



DISASTER MANAGEMENT PLAN

of

INDIAN RAILWAYS

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Abbreviations

| | |
|------|---|
| AC | Air Conditioned |
| AGM | Additional General Manager |
| ARME | Accident Relief Medical Equipment |
| ARMV | Accident Relief Medical Van |
| ART | Accident Relief Train |
| BIS | Bureau of Indian Standards |
| BLS | Basic Life Support |
| BRO | Border Roads Organization |
| BSF | Border Security Force |
| BT | Bio-Terrorism |
| BW | Biological-Warfare |
| CAG | Comptroller & Auditor General |
| CBO | Community Based Organization |
| CBRN | Chemical, Biological, Radiological, Nuclear |
| CCTV | Close Circuit Television |
| CDM | Chief Disaster Management |
| CE | Civil Engineer |
| CISF | Central Industrial Security Force |
| CMD | Chief Medical Director |
| CMG | Crisis Management Group |
| CMP | Crisis management Plan |
| CMS | Chief Medical Superintendent |
| CPMF | Central Para Military Force |
| CRB | Chairman Railway Board |
| CRPF | Central Reserve Police Force |
| CSO | Chief Safety Officer |
| CTD | Chemical (Terrorism) Disaster |
| CWC | Central Water Commission |
| DDMA | District Disaster Management Authority |
| DG | Director General |
| DOD | Department of Ocean Development |
| DM | District Magistrate |
| DRM | Divisional Railway Manager |
| EMS | Electronic Messaging System |
| EMR | Emergency Medical Response |
| ERC | Emergency Response Centres |
| ESF | Emergency Support Function |
| ESIC | Employees State Insurance Corporation |
| EWS | Early Warning System |

| | |
|---------|---|
| FC | Financial Commissioner |
| FF | Flood Forecasting |
| FM | Flood Management |
| FOIS | Freight Operation Information System |
| GAIL | Gas Authority of India Ltd. |
| GIS | Geographic Information System |
| GM | General Manager |
| GRP | Government Railway Police |
| GSI | Geological Survey of India |
| Hazchem | Hazardous Chemical |
| HFL | Highest Flood Level |
| HLC | High Level Committee on Disaster Management |
| HM | Home Minister |
| HQ | Headquarter |
| HS | Home Secretary |
| HSD | High Speed Diesel |
| IAN | Integrated Ambulance Network |
| ICS | Incident Command System |
| IDSP | Integrated Disease Surveillance Programme |
| IMD | India Meteorological Department |
| IOC | Indian Oil Corporation |
| IOC | Integrated Operation Centre |
| INCOIS | Indian National Centre for Oceanic Information Services |
| IRITM | Indian Railways Institute of Transport Management |
| IS | Internal Security |
| ITBP | Indo Tibetan Border Police |
| ITWC | Interim Tsunami Warning Centre |
| MCE | Mass Casualty Evacuation |
| MCM | Mass Casualty Management |
| ME | Member Engineering |
| MFR | Medical First Responder |
| MHA | Ministry of Home Affairs |
| ML | Member Electrical |
| MM | Member Mechanical |
| MoD | Ministry of Defense |
| MoES | Ministry of Earth Sciences |
| MoH&FW | Ministry of Health and Family Welfare |
| MoR | Ministry of Railways |
| MoS | Minister of State |
| MoSRTTH | Ministry of Shipping, Road Transport and Highways |
| MoWR | Ministry of Water Resources |

| | |
|---------|---|
| MPMCM | Medical Preparedness and Mass Casualty Management |
| NAHI | National Association of Home Inspectors |
| NBC | Nuclear, Biological & Chemical |
| NCMC | National Crisis Management Committee |
| NCRMP | National Cyclone Risk Mitigation Project |
| NDM | National Disaster Management |
| NDMA | National Disaster Management Authority |
| NDRF | National Disaster Response Force |
| NEC | National Executive Committee |
| NFMI | National Flood Management Institute |
| NGO | Non Governmental Organization |
| NIDM | National Institute of Disaster Management |
| NIO | North Indian Ocean |
| NIOT | National Institute of Ocean Technology |
| NSG | National Security Guard |
| OFC | Optic Fiber Cable |
| PMO | Prime Minister Office |
| POMKA | Portable Medical Kit for Accidents |
| PPE | Personal Protective Equipment |
| PTWC | Pacific Tsunami Warning Centre |
| QRT | Quick Reaction Teams |
| R&D | Research & Development |
| RAT | Remote Administration Tool |
| RAW | Research and Analysis Wing |
| RDSO | Research, Design and Standards Organization |
| RMC | Regional Meteorological Centres |
| ROB | Road Over Bridge |
| RPF | Railway Protection Force |
| RPSF | Railway Protection Special Force |
| RR | Railway Receipt |
| RSC | Railway Staff College |
| RUB | Road Under Bridge |
| S&T | Signal & Telecommunication |
| SDMA | State Disaster Management Authority |
| SDRF | State Disaster Response Force |
| SE | Section Engineer |
| SEC | State Executive Committee |
| SLR | Sitting Luggage Rake |
| SOP | Standard Operating Procedure |
| SP-ARMV | Self Propelled Accident Relief Medical Van |
| STC | Supervisor Training Centre |

| | |
|------|----------------------------------|
| STS | System Technical School |
| TA | Territorial Army |
| TC | Tropical Cyclones |
| TMS | Terminal Management System |
| TS | Train Superintendent |
| TTE | Train Ticket Examiner |
| UT | Union Territory |
| ZRTI | Zonal Railway Training Institute |

INTRODUCTION

1.1 Background

Indian Railways came into existence with the running of the first train from Kurla to Thane in 1853. Ever since then handling train accidents has been a priority area for the railways. With the main reason for building up of the rail network by the British Empire being the transportation of the military requirements through the Indian Railways, the railway organization worked hand in hand with the army authorities. Sharing of the Indian Railways' and Army Cranes as also their Medical Vans in times of a train accident was an accepted system for handling disasters (rail accidents).

With the gradual growth of Indian Railways and its transition to transportation of passengers and other goods including raw material for industries etc the railway gradually built up its own infrastructure of Cranes, Accident Relief Trains (ARTs), Accident Relief Medical Equipments (ARMES). *Till the beginning of the year 2005, a disaster on the railway in effect meant a serious train accident*; other items of disaster viz. Floods, Earthquakes etc were handled in an uncoordinated manner. Disaster preparedness of the Railways, mainly pertaining to handling train accidents, had been gone into by a High Level Committee (HLC) in the year 2002/03 whose recommendations, where relevant, have been kept in view in the preparation of Railways' Disaster Management Plan.

The situation has now changed with the promulgation of the Disaster Management (DM) Act in 2005. A disaster no longer means only a train accident, but its scope has become much wider to include other incidents, terrorism related activity and natural calamities etc. The Indian Railways Disaster Management Plan has to be prepared on the principles now incorporated in the Act of sharing resources of all Government Departments along with Railways own resources available to handle serious train accidents, other mishaps, terrorism related crisis and natural calamities etc.

1.2 Recommendations of High Level Committee on Disaster Management:

1. Various committees have been appointed on the Indian Railways to review Preparedness to handle a Disaster. A high level committee (HLC) was constituted in Sep'02 (headed by Mr. S. Dhasarathy, retd MM, Rly Bd) to review Disaster Management on the Railways. The terms of reference of this committee were "to review the existing DM system over Indian Railways related to train accidents and natural calamities and to suggest improvements". Despite the above Terms of Reference incorporating an item of natural calamities, the high level committee had mainly gone into DM system over Indian Railways related to train accidents; natural calamities were hardly considered for review of relief/rescue arrangements with the railways. One of the important recommendations of the Committee relating to management of natural calamities was the setting up of a "Disaster Resistant Control Room" with self contained provisions for one week.

The report of this committee was published by Railway Board vide letter no. ERB-I/2002/24/44 dated 17.9.02. Till 31.03.09, 92 recommendations have been implemented out of a total of 111 recommendations on all the Zonal Railways, 3 have been modified, 1 deleted and balance 18 are under various stages of implementation on the zonal railways.

The recommendations had varying time frame of implementation with maximum being 36 months. Implementation of some of the recommendations has been delayed as the associated policy decision, research and development and vendor identification took some time. With the change in national scenario, some of the recommendations were reviewed to fall in line with the latest concept of participation by all stakeholders during disasters.

