

CHAPTER- 6

DISASTER MANAGEMENT PLAN

6.1 INTRODUCTION

Disaster Management planning is an integral and essential part of loss prevention strategy. The nature of the proposed project is such that there are minimal chances of accidents. The project operations do not entail any risk or hazard. There is no hazardous cargo to be handled at the proposed facility. The cargo proposed to be handled at proposed facility includes Coal, Steel, Container and general cargo. However, there still remains a small possibility that disaster may occur. Effective action is possible due to existence of pre-planned and practiced procedures for dealing with emergencies. The present chapter outlines the Disaster Management Plan to be implemented in the event of an emergency. Proposed facility is proposed near existing Mormugao Port, which has the On-site Emergency Action Plan in place.

Mormugao Port has 100 bed hospital to cater to the various medical needs of the MPT employees and well equipped to handle the emergency situation. This hospital is also equipped with an ambulance service round the clock to handle any emergencies. Hence, existing services shall be utilised for the proposed facility, as well.

This Disaster Management Plan also sets out the procedures and measures to be taken into account in the event of loss of containment and consequence thereof in the proposed project.

6.2 TYPES OF EMERGENCIES

The type of emergency primarily considered here is the major emergency which may be defined as one which has the potential to cause serious danger to persons and/or damage to property and which tends to cause disruption inside and/or outside the site and may require the co-operation of outside agencies.

Emergency is a general term implying hazardous situation both inside and outside the premises. Thus the emergencies termed “on-site” when it confines itself within the installation even though it may require external help and

‘offsite’ when emergency extends beyond its premises. It is to be understood here, that if an emergency occurs inside the project area and could not be controlled properly and timely, it may lead to an “off-site” emergency.

An emergency in the premises can arise due to certain undesired incidents resulting in fire, explosion or oil spill.

6.3 PRIORITY IN EMERGENCY HANDLING

The general order of priority for involving measures during the course of emergency would be as follows:

- Safeguard life
- Safeguard environment
- Safeguard property

6.4 OBJECTIVES OF THE DISASTER MANAGEMENT PLAN

The main objectives of the Disaster Management Plan would be:

- Ensure that loss of life and injuries to persons are minimized
- Damage to environment is minimized, property loss is minimized
- Relief and rehabilitation measures are effective and prompt
- Minimize the outage duration of the facilities.

The above objectives are sought to be achieved through some of the following measures:

- Providing information to all concerned on the estimated consequences of the events that are likely to develop as a result of the emergency.
- Mobilizing on-site resources.
- Calling up assistance from outside agencies.
- Initiating and organizing evacuation of affected workmen.
- Providing necessary first aid and other medical services that may be required.
- Collecting data on the latest developments, other information and requirements.

6.5 LIKELY EMERGENCIES

Likely emergencies in the proposed Multipurpose Cargo Terminal include;

- Fire in Godowns / Terminal area
- Accidents involving vessels
- Oil Spill from ships
- Sabotage/Terrorism
- War
- Fire on board a ships within the port limits
- Breakdown of ship engine in deep sea
- Earthquake, Cyclone and Tsunami

6.6 COMMUNICATION SYSTEMS

Timely communication of an impending disaster may be life-saving for many people. Effective hazard communication is treated as the single most effective way of limiting losses both in terms of life and property by way of actuating preventive or remedial actions. The various aspects covered in this section are:

- Communication infrastructure
- Sounding of early warning notification
- Siren Warning Systems

6.6.1 Communication Infrastructure

It is recommended that multimodal channel of communication should be made available in the Multipurpose Cargo Terminal for effective communication in event of any emergency:

- Telephone link(within the Terminal)
- Link between Indian Meteorological Department (IMD) and Multipurpose Cargo Terminal office
- Satellite link with other ports and harbor in the area.
- Local cable TV network for telecasting the emergency to the public at large along with what to do.

