 Act and have obtained legal sanctity. Section 135 of the 2013 Act, seeks to provide that every company having a net worth of 500 crore INR, or more or a turnover of 1000 crore INR or more, or a net profit of five crore INR or more, during any financial year shall constitute the corporate social responsibility committee of the board.

The 2013 Act mandates that these companies would be required to spend at least 2% of the average net-profits of the immediately preceding three years on CSR activities, and if not spent, explanation for the reasons thereof would need to be given in the director's report (section 135 of the 2013 Act).

#### **Under CSR activities M/s SSL has planned following activities :**

M/s SSL knows that the role of a successful company is to contribute to National wealth, generate employment opportunities, promote e-business and e-commerce, bring transparency in management policies and provide open communication and a safe working environment.

Following activities have already been done for development of the locality.

1. Women's' empowerment means individual woman acquiring the power to think and act freely, exercise choice and fulfil her potential as full and equal members of society. The company has already trained women of Ikra village to make ladies dress materials and provided six numbers of sewing machines, stitching kits and space to set up centre under self-help activities as a step towards women's empowerment.
2. Trained 10 students from Ikra village with diploma course from RAM KRISHNA MISSION in the field of electrical and welding.
3. Provided 15 pairs of desks and benches to Baba Betaliram Balika Vidyalaya. Provided two gates for compound wall of Hoodubi School in Jamuria block for safety & security of students.

4. The company has a proposal of adopting minimum 55 children of backward Tribal/SC community provide dress, bag, book and study material to them and educate. The process is on.
5. The company has donated note books, pens and Geometry boxes etc. to class VI & VII students of Nitya Gopal High school at Birkuti in Jamuria block.
6. The company has erected two water tanks and benches at burning ghat of Ikra village.
7. The company has made 2km approach road for Sakhir and Kumardi villages
8. The company has setup street light for Birkulti village.
9. Agriculture project has been started for Birkulti vllage area for which pond cutting and PVC pipe line fitting has been done for better development of agriculture crops.
10. Health camp and blood donation camps have been conducted by the company and free medicines have been distributed.



Photographs of some of CSR activities done by M/s SSL

The company has constituted a committee consisting members from workers, officers and local administration and it is headed by one of the directors to take decision and fix priority of CSR activities.

The committee shall formulate the policy, including activities specified in Schedule VII, which are broadly as follows:

- Eradicating extreme hunger and poverty
- Promotion of education
- Promoting gender equality and empowering women
- Reducing child mortality and improving maternal health
- Combating human immunodeficiency virus, acquired immune deficiency syndrome, malaria and other diseases
- Ensuring environmental sustainability
- Employment enhancing vocational skills
- Social business projects

- Contribution to the Prime Minister's National Relief Fund or any other fund set-up by the central government or the state governments
- Such other matters as may be prescribed

Operations in the iron and steel industry may expose workers to a wide range of hazards or workplace activities or conditions that could cause incidents, injury, death, ill health or diseases.