2. The Ministry of Railways appointed another committee in the year 2004 headed by Shri I.I.M.S. Rana, retired Chairman Railway Board, to re-examine the entire gamut of facilities available with the railways to handle disasters including natural calamities, earthquakes, cyclones, floods etc. This committee submitted its interim report in 2004; before it could submit a detailed report, it was wound up.

3. Another Disaster Management Review Committee was appointed on 27.02.07 under the Chairmanship of Mr. G. Narayan, an ex. IPS officer, with Terms of Reference to audit the current preparedness of all types of disasters/hazards for prevention, mitigation, rescue, relief and rehabilitation; integration of disaster reduction concept into development planning; and to recommend areas of multi-stakeholder partnership and citizen participation to establish a coordinated mechanism for disaster reduction, response and rehabilitation etc.

Report of the Disaster Management Review Committee (Headed by Shri G. Narayan), was submitted on 22.12.08, and is presently being examined on the zonal railways and in the Board's office.

1.2 Approval of the Disaster Management Plan of Indian Railways :-

The Disaster Management Plan of Indian Railways will be submitted to the concerned Ministries of the Government of India (and especially to the MHA) and to the NDMA for comments, suggestions and approval and subsequent updating especially where there is an interface between 2 or more departments in the management of a disaster.

CONCEPT OF DISASTER ON RAILWAYS

2.0 Disaster Risks in India :

India is vulnerable, in varying degrees, to a large number of natural as well as man-made disasters. 58.6% of the landmass is prone to earthquakes of moderate to very high intensity; over 40 million hectares (12% of land) is prone to floods and river erosion; of the 7516 km long coastline, close to 5700 km is prone to cyclones and tsunamis; 68% of the cultivable area is vulnerable to drought and hilly areas are at risk from landslides and avalanches. Vulnerability to disasters/emergencies of Chemical, Biological, Radiological and Nuclear (CBRN) origin also exists. Heightened vulnerabilities to disaster risks can be related to expanding population, urbanization and industrialization, development within high-risk zones, environmental degradation and climate change. It can also be related to increase in terrorism around the Globe.

2.1 Disaster defined in Railways' context :

The concept of a Disaster was, till the year 2005, not adequately and comprehensively defined on Indian Railways. It was accepted that a Disaster situation implies, on the railways, to cover only cases of serious rail/train accidents. It was, perhaps, due to this anomaly as late as the year 2008, even CAG's report on DM on Indian Railways has broadly adopted this fact in the concept of disaster and has gone to examine the relief/rescue/mitigation and preparedness of Indian Railways based on the earlier concepts and has reviewed the facilities for handling disasters available with the Railways only on the report/recommendations of the HLC on DM of Mr. S. Dhasarathy.

The definition of DM as given by the Government of India was legislated for the first time in the Disaster Management Act, 2005. The broad principles of disaster for any department of the government changed to the concept of any incident which could not be handled with alone by that department i.e. if it was beyond the coping capacity of a particular department, the incident could be termed as a disaster. With this came the concept of the departments of Government of India as also the State governments required to join hands to extend whatever facilities were available with them to provide relief/rescue and mitigation on the occurrence of a disaster.

In the DM plan of Indian Railways, this concept of disaster, which has now evolved, has been adopted. The zonal railways have to ensure that, down the line, this definition is understood.

While this Disaster Management Plan is a comprehensive Document, more detailed guidelines where required will be laid down on specific topics under the overall philosophy of Disaster Management laid down in this document. For instance, this has been done in the Guidelines on Chemical Disasters and the Hospital Disaster Management Plan.

2.2 Strengths of the Railways to handle a Disaster :-

In handling disasters, Indian Railways is in a unique position as it has a number of strengths not available with many other departments of Government of India. These include:

- Railways' own Communication Network.

- Operating Control on each Division linked with each Station.
- Territorial Army Units.
- Uniformed force of RPF/RPSF
- Railways' own Medical Infrastructure
- Civil Defence Organization
- An army of Gang men spread out all over the Indian Railways.
- Scouts and Guides (they can at best provide background support).
- Dedicated Rescue/Restoration and Medical Equipment on Rails.

Each of the above can be made use of to handle adversities depending upon requirement to handle the disaster.

Railway's shortcomings to handle Disaster:

There are, however, a few inadequacies in the Railways own resources which are very essential for handling a specific type of Disaster as under:

- *Absence of Tunnel rescue equipment – in case of collapse of or mishap in a rail Tunnel, expertise and related equipment on this aspect is lacking.*
- *Non-availability of trained divers for extrication of passengers and/or casualties (dead bodies and drowning/drowned passengers) from rolling stock fallen down in sea/river/lake etc. Limited help of sports persons (Swimmers) can be taken for this; the time of their mobilization is a factor to be kept in view.*
- *Non-availability of cranes operated from a ship/barge for lifting of the coaches/bogies from a water body.*
- *Ability to handle a CBRN Disaster and major fire.*
- *Limited resources to handle a terrorist attack on a train and/or a station, **other railway premises etc.***

2.3 Types of Disasters

Disaster in the Railway context was traditionally a serious train accident, caused by human/equipment failure, which may affect normal movement of train services with loss of human life or property or both. This is now extended to include natural and other man made disasters. Different types of disasters are described along with a few examples, below :

(a) Natural Disaster:-

Earthquakes, Floods, Cyclones, Land Slides, Tsunami etc.

(b) Train Accident related Disaster

Collisions (with a huge number of casualties), Train marooned (flash floods), derailments at a bridge over a river, and coaches falling down; train washed away in cyclone, derailment of a train carrying explosives or highly inflammable material, tunnel collapse on a train, fire or explosion in trains, and other miscellaneous cases etc.

(c) Man made Disasters

Acts of Terrorism and Sabotage, i.e. causing deliberate loss of life and/or damage to property, which includes :-

Setting fire to a Train, Railway installations etc., bomb blast at Railway Station/Train, Chemical (Terrorism) Disaster, Biological and Nuclear Disaster.

2.4 Changed Philosophy of Disaster Management in the Railways

With the enactment of the Disaster Management Act, 2005 and other developments on the national level, DM philosophy has also changed to adopt the latest concepts.

NEW PHILOSOPHY

- Serious train accidents, not the only events termed as disasters.
- Other events, e.g. Internal security related events like terrorist attack at station/train, marooning of train due to flash flood, disruption to traffic due to natural factors like earth-quake, cyclone, floods etc.
- No more Relief and Rescue Centric.
- Holistic Approach adopted to incorporate :-
 - Prevention
 - Mitigation
 - Preparedness
 - Rescue, Relief
 - Rehabilitation

New Philosophy gives more Emphasis on Prevention and Mitigation as under:

- Prevent and mitigate disasters
- Audit Existing Systems for Disaster Resistance, Disaster Prevention and Mitigation on the basis of NDMA's and self prepared guidelines
- Disaster Management in Developmental Planning – New activities should be disaster resistant
- Preparedness, Rescue, Relief and Rehabilitation - Dimensions of DM
- Expertise based response from all stake holders
- Pooling of resources of all agencies, e.g. local administration, community, defence, hospitals and other Govt. organizations.

2.5 Definition of a Disaster on Railways:

Based on the definition of the Disaster Management Act 2005, Ministry of Railways has adopted the following definition of Railway Disaster:

“Railway Disaster is a serious train accident or an untoward event of grave nature, either on railway premises or arising out of railway activity, due to natural or man-made causes, that may lead to loss of many lives and/or grievous injuries to a large number of people, and/or severe disruption of traffic etc, necessitating large scale help from other Government/Non-government and Private Organizations.”

2.6 Nodal department for Policy Formulation on DM on Indian Railways:

The preparation of the Disaster Management Plans on Indian Railways and on the Zonal Railways in co-ordination with the different Departments of the Railway, other Central/State Govt. agencies, NGOs, Private agencies, etc. has to be done by the Safety department in the Railway Board, on the Zonal Railways and Divisions.

The Hospital DM plans and the Security arrangements (drills etc) shall be prepared coordinated by the Medical and the Security deptt. respectively.

The Management of Floods, Cyclones, Earthquakes, Landslides, etc, and preventive action to be taken for mitigation shall be coordinated by the Civil Engg Deptt.

The Rescue and Restoration DM Plans including preparing plans and procurement of specialized equipment and rescue centric training of personnel has to be coordinated by the Mechanical Department.