Medical Services

- Chief Medical Officer, Mormugao Port
- Chief Fire Officer, Mormugao Port
- SHO, Mormugao Police Station
- Estate Manager
- Ambulance service at Mormugao Port

The emergency control room telephone numbers should be pasted on a stand post at various places within Multipurpose Cargo Terminal to ensure that the number is available for ready use in the event of an emergency. The stand display board should always read the following numbers to facilitate ease of dispatching the information :

- Telephone numbers of Fire Station, Hospitals and the Security Officer control room
- Installation of a Voice Paging/Public Address (PA) system is highly recommended. The PA system shall be such that it is capable of addressing all the harbor areas/offices at least, to ensure that all the personnel are informed as well as are told to take preventive actions for safeguard to life of the people working in the area.
- All the security personnel patrolling the area should be given Walkie Talkie sets in order to ensure quick communication of the emergency.

6.6.2 Communication functionary

Communication functionary as appointed for Multipurpose Cargo Terminal shall perform the following duties to:

- Ensure all available communication links remain functional.
- Quickly establish communication links between incident site and the control room

To maintain voice record of significant communications with timings received/passed from the primary control room.

6.6.3 Sounding an early warning notification

Raising of an alarm holds the key to minimizing the extent of damage to both life and property. The key to raising of an alarm lies in the early warning for notification of an impending disaster. The proposed Multipurpose Cargo Terminal shall have a minimum of three modes of raising an alarm:

- Raising of flag atop the signal room building
- Siren/hooter
- Public Address system

In addition to three modes of raising an alarm there could be other modes of doing the same i.e. by providing the following annunciation system:

- Break glass fire alarm
- Blow horn speakers mounted on vehicles
- Local Doordarshan Kendra, Local cable TV operators
- Local AIR (Radio)

The raising of alarm becomes critical for the following events:

- An impending cyclone or any natural disaster on receiving an information from IMD or TV Channel
- Major fire on the Terminal.

6.6.4 Siren warning systems

Raising the alarm is the first step in the implementation of Onsite Emergency Plan/Disaster Management Plan (DMP). Essentially there would be various alarms for sounding of an emergency including fire, building collapse and flooding. The alarms are basically used to notify people of an impending disaster or an event, which is likely to snowball into a major disaster.

The various categories of alarms are as follows:

- Cyclone alarm (11 levels)
- Fire
- Flooding
- Building collapse
- All clear

The various means of communicating or raising of alarm would be in the following order:

- Raising of flag on top of the signal room for indicating the severity of cyclone.
- Blowing of the siren having a short blast followed by a long blast and repeating it 3 times for indicating evacuation from the Terminal.
- Blowhorns in the vehicles being used by security people.
- Using telephone as well as fax to inform the main emergency control room of a fire.
- Establishing contact with the District Collector and requesting for help.
- Public Address System would be used to inform the public at large in the township to ensure that they do not travel in the direction of the disaster and assemble at the assembly point as designated.

The following alarm system may be considered or any other system, which will identify the various levels of emergency.

- **Warning for cyclone** - the level of cyclone as decided by the port authorities could be made known by putting up suitable display board. This could be known by putting up suitable display board. This could be known to public by making announcements on the TV or radio as discussed earlier. Any change in cyclone level could be made known by a siren.

Similar siren may also be used for other natural disasters like flood or earthquake.

Siren – Short, intermittent.

- **All clear** – when the Main controller considers that the accident is over and it is safe for re-entry.

Siren: - A wailing siren for 5 minutes.

6.7 TEMPORARY SAFE ZONES

In the event of an impending disaster the affected population at large would have to be transported to intermediate temporary shelter. The temporary shelters could be nearby schools. The temporary shelters would greatly

depend upon the emergency condition and the nature of the emergency. The shelters are to be used only when there is a threat of a natural disaster.

Certain basic amenities also have to be available before the temporary safe shelter can be decided upon which are as follows:

- Water supply
- Shelter for putting up the refugees or the affected population.
- Structure of temporary shelter need to be of concrete made in order to withstand natural disaster (earthquake) if the need be. It is in this regard that schools with RCC building are ideal as sheltering spaces for the displaced population.
- Emergency shelters identified is also from the point of view of obtaining relief i.e. food supplies from the town. In the event of an impending disaster all the temporary shelters shall be provided with wireless sets.
- Provision for setting up kitchen for preparing the food for the displaced population. In addition to the food supply, provision for temporary water trailers/tanker shall also be made.
- Prior permission may be obtained from authorities for converting the schools into temporary safe shelters shall be made with the respective educational institutions along with volunteer organizations for usage of their premises to shelter the displaced population.
- The principal of individual schools shall be appointed as a record keeper before taking in the displaced population. The principals and some of the staff members need to be trained in Disaster Management.
- The termination of the emergency in the case of the natural disaster would be done by District Administration i.e. the District Magistrate/Collector.