2.7 Authority to declare a Disaster on Railways :

Railway Board has also approved to nominate GMs, AGMs or CSOs (when GM/AGM are not available) for declaring an untoward incident as Railway Disaster. With the adoption of the above definition of railway disaster, it needs to be appreciated that not only a serious train accident may turn into a railway disaster, if not handled and managed properly, there may be many more railway related events which may not even involve human lives but may turn into disasters for which necessary prevention and mitigation measures are to be taken by the railways beforehand. Zonal Railways will ensure that prevention, mitigation, preparedness, rescue and relief related issues covering all types of disasters affecting railway system are addressed and their details are also appropriately incorporated in their Disaster Management plans.

DISASTER MANAGEMENT ACT – 2005

3.0 National Policy on Disaster Management (NPDM) :

The Disaster Management Act, 2005 (hereinafter referred to as the Act), enacted by the Parliament was notified in the Gazette of India on 26th December, 2005. The Act provides for the legal and institutional framework for the effective management of disasters. The Act mandates creation of new institutions and assignment of specific roles for Central, State and Local Governments. Under the provisions of the Act, the National Disaster Management Authority (NDMA) has been established under the chairmanship of the Prime Minister and a National Executive Committee (NEC) of Secretaries has been created to assist the NDMA in the performance of its functions. At the State level, a State Disaster Management Authority has been created under the chairmanship of Chief Minister, which has been assisted by a State Executive Committee. At the District level, District Disaster Management Authorities have been created.

The responsibility of laying down the policies on disaster management, approving the National Policy on Disaster Management (NPDM) and laying down the guidelines on Disaster Management has been given to NDMA under the Act. The NDMA accordingly prepared a draft of the National Policy on Disaster Management in consultation with the Home Ministry and submitted the same for approval of the Government.

The Home Ministry has circulated the draft NPDM to the concerned Central Ministries and all the State Governments/Union Territories. The comments received by the Central Ministries/State Governments/Union Territories were duly examined and the acceptable views/comments of Central Ministries/State Governments/Union Territories have been duly incorporated in the NPDM.

Approval of the Cabinet to the NPDM was given in the Cabinet Meeting held on 22.10.2009.

The NPDM envisages a holistic approach to disaster management, encompassing the entire disaster management cycle including prevention, mitigation, preparedness, relief, response, rehabilitation and reconstruction. It addresses all aspects of disaster management covering institutional, legal and financial arrangements, capacity building, knowledge management, research and development. It focuses on the areas where action is needed and the institutional mechanism through which such action can be channelised.

3.1 Salient Features of the Disaster Management Act, 2005 :

It is the central legislation on Disaster Management around which all the Disaster Management related activities revolve since its enactment. It legislates a holistic approach to Disaster Management; from mere responding to disasters to greater attention to prevention and mitigation, capacity building and preparedness. The Disaster Management Plan of the Railways has been prepared by taking relevant provision of this Act into consideration.

Disaster has been defined in this Act as under:

“Disaster means a catastrophe, mishap, calamity or grave occurrence in any area, arising from natural or man-made causes, or by accident or negligence which results in substantial loss of life or human suffering or damage to, and destruction of, property, or damage to, or degradation of, environment, and is of such a nature or magnitude as to be beyond the coping capacity of the community of the affected area”

Disaster Management has been explained in this Act as under:

“Disaster Management means a continuous and integrated process of planning, organising, coordinating and implementing measures which are necessary or expedient for-

- prevention of danger or threat of any disaster;
- mitigation or reduction of risk of any disaster or its severity or consequences;
- capacity-building;
- preparedness to deal with any disaster;
- prompt response to any threatening disaster situation or disaster;
- assessing the severity or magnitude of effects of any disaster;
- evacuation, rescue and relief;
- rehabilitation and reconstruction”

3.2 Important Provisions in the DM Act, 2005 Concerning Railways:

Sections 35, 36 & 37 of the DM Act, 2005 detail the responsibilities of Ministries and Departments of Central Govt. as per which a number of measures/actions are to be taken either on their own or in consultation with NDMA. Drawing up mitigation, preparedness and response plans, capacity building, data collection and identification and training of personnel in relation to Disaster Management is one of the key responsibilities. These provision are summarized as under :-

Section 35

The Central Government shall take all such measures as it deems necessary or expedient for the purpose of disaster management and it shall include :-

- a) coordination of actions of the Ministries or Departments of the Government of India, State Governments, National Authority, State Authorities, governmental and non-governmental organizations in relation to disaster management;
- b) ensure the integration of measures for prevention of disasters and mitigation by Ministries or Departments of the Government of India into their development plans and projects;
- c) ensure appropriate allocation of funds for prevention of disaster, mitigation, capacity-building and preparedness by the Ministries or Departments of the Government of India;
- d) ensure that the Ministries or Departments of the government of India take necessary measures for preparedness to promptly and effectively respond to any threatening disaster situation or disaster;
- e) cooperation and assistance to the State Governments, as requested by them;
- f) deployment of naval, military and air forces, other armed forces of the Union or any other civilian personnel as may be required for the purposes of this Act.

Section 36

It shall be the responsibility of every Ministry or Department of the Government of India to-

- a) take measures necessary for prevention of disasters, mitigation, preparedness and capacity-building in accordance with the guidelines laid down by the National Authority;
- b) Integrate into its development plans and projects, the measures for prevention or mitigation of disasters in accordance with the guidelines laid down by the National Authority;
- c) Respond effectively and promptly to any threatening disaster situation or disaster in accordance with the guidelines of the National Authority or the directions of the National Executive Committee in this behalf;
- d) Review the enactments administered by it, its polices, rules and regulations, and incorporate provisions for prevention of disasters, mitigation or preparedness;
- e) Allocate funds for measures for prevention of disaster, mitigation, capacity-building and preparedness;
- f) Provide assistance to the National Authority and State Government for

- i) Drawing up mitigation, preparedness and response plans, capacity building, data collection and identification and training of personnel in relation to disaster management.
 - ii) Carrying out rescue and relief operation in the affected area;
 - iii) Assessing the damage from any disaster;
 - iv) Carrying out rehabilitation and reconstruction;
- g)** make available its resources to the National Executive Committee or a State Executive Committee for the purposes of responding promptly and effectively to any threatening disaster situation or disaster, including measures for-
- (i) providing emergency communication in a vulnerable or affected area;
 - (ii) Transporting personnel and relief goods to and from the affected area;
 - (iii) Providing evacuation, rescue, temporary shelter or other immediate relief;
 - (iv) Setting up temporary bridges, jetties and landing places;
 - (v) Providing, drinking water, essential provisions, healthcare, and services in an affected area;
 - (vi) Take such other actions as it may consider necessary for disaster management.

Section 37

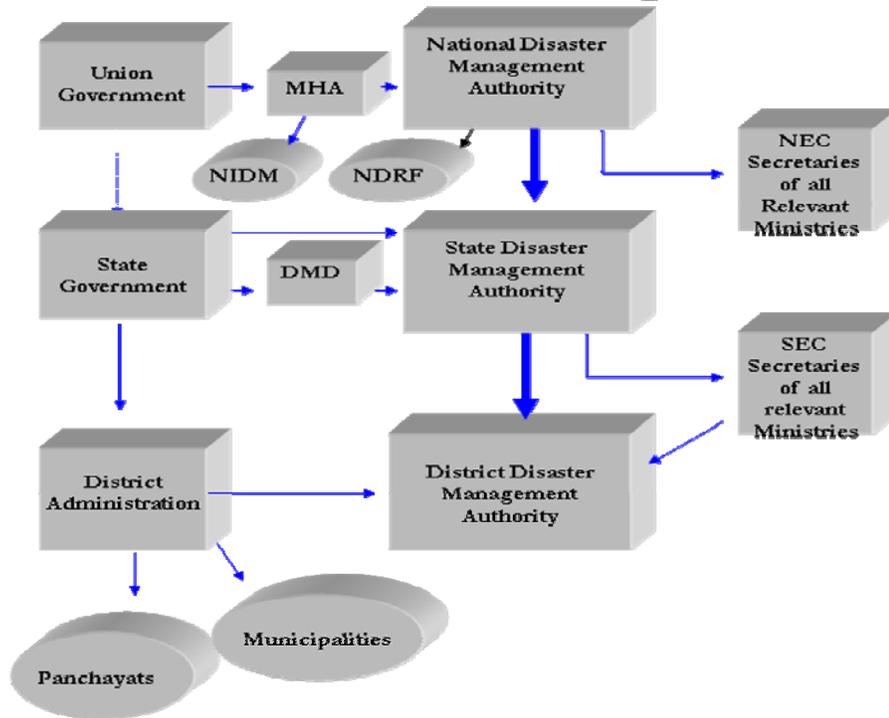
(1) Every Ministry or Department of the Government of India shall-

- a) prepare a disaster management plan specifying the following particulars, namely;
 - (i) The measures to be taken by it for prevention and mitigation of disasters in accordance with the National Plan;
 - (ii) The specifications regarding integration of mitigation measures in its development plans in accordance with the guidelines of the National Authority and the National Executive Committee;
 - (iii) Its roles and responsibilities in relation to preparedness and capacity-building to deal with any threatening disaster situation or disaster;
 - (iv) Its roles and responsibilities in regard to promptly and effectively responding to any threatening disaster situation or disaster;
 - (v) The present status of its preparedness to perform the roles and responsibilities specified in sub-clauses (iii) and (iv);
 - (vi) The measures required to be taken in order to enable it to perform its responsibilities specified in sub-clauses (iii) & (iv)
- b) Review and update annually the plan referred to in clause (a);
- c) Forward a copy of the plan referred to in clause (a) or clause(b), as the case may be, to the Central Government which Government shall forward a copy thereof to the National Authority for its approval.

(2) Every Ministry or Department of the Government of India shall-

- a) Make, while preparing disaster management plan under clause (a) of sub section (1), provisions for financing the activities specified therein;
- b) Furnish a status report regarding the implementation of the plan referred to in clause (a) of sub-section (1) to the National Authority, as and when required by it.

Institutional Framework Under the Disaster Management Act, 2005



No Railway official is nominated either in National Executive Committee (NEC) or State Executive Committee (SEC), though they can be co-opted as per need.

NATIONAL DISASTER MANAGEMENT AUTHORITY (NDMA)

4.0 The Disaster Management Act, 2005, provides the powers, roles and jurisdiction of a National Authority as under:-

4.1 Powers and functions of National Authority:

Subject to the provisions of this Act, the National Authority shall have the responsibility for laying down the policies plans and guidelines for disaster management for ensuring timely and effective response to disaster.

The National Authority may --

- a) lay down policies on disaster management;
- b) approve the National Plan;
- c) approve plans prepared by the Ministries or Departments of Government of India in accordance with the National Plan;
- d) lay down guidelines for the State Authorities to draw up the State Plan;
- e) lay down guidelines to be followed by the different Ministries or Departments of the Government of India for the purpose of integrating the measures for prevention of disaster or the mitigation of its effects in their development plans and projects;
- f) coordinate the enforcement and implementation of the policy and plan for disaster management;
- g) recommend provision of funds for the purpose of mitigation;
- h) provide such support to other countries affected by major disasters as may be determined by the Central Government;
- i) take such other measures for the prevention of disaster, or the mitigation, or preparedness and capacity building for dealing with the threatening disaster situation or disaster as it may consider necessary;
- j) lay down broad policies and guidelines for the functioning of the National Institute of Disaster Management;

4.2 Constitution and Role of NDMA :

It is constituted under the DM Act as the apex body in the country to deal with disaster management holistically. Hon'ble Prime Minister is the ex-officio Chairperson of the Authority and presently General (Retd.) N. C. Vij is the Vice-Chairperson. The Members have also been nominated and the total number of Members is limited to nine to be nominated by the Chairperson. Vice Chairperson is Cabinet rank and Members are State rank Ministers.

NDMA is responsible for laying down the policies, plans and guidelines for disaster management for ensuring timely and effective response to disaster.

State and Districts have also been mandated to constitute State and District Disaster Management Authorities respectively on the line of NDMA.

4.3 Constitution of Advisory Committee by National Authority :

The National Authority may constitute an Advisory Committee consisting of experts in the field of disaster management and having practical experience of disaster management at the National, State or District level to make recommendations on different aspects of disaster management;

4.4 National Executive Committee :

The Central Government shall, immediately after issue of notification under sub-section (1) of section 3, constitute a National Executive Committee to assist the National Authority in the performance of its functions under this act.

The National Executive Committee shall consist of the following members, namely :

- (a) the Secretary to the Government of India in charge of Ministry or Department of the Central Government having administrative control of the disaster management, who shall be Chairperson, ex-officio ;
- (b) The Secretaries to the Government of India in the Ministries or Departments having administrative control of the agriculture, atomic energy, defence, drinking water supply, environment and forests, finance (expenditure), health, power, rural development, science and technology, space, telecommunication, urban development, water resources and the Chief of the Integrated Defence Staff of the Chiefs of Staff Committee as ex-officio, members.

The National Executive Committee shall assist the National Authority in the discharge of its functions and have the responsibility for implementing the policies and plans of the National Authority and ensure the compliance of directions issued by the Central Government for the purpose of disaster management in the country.

The **National Executive Committee** may-

- act as the coordinating and monitoring body for disaster management;
- prepare the National Plan to be approved by the National Authority;
- coordinate and monitor the implementation of the National Policy;
- lay down guidelines for preparing disaster management plans by different Ministries or Departments or State Authorities;
- provide necessary technical assistance to the State Government and State Authorities for preparing their DM plans in accordance with the guidelines laid down by the National Authority;
- monitor the implementation of the National Plan and the plans prepared by the Ministries or Departments of the Government of India;
- monitor the implementation of the guidelines laid down by the National Authority for Integrating of measures for prevention of disasters and mitigation by the Ministries or Departments in their development plans and projects;
- monitor, coordinate and give directions regarding the mitigation and preparedness measures to be taken by different Ministries or Departments and agencies of the Government;

- evaluate the preparedness at all governmental levels for the purpose of responding to any threatening disaster situation and give directions where necessary for enhancing such preparedness;
- plan and coordinate specialized training programme for disaster management for different levels of officers, employees and voluntary rescue workers;
- coordinate response in the event of any threatening disaster situation or disaster;
- lay down guidelines for, or give directions to, the concerned Ministries or Departments of the Government of India, the State Government and the State Authorities regarding measures to be taken by them in response to any threatening disaster situation or disaster;
- require any department or agency of the Government to make available to the National Authority or State Authorities such men or material resources as are available with it for the purposes of emergency response, rescue and relief;
- advise, assist and coordinate the activities of the Ministries or Departments of the Government of India, State Authorities, statutory bodies, other governmental or non-governmental organizations and others engaged in disaster management;
- provide necessary technical assistance or give advice to the State Authorities and District Authorities for carrying out their functions under this Act;
- promote general education and awareness in relation to disaster management;
- perform such other functions as the National Authority may require it to perform.

4.5 National Plan :-

There shall be drawn a plan for Disaster Management for the whole of the country to be called the National Plan;

The National Plan shall be prepared by the National Executive Committee having regard to the National Policy and in consultation with the State Governments and expert bodies in the field of Disaster Management to be approved by the National Authority;

The National Plan shall include-

- measures to be taken for the prevention of disasters, or the mitigation of their effects;
- measures to be taken for the integration of mitigation measures in the development plans;
- measures to be taken for preparedness and capacity building to effectively respond to any threatening disaster situations or disaster;
- role and responsibilities of different Ministries or Departments of the Government of India in respect of measures specified in clauses (a), (b) and (c).

The National Plan shall be reviewed and updated annually.

Appropriate provisions shall be made by the Central Government for financing the measures to be carried out under the National Plan;

Copies of the National Plan referred to above shall be made available to the Ministries or Departments of the Government of India and such Ministries or Departments (including Railways) shall draw up their own plans in accordance with the National Plan.

Guidelines for minimum standards of relief :

The National Authority shall recommend guidelines for the minimum standards of relief to be provided to persons affected by disaster, which shall include-

- a) the minimum requirements to be provided in the relief camps in addition to shelter, food, drinking water, medical cover and sanitation;
- b) the special provisions to be made for widows and orphans;
- c) ex gratia assistance on account of loss of life as also assistance on account of damage to houses and for restoration of means of livelihood;
- d) such other relief as may be necessary;

Relief in loan repayment, etc.

The National Authority may, in cases of disasters of severe magnitude recommend relief in repayment of loans or for grant of fresh loans to the persons affected by disaster on such concessional terms as may be appropriate;

4.6 Role of the Nodal and other Central Ministries and Departments etc :-

For various types of disasters, the nodal Ministry concerned will chart out detailed Response Plans which will be integrated into the National Response Plan. The NEC may coordinate response in the event of any threatening disaster situation or disaster.