6.8 TRAINING

Training sessions need to be provided in which personnel are briefed on their specific duties in an emergency. The concerned personnel are shown how to wear and properly use of personal protective clothing and devices. Periodic

drills shall be conducted to test the overall efficiency and effectiveness of the emergency response plan and emergency response capabilities.

The types of training required for emergency response personnel with responsibilities in any or all phases of the response is based upon the types of incidents most likely to occur and the related response and planning activities.

The contact details of hospital in the nearby area needs to displayed at appropriate location.

6.9 EMERGENCY CONTROL CENTRE

One control at Multipurpose Cargo Terminal shall be provided and shall be sufficiently equipped to inform collector, Police Department, Coast Guard. The key activities of the control shall:

- Have IMO web site available through Internet connection in the control room for ready reference.
- Display a map of the whole harbor area and the population distribution in the nearby area.
- Emergency Control Room to be constructed in a fashion that it should be able to survive the various manmade and natural contingencies like, cyclone, high wind velocity, flooding, etc.
- Equipped with diesel driven electric generators.
- Automatic display name, address, telephone numbers of any incoming call once the emergency control centre number is dialed the same should be registered in computer.
- Map depicting railway station, Ferry start points, bus stands and taxi stands should be available
- Map depicting the inter-tidal zone.
- Map depicting temporary shelter as well as food supplying store.
- List of Personal Protective Equipment (PPE) suppliers and availability in the harbor.
- Adequate number of flameproof searchlights numbering shall be made available at the control room.

6.10 HAZARDS ASSOCIATED WITH DREDGING

The cranes of dredgers are extremely dangerous. Workers are prone to fall accidents as well. Another concern with dredging is offshore pollution. If a dredge sinks, oil can seep out into the water that they are operating in.

A dredging process hazard analysis (PHA) is a systematic identification of the potential hazardous scenarios within a dredging operation. Many federal agencies are now requiring firms to perform PHAs during their mobilization phase. For example, Occupational Safety and Health Administration (OSHA) and the U.S. Environmental Protection Agency (EPA) require that PHAs are performed before a contract becomes operational, and are mandatory for all new processes or when modifications are made to the original PHA. The U.S. Army Corps of Engineers requires that Accident Prevention Plans address the risk associated with each task when preparing a PHA. PHAs shall define the activities being performed and identify the work sequences, the specific anticipated hazards, site conditions, equipment, materials, and the control measures to be implemented to eliminate or reduce each hazard to an acceptable level of risk (USACE 2008).

A generic risk matrix is shown in Figure-6.1. The risk assessment team establishes for each identified risk “item” its level of severity (the impact upon the project, or outcome/degree of the incident, near miss or accident) and its corresponding probability of occurrence (how many times that risk event can occur, or likelihood of the hazard to cause an incident, near miss, or accident). The result is that each item is assessed a level of risk (ranging from very high to very low). Once the level of risk is determined for the severity (x-axis of chart) and probability (y-axis of chart), a Risk Assessment Code (RAC) is selected for each hazard. This assessment and selection is then continued for each identified hazard in the PHA.

	very	VH						
	high	H						
	medium	M						
	low	L						
	very	VL						
			VL	L	M	H	VH	
			very low	low	medium	high	very high	
			SEVERITY (impact on the project)					

Figure-6.1: Generic Risk Matrix

Dredger Monitoring Software

Dredgers are often equipped with dredge monitoring software to help the dredge operator position the dredger and monitor the current dredge level. The monitoring software often uses Real Time Kinematic satellite navigation to accurately record where the machine has been operating and to what depth the machine has dredged to.