- Role of Central Ministries and Departments

As disaster management is a multi-disciplinary process, the National Policy on Disaster Management lays down that all Central Ministries and Departments will have a key role in the field of disaster management. The nodal Ministries and Departments of Government of India (i.e. the Ministries of Agriculture, Atomic Energy, Civil Aviation, Earth Sciences, Environment and Forests, Home Affairs, Health, Mines, Railways, Space, Water Resources etc.) will continue to address specific disasters as assigned to them.

- Institutional Arrangements of Central Government

- Armed Forces :

Conceptually, the Armed Forces are called upon to assist the civil administration only when the situation is beyond their coping capability. In practice, however, the armed forces form an important part of the Government's response capacity and are immediate responders in all serious disaster situations. On account of their vast potential to meet any adverse challenge, speed of operational response and the resources and capabilities at their disposal, the armed forces have historically played a major role in emergency support functions. These include communication, search and rescue operations, health and medical facilities, and transportation, especially in the immediate aftermath of a disaster. The air and heli-lift and movement of assistance to neighbouring countries primarily fall within the expertise and domain of the armed forces. The armed forces will participate in imparting training to trainers and DM managers, especially in CBRN aspects, heli-insertion, high altitude rescue, watermanship and training of paramedics.

At the national level, the Chief of the Integrated Defence Staff and the Chairman Chiefs of Staff Committee has already been included in the NEC. Similarly, at the State and District levels, the local representatives of the armed forces may be included in their executive committees to ensure closer coordination and cohesion.

➤ Central Para Military Forces :

The Central Paramilitary forces, which are also the armed forces of the Union, play a key role at the time of immediate response to disasters. Besides contributing to the NDRF, they will develop adequate disaster management capability within their own forces and respond to disasters which may occur in the areas where they are posted. The local representatives of the CPMFs may be co-opted/invited in the executive committee at the State level.

➤ State Police Forces and Fire Services :

The State Police forces and the Fire Services are crucial immediate responders to disasters. The police force will be trained and the Fire Services upgraded to acquire multi-hazard rescue capability.

➤ Civil Defence and Home Guards :

The mandate of the Civil Defence and the Home Guards will be redefined to assign a effective role in the field of disaster management. They will be deployed for community preparedness and public awareness. A culture of voluntary reporting to duty stations in the event of any disasters will be promoted.

➤ State Disaster Response Force (SDRF) :

States will be encouraged to create response capabilities from within their existing resources. To start with, each state may aim at equipping and training one battalion equivalent force. They will also include women members for looking after the needs of women and children. NDRF battalions and their training institutions will assist the States/UTs in this effort. The States/UTs will also be encouraged to include DM training in their respective Police Training Colleges and basic and in-service courses, for gazetted and non-gazetted officers.

4.7 Guidelines issued by NDMA and Action thereon

Till the mid 2009, NDMA have already issued guidelines on the Management of Earthquakes, Cyclones, Floods, Medical Preparedness and Mass Casualty Management, Chemical Disasters, Biological Disasters, Nuclear Disasters, Chemical (Terrorism) Disaster, Landslides and Snow Avalanches and Preparation of State Disaster Management Plans etc. These guidelines are available on the NDMA website at <http://ndma.gov.in>. These Guidelines are statutory and mandate all the stake-holders including Railways to take necessary measures for prevention and mitigation of all types of disasters possible on their system and also to have mechanism in place for rescue, relief and restoration, if these happen.

4.8 Guidelines on Chemical Disasters issued by NDMA are very relevant for the Railways, as we transport a number of hazardous chemicals by rail. These guidelines add to safeguards listed in the Red Tariff on handling, storage and transportation of hazardous material. These guidelines are directed more towards their prevention and mitigation of their effects, if these happen, than on rescue and relief operations afterwards.

4.9 Guidelines on Chemical (Terrorism) Disaster call for the railways to strengthen mechanism against chemical terrorism related disasters. Medical and RPF personnel would be required to be given specialized training to handle such a disaster.

4.10 Guidelines on Nuclear and Biological Disasters call for the railways to take stipulated precautions in the transportation of Radio-active substances and Chemical (Biological) items.

4.11 Guidelines on Preparation of State Disaster Management Plans concern the zonal Railways to the extent that co-ordination mechanism between the State Governments and the Railways should be institutionalised for disaster response. The Relief Commissioners in the States may be coordinated for assistance required from the State Governments, district officials as also to involve NGOs. Mutual sharing of each others strengths and facilities has to be institutionalized as a system.

4.12 Guidelines on Management of Earthquakes, Cyclones, and Floods broadly necessitate zonal Railways to survey their existing infrastructure with respect to earthquake, floods and cyclone preparedness based on the vulnerability maps and to take necessary action for making the infrastructure resistant to such disasters. All new construction should henceforth necessarily be disaster resistant.

4.13 Guidelines on Medical Preparedness and Mass Casualty Management envisage train based casualty transport and evacuation system with following highlights:

1. In MCM (Mass Casualty Management), wherever required Railways needs to provide transportation facility for Mass Casualty Evacuation (MCE). Where required, ARMVs or special trains may be run to facilitate relief from the nearest coaching terminal to the disaster site.
2. The railway disaster plan will provide support to the community and local administration during mass casualty emergencies. Assistance through Railways' infrastructure of Hospitals etc has to be provided as and when it is asked for.

Railway Board examined the workability of the NDMA guidelines and held meeting with NDMA officials on 30.4.09. Suggested changes in the guidelines as agreed to by NDMA are now to be suitably incorporated in the HQ and Division Level DM Plans of Zonal Railways. Necessary instructions on the above have been issued vide Board's letter No.2003/Safety (DM)/6/3 Pt dated 21.5.09.

NATIONAL DISASTER RESPONSE FORCE

5.0 General – First and Key Responders :

The role and importance of community, under the leadership of the local authorities, Panchayati Raj Institutions (PRIs) and Urban Local Bodies (ULBs), being the bedrock of the process of disaster response, is well recognized. For their immediate support, there are other important first responders like the police, State Disaster Response Force (SDRFs), Fire and Medical Services. The NDRF will provide specialist response training whenever required. In serious situations, the resources of all NDRF battalions (18 teams per battalion), on an as required basis, will be concentrated in the shortest possible time in the disaster affected areas. Other important responders will be the Civil Defence, Home Guards and youth organizations such as NCC, NSS and NYKS. The deployment of the armed forces will also be organized on as required basis. Establishment/raising of NDRF should progressively reduce deployment of the Armed Forces. However, Armed Forces would be deployed only when the situation is beyond the coping capacity of State Government and NDRF.

5.1 Location, Constitution and Functions

These have been formed under the Disaster Management Act at 8 selected locations in the country for dealing with relief and rescue operations related to all types of disasters. 8 battalions, 2 each from CRPF, CISF, ITBP and BSF have been placed in different parts of the country. DG, Civil Defense under MHA is additionally looking after the work of NDRF at the Centre. Out of these 8 battalions, 4 (1 each from 4 Para-Military forces) to deal with Nuclear, Chemical and Biological (NBC) Disasters and balance 4 will deal with Non-NBC Disasters. Each Battalion has 6 Companies comprising of 3 teams each. Team comprises of 45 men out of which 24 are for Search & Rescue and balance 21 for support functions. Short-listed & trained staff are on deputation in NDRF. Further details are as under:

Details of NDRF organization and 8 battalions are as under:

| S.N. | Name of Officers/Designation and Location of Deployment | STD Code | Tele(O) | Mobile No. | Fax Nos. |
|-----------------|--|----------|----------------------------------|-------------|--------------------------------|
| Hd. Qrs. | Sh.R.K. Bhatia, DG | 011 | 26712851 24101450 | 971771248 | 26715303 |
| | Sh.Sekhar Sundhan, SSO | | 26712944 | 9871464227 | |
| 1 | Commandant, 6 th Bn ITBP Gautam Budh Nagar | 0120 | 2935114 | 9968610011 | 2351087 |
| 2 | Commandant, 27 Bn, ITBP Bhatinda (Pubjab) | 0164 | 2246030 2246570 (Exchange) | -- | 2246570 |
| | Second-in-Command | | 2246758 | | |
| 3 | Commandant, 6 th Bn, CISF Vellore (TN) | 04177 | 246269 246233 | 09442105069 | 246269 |
| 4 | Commandant, 4 th CISF Mundali (Orissa) | 0671 | 2879710 | 09437964571 | 2879710 9937186222 (C/R) |
| | Second-in-Command | | | 09442105169 | |

| | | | | | |
|---|--|-------|----------------------|----------------------------|----------------------|
| 5 | Commandant, 106 Bn, BSF Kolkata(WB) | 033 | 25264394 | 9434742836 | 25264394 |
| | Second-in-Command | | | 09435545951 | |
| 5 | Commandant, 128 BSF Kamrup (Assam) | 0361 | 2841464 | 09435545951 | 2840284 |
| 6 | Second-in-Command | | | 09435545949 | |
| 7 | Commandant, 145 Bn. CRPF Pune(Maharashtra) | 02411 | 231245 231509 | 09423506765 | 231245 |
| | Second-in-Command | | | 09423578446 | |
| 8 | Commandant, 146 Bn CRPF Gandhinagar (Gujarat) | 079 | 23262540 23262547 | 09427304100 09427304218 | 23262587 23262549 |

As per the Disaster Management Act, various ministries and departments under Government of India should join hands for mutual assistance in case of a disaster. Assistance from local government and non-government agencies is invariably required by the railway administration for prompt relief and rescue operation in case of disasters affecting railways and, therefore, assistance of NDRF could be of great help to the railways. The rail infrastructure is not in an island away from the civil areas (of the Districts/States). In most cases of a disaster, other than a train accident, the State Governments as well as the Zonal Railways would, therefore, requisition the NDRF simultaneously (for the same disaster). Coordination amongst the affected agencies (many departments of the Central Government and the States) is very important before the help of NDRF is required.

5.2 Coordination with NDRF

Zonal Railways should get in touch with NDRF offices at the nearby locations to have the first hand knowledge of the resources available with them and also to familiarize them with railway related disaster situations and expose them to the issues relevant to the rescue and relief of passengers during railway accident. It has also been advised to associate NDRF in full scale exercise that is held once every year. There are no charges for availing the services of NDRF except the rail transportation which railways may provide at their cost for attending to rail disasters. Railways may also have to provide rail transportation logistics for transporting NDRF even in case of non-railway exigencies.

The Railway Board had earlier empowered DRMs to directly requisition the relevant NDRF battalion for relief and rescue operations depending on the gravity of situation so that their services could be made available expeditiously without any loss of time. However, in the Cabinet Meeting held on 22nd October 2009, the National Policy on the Disaster Management has been approved. This Policy lays down modalities for the requisitioning of the NDRF as under :-

The general superintendence, direction and control of this force shall be vested in and exercised by the NDMA and the command and supervision of the Force shall vest in an officer to be appointed by the Central Government as the Director General of Civil Defence and National Disaster Response Force. Board's policy directions given to the Zonal Railways that the DRMs can directly approach for requisitioning the services of the NDRF now stand revised. The need for the services of the NDRF shall be communicated in a centralised manner by the Zonal Railways through the NDMA only.

DISASTER MANAGEMENT PLAN OF RAILWAYS – PERIODICAL REVIEW

Disaster Management Plan of Zonal Railways (HQ/Divisional levels)

6.1 Preparation of DM Plans on Zonal Railways

Zonal Railways will prepare Disaster Management Plans at HQ and Divisional Levels as per the provision of Disaster Management Act, 2005 as detailed in the earlier chapters and the DM Plan of the Indian Railway (prepared by Railway Board). These Plans will encompass all types of disasters that can occur on the Railway system. It is reiterated that the High Level Committee on Disaster Management Constituted in 2003 had mainly dealt with the upgradation of Railways relief/rescue facilities to handle train accidents. These are, therefore, only of limited use and relevance in the DM plan now to be framed based on the new concept of a Disaster as given in the DM Act, 2005. The Plans of the Zonal Railways should detail for all types of disasters, the preventive, and mitigation and preparedness measures being taken by the railways and also the rescue, relief and restoration systems in place to meet with them.

NDMA guidelines, instructions issued by the Boards office from time to time and the action plan as framed by the zonal railways will form the backbone of the DM Plans of Zonal Railways. These plans must be dovetailed with the State and District Disaster Management Plans wherever the same have been prepared. Zonal Railways will keep their focus on the developments happening in their local area in the Government, non-govt. and private sector to build on the expertise-based all inclusive approach as envisaged in the Disaster Management Act, 2005.

For ensuring the uniformity and best possible use of the information, the effort needs to be made to broadly format these plans as under:

- **Divisional Disaster Management Plans** will contain division specific information. It will generally contain divisional action plan for dealing with all types of railway disaster. It not be restricted only to detailed inventory of Railway and non-Railway resources as envisaged in High Level Committee's Report on Disaster Management. It should focus mainly on further new developments of sharing of resources with all stake holders. It should also have, thereafter, divisional specific information like road maps, etc. Information common to all divisions of a Zonal Railway may be replicated uniformly in DM Plans of all divisions of the Zonal Railway. Divisional Specific information need not be contained in headquarter DM Plan.
- **Headquarter level Disaster Management Plans** will have information common to all divisions of Zonal Railway. It will generally contain Railway's action plan for dealing with all types of railway disaster. Action items along with their progress will be detailed for all type railway disasters. Contrary to the divisional Plan this will be more centric towards prevention, mitigation and preparedness than rescue and relief. Information like formation of relief and rescue teams at the accident site, Disaster Management Control Management, Duties of various officers/officials etc. in addition to the information specific to headquarter will be contained in this plan. Information common to all divisions of a Zonal Railway may be replicated uniformly in DM Plans of all divisions of Zonal Railway.

6.2 Periodical Review of Disaster Management Plans:

The DM Plans is to be reviewed and updated at least once a year, i.e. January. In the review changes in policy issued by NDMA/NEC and by the Central Governments and Railway Board are to be made. The DM Plans of the State Governments and of the Districts need to be gone into periodically and changes incorporated in the respective DM Plans of Zonal Railways/ Divisions.

6.3 Safety Deptt. - Nodal Deptt for Compilation/Updating of DM Plans:-

Safety department on the Zonal Railways is responsible for compilation of DM Plans at HQ and Divisional Levels which also need to be reviewed in January every year These Plans will also to be hosted on the rail-net server of the zonal railways in an interactive format so that the information can be shared and its retrieval is simpler.

6.4 ISO certification of DM plans:-

ISO 9000 certification is to be obtained initially for HQ and later for the Divisional DM Plans.

CAPACITY BUILDING TO HANDLE DISASTER

7.0 National Disaster Response and Mitigation Funds :

7.1 Disaster Management to be inbuilt in Developmental Plans :

The National Policy on Disaster Management provides for development of the Disaster Management handling capability by each Ministry/Department of the Central Government as also by the State Government. As per the policy, NDMA will ensure mainstreaming of disaster risk reduction in developmental agenda in all existing and new developmental programmes and projects shall incorporate disaster resilient specifications in the design and construction. The Planning Commission will give due weightage to these factors while allocating resources.

7.3 Responsibilities of the Central Ministries and Departments :

The National Policy on Disaster Management lays down that all Central Ministries and Departments will prepare their DM Plans and where funds are being asked for to improve Disaster Management capability including the financial projections to support these plans. The necessary budgetary allocations will be made as part of the Five Year and Annual Plans.

7.3 National Disaster Response and Mitigation Funds :

As per the National Policy on Disaster Management, a National Disaster Response Fund may be constituted as mandated in the Act. The National Response Fund will be applied by the National Executive Committee (NEC) towards meeting the expenses for emergency response, relief and rehabilitation, in accordance with the guidelines laid down by the Central Government in consultation with the NDMA. The proposal of merger of National Calamity Contingency Fund (NCCF) with the National Disaster Response Fund shall be as recommended by the Finance Commission from time to time.

Similarly, as mandated by the Act, the National Disaster Mitigation Fund (NDMF) may be created for projects exclusively for the purpose of mitigation. NDMF shall be applied by the NDMA and shall be as recommended by the Finance Commission from time to time.

7.4 Modernization of Relief/Rescue during Disasters :

The National Policy on Disaster Management provides that all Central Ministries and Departments of the Central Government and of the States will build capacity to handle different types of Disasters based on guidelines issued by the NDMA.

Helicopter based relief rescue missions on par with similar arrangements existing in western world can also be used extensively for Mass Casualty Evacuation and for providing relief where required. For Railways own Disaster situation like a major train accident where the site is not approachable by rail or by other road vehicles this would be the only means of relief. All Zonal Railways may obtain details of Government and Private Helicopter service and the contact numbers of their operators to be contacted in advance. The Disaster Management Plan of the Zonal Railway and the Divisions should make a mention of the helicopter service providers. If these services are not available on one Zonal Railway, they may contact the nearest Zonal Railway where they are available to be called upon in a Disaster situation. The images of the year 2001 of a crash of an intercity train in Germany, killing more than 100 people, show 35 to 40 helicopters landing and taking off near accident site.

We have to have a total paradigm shift in the manner in which serious train accident relief is to be managed in the second decade of the 21st century. A much more radical approach would be gradually need to be introduced that what is existing on date.

Sensitive installations of Railways need to be identified. All Zonal Railways need to define sensitive installations and infrastructure. These should be ones which would cripple the Railways primary objective of transportation. For instance, Control Rooms; Microwave Towers; TF Exchanges; RRI of Jn Stations, Major Bridges, Tunnels of long lengths, Hospitals etc. are very sensitive/vulnerable locations.

7.5 Crowd control and Management of rush at Railway Stations during festivals :

We should prescribe preventive protocols, when laid down footfalls defined separately for important stations become extraordinarily high, as during Melas or other exceptional situations. It may not be out of place to ban all commercial vending and parcel handling on such occasions, supplement exits if possible, and bring more area under illumination.

The car and other vehicle parking facility at a station where a terrorist strike is expected may be discontinued; sale of Platform Tickets can also be banned for short period of time. RPF and GRP personnel deployed on each platform will monitor crowds and rush build up in the circulating areas, booking windows, station platforms and mainly on the FoBs. Special teams of commercial staff will liase with the RPF/GRP and relay 2/4 hourly position to a centralized location viz. commercial control who will advise the need for running of special trains to specified destination to the operating departments control room.

7.6 Terrorist attacks on a freight train carrying inflammables :-

Railways have an excellent liaison with the Oil Companies due to the transport of their commodities viz. Motor Spirit, HSD, Naptha etc. Traditionally we have always made use of their foam extinguishers alongwith the expertise in fire control available with them.

Gradually, Railways may have to develop both the expertise through training in the Railways Rescue, Relief Training Institute being set up at Bangalore; also procure gradually foam type of fire extinguishers in limited numbers.

7.7 Capacity Building to reduce destruction due to earthquakes, floods etc. :-

RDSO has been assigned the task of identifying vulnerable buildings, locations, rail infrastructure including bridges, sensitive location, waterways embankments etc. Based on this, strengthening works would be undertaken by prioritizing essential locations/buildings so as to strengthen Railways infrastructure.

MEDICAL PREPAREDNESS – MCE AND MOBILE RELIEF

8.1 Network of Mobile Medical Infrastructure:

The Indian Railways has an established network system capable of handling train accidents along with emergency medical response and casualty evacuation. The system is based on an infrastructure consisting of 172 Accident Relief medical Vans (ARMV) – Scale I (Unit of accident relief trains situated at an average distance of every 100 kms on main lines and 200 km on branch lines), 325 Accident Relief Medical Equipment (ARME) – Scale II (situated at every 80-100 km on either side of ARMV – Scale I) and consisting of three sets of Portable Medical Kit of Accidents (POMKA). POMKAs are also available at all health units, sub-divisional and divisional/zonal hospitals. Trained manpower of medical and all other departments of the Indian Railways provide first aid, immediate and necessary emergency medical treatment to save the life and limbs of persons involved in train accidents and arrange rapid evacuation to the nearest government/private hospital by the first available means of transport. There is a well-rehearsed action plan to handle railway accidents.

The system is committed to the primary goal of meeting the needs of the Ministry of Railways, though this resource may be available in a limited manner for assistance of the district administration for mass casualty management.

8.2 Responsibility of Stake Holders :

Medical Response :

Medical Response has to be quick and effective. The execution of medical response plans and deployment of medical resources warrant special attention at the State and District level in most of the situations. The voluntary deployment of the nearest medical resources to the disaster site, irrespective of the administrative boundaries, will be emphasized. Mobile medical hospitals and other resources available with the centre will also be provided to the States/UTs in a proactive manner. Post-disaster management of health, sanitation and hygiene services is crucial to prevent an outbreak of epidemics. Therefore a constant monitoring of any such possibilities will be necessary.

The main stakeholders in the Medical Preparedness and Mass Casualty Management (MPMCM) are the Ministry of Health and Family Welfare, Ministry of Labour and Employment, Employees State Insurance Corporation, Ministry of Defence, Ministry of Railways, State Governments and Union Territories and private health care providers.

The NDMA's guidelines on Mass Casualty Management (MCM) have been prepared to provide directions to the Central Ministries, Departments and State Authorities for the preparation of their detailed Medical Preparedness Plans. These guidelines call for a proactive, participatory, well-structured, fail-safe, multidisciplinary and multi-sectoral approach at various levels.

Each organization of the Government may be made aware of risks, vulnerabilities and effects of various natural and man-made disasters including peripheral emergencies in terms of mortality and morbidity; short and long-term health effects including the socio-economic problems faced by the

community during, and in the aftermath of MCE. The need for creation of an institutional mechanism and system is essential. This would result in enhancing capacities and capabilities of hospital and health care workers. So also is the need for strengthening existing procedures that allow emergent activities to meet the challenge of surge capacity because of mass casualty events. The different mass casualty events and other potential disasters including Chemical, Biological, Radiological and Nuclear (CBRN) emergencies which may lead to Mass Casualty Evacuation are to be made aware of to the Medical Management of the concerned departments which have their own medical establishments; Railways falls within the ambit of this item; this can be achieved only through specialized training initially to a few select Doctors in each Divisional Hospital (and the Zonal Hospitals).

A review of the existing health framework, preparedness of the Ministry of Health and Family Welfare, Ministry of Defence, Ministry of Railways and Ministry of Labour and Employment in relation to their capacity for handling casualties caused by various disasters is to be done so as to share each others strengths and capabilities. Ministry of Health and Family Welfare is assigned with legislative capacity for a number of subjects including all matters relating to the medical, dental, nursing and pharmacy professions and education; mental health; standards for drugs; prevention of food adulteration; and prevention and control of epidemics.

Medical preparedness of Ministry of Defence, Ministry of Railways and ESIC have also elaborated in the NDMA's guidelines. A brief outline of the arrangements with the state health departments is enumerated; there is also a bird's eye view of the health care infrastructure of the private sector, Indian Red Cross Society, certain Non-Governmental Organisations and various laboratories. Among the various International initiatives, the role of the recently operationalised International Health Regulations in limiting the spread of epidemics and other public health emergencies by the Member States has been highlighted in the guidelines.

Medical preparedness aims at preventive and mitigation measures. Preventive measures include upgrading public health laboratories and establishing an integrated Disease Surveillance Programme (IDSP). Preparedness for Emergency Medical Response (EMR) for the management of mass casualties at the incident site and, their quick and safe evacuation by ambulance services is an important step in this direction. Inadequacy and lack of appropriate capabilities and capacities in existing medical arrangements have to be appreciated. The need for hospital disaster preparedness plans alongwith the non-availability of medical logistics in critical care have been highlighted by NDMA in their guidelines which need to be followed up. The cold chain system in blood transfusion services needs to be established all across the country. The requirement of specialised facilities for CBRN management has also been highlighted by NDMA.

NDMA's guidelines are comprehensively given for a legislative and regulatory framework, preventive measures, preparedness, capacity development, hospital preparedness, specialised health care and laboratory facilities, role of alternative systems of medicine and identification of the dead, psychosocial care and mental health services and Research and Development for MPMCM. The roles and responsibilities of various stakeholders at the centre state and district levels are also described. The salient highlights in the guidelines include :

- Preventive measures like strengthening of epidemic control programmes, immunisation, HIV control etc., development of minimum standards of food and water; IDSP and its integration at all levels converged to develop an effective Early Warning System (EWS) operable at all levels.

- The Medical First Responders (MFRs) of mobile medical teams will be fully trained in triage and resuscitation; well-equipped and supported by all emergency services and material logistics.
- Emergency medical evacuation requires development of an Integrated Ambulance Network (IAN) including road, aerial and water ambulance networks integrated with special trains for MCE and not only self-propelled Accident Relief medical Vans (SP-ARMVs) of the railways as mentioned in the guidelines. As the evacuation of large number of casualties cannot be done by and ARME (or SP-ARMEs) the Railways have adopted the concept of mobilization of special train for MCE when required. It will work in conjunction with Emergency Response Centres (ERCs), ESIC medical services and related emergency functionaries with laid down Standard Operative Procedures (SOPs) for all stakeholders.
- Full-fledged containerised mobile hospitals will be acquired and attached with hospitals earmarked by states/districts.
- Capacity development will include training of all stakeholders including doctors, nurses, paramedics and other resource persons in triage and Basic Life Support (BLS), and development of specialists.
- Hospital preparedness should aim at planning the use of hospital resources in a well coordinated and simple way with defined roles for all medical personnel. Such activities will be drafted in the hospital DM plan which will be a part of the Zonal/Divisional DM plan. The plan will be rehearsed twice a year using mock drills.

NDMA's guidelines include items related to response, rehabilitation and recovery, PPP, post-disaster documentation, media management and important medical management aspects which need to be integrated into the district DM plans. The major guideline include :

- Mock drills will be based on the simulation of worst scenario in the identified vulnerable areas to check the preparedness level of the MFRs.

A specific reference in NDMA's guidelines include item for medical preparedness for handling CBRN emergencies besides the basic aspects of medical preparedness. It covers the following areas :

- Specific education and skill based training of MFRs and necessary community awareness about various Dos and Don'ts to deal with CBRN incidences in a participative approach.
- SOPs for CBRN management at the incident site, triage, personal protection, decontamination, resuscitation, and casualty evacuation followed by management of victims at the hospital level.
- The necessary resource inventory in terms of Personal Protective Equipment (PPE), various detectors, decontamination and decorporation agents, antidotes, essential medicines, specialised mobile laboratories and ambulances fitted with CBRN filters. Special CBRN stores and necessary laboratory facilities will be established at various levels.

8.3 Use of Medical Vans/Special Trains by Railways :

- The infrastructure of ARMVs available with the Railways has been over rated in the NDMAs Guidelines. There are a number of constraints both in the movement of the ARMVs as also in the space available for MCE. Bulk evacuation of 50 casualties or more by the ARMV would not be possible with the present design of the ARMV. It is not desirable to increase the size of the ARMV as it would then become further away from the site creating difficulty in the evacuation of injured. The ARMVs would continue to be useful for evacuation of a small number of injured.

- The paras mentioned in Item 4.3.2 in NDMA's Guidelines on Medical Preparedness and MCE under the heading of "Transportation and Evacuation of Casualties", subject Item IX, page 35, Item (a) to (g), needs to be adopted keeping in view that the ARMVs would not be able to evacuate the casualties in large numbers as mentioned in the Guidelines. Along with mass evacuation of casualties there may be a need in some cases of disasters for large scale evacuation of fit humans. The ARMV is too small to cater to this need.

We have two coaches in the ARME; one of the coaches is mainly used for stocking cold cutting equipment, jacks etc. The other coach provides elementary level hospital facilities for a limited no. of injured persons. A portion of one coach is for accommodation of Railway Staff, Paramedical staff and Doctors etc. Any increase in capacity of the ARME to take care of enhanced need of evacuation of a large no. of chemical casualties will require much more equipment(including PPE) , more space in the ARME along with a heavy component of trained man power to look after CBRN casualties.

As an alternative the Zonal Railways have to arrange special trains consisting of AC and/or non-AC coaches to run from the nearest coaching terminal to the site for evacuation especially for large scale casualties. Railway and non-Railway Medical Teams may be deployed in these special trains along with a portable kit of medicines etc. (POMKA) to attend to the injured during the process of evacuation. In these special trains casualties even in hundreds can be evacuated; the medical attention, however, would be limited vis-à-vis what can be provided in the ARMVs.

In case there are more than one closely located affected areas, on different rail routes even 3 or more special trains can be run, each to cater to a respective area. This cannot be done by ARME's as these are few in nos.

Each different type of casualty requires a specialized training to handle it. The Railway Medical Department neither has the training nor can they digress from their principle function of providing medical care to the railway men and their families including to ret'd. staff/families. During a Chemical Disaster, as the public areas are far away from station premises it may not be possible to run the ARME or a special train to the location close to the site. In some situations due to effect of Chemical Gases (as was the case in Bhopal Gas tragedy of Union Carbide) even the Loco Pilot/Guard and the Medical Teams may not find it possible to reach the site in the immediate period of post-Disaster.

Railways is not expected to be a main stake holder in the DM Plan of CBRN disasters. They can at best be involved in the evacuation of casualties by a special train (A/c and non A/c coaches) from the nearest station closer to site to a station serving Hospital, nearby. Skeleton First Aid facility can be extended by the Railways Medical Team in this special train. In any case it would take a maximum of 5/6 hours for the special train to evacuate the casualties once it reaches near the site to reach the station serving the Hospital.

8.4 In the NDMA's Guidelines on Medical Preparedness and MCE, under the head of Medical Preparedness (Page 31) in Item 3.3.3 (i) a no. of duties are defined to be done by the Medical First Responder (MFR). It is specifically mentioned that adequate no. of Personnel, Protection Equipment (PPE) should be available with the mobile teams, various first responders and rescue services. Further, in item (ii) (b), it is mentioned for evacuation of CBRN victims the use of Rail Ambulances is currently non-existent.

As the different MFR's are neither defined nor separately listed in the NDMA's guidelines, it is clarified that the Railways are not to be treated as MFR. NDMA has clarified in a review meeting held with Railway Ministry representatives that the MFR would be NDRF and along with trained personnel of State Governments and District Administration. This may be specifically clarified in the Zonal and Divisional DM Plans as to who is considered as MFR.

MEDICAL PREPAREDNESS IN HOSPITALS
HOSPITAL DISASTER MANAGEMENT PLAN

9.1 Aim of Hospital Disaster Management Plan:

The aim of a Hospital Disaster Management Plan is to provide prompt and effective medical care to the maximum possible, in order to minimize morbidity and mortality resulting from any MCE.

9.2 Hospital DM Plan:

There shall be Hospital Disaster Management Plan for each Railway Hospital of Indian Railways which will be prepared by CMS/MD of the Divisional/ Zonal/ Workshop Hospital of the Zonal Railway. This shall be based on the NDMA Guidelines on Medical Preparedness and Mass Casualty Management (Annex. I page 104 of NDMA Guidelines) referring to “Important Considerations for Developing the Hospital Disaster Management Plan”.

The Hospital DM Plan should incorporate relevant items given in the DM Plan of the Railways. It should be clarified that:-

“The Hospital DM Plan comes into effect only if the competent authority so authorized declares on the Zonal Railways an incident as a disaster. It can also come into effect if any Central/ State Govt. agency declares a major incident a Disaster, and where the Medical facility of the Railways shall be required to give assistance.”

9.3 Objective and Goals of a Hospital Disaster Management Plan:

The hospital disaster management plans should address not only mass casualties that has occurred away from the hospital, but should also address a situation where the hospital itself has been affected by a disaster – fire, explosion, flooding or earthquake.

The role of the Railway Hospital will be of a general hospital only. After assessment of the hospital resources, treatment capacity and surgical capacity (refer Annex-1 of Chap 4, Page 105 of NDMA Guidelines on Medical Preparedness and Mass Casualty Management), its Hospital Disaster Management Plan should be available to the Divisional /Zonal Railway Administration and also to the district administration.

9.4 Disaster Drills :

As a part of the emergency management plan, every hospital is required to have structure in place to respond to emergencies, this structure is routinely tested during drills.

Continuous revisions should be made in the hospital disaster management plan taking leads from the regular disaster drills in the hospitals. In these drills it should be tested if the Hospital is equipped to respond effectively to the disposal of a large no. of dead etc i.e, role of mortuary services and forensic departments

Hospital Disaster Management Plan should be tested once a year by mock drills for updation.

9.5 Training of Health Care Personnel of Indian Railways:

It is desired by the National Plan that the Railways should train their Doctors in the treatment of specific injury from CBRN disasters as also keep medicines, the vaccines, equipments and disposables etc for the same in their hospitals. Railways may alternatively get the Training for Trainers of Medical department so that this could be proliferated to other Doctors and other Para Medical Personnel on all Indian Railways in nominated Railway Training Institute/s.

ROLE OF SECURITY DEPARTMENT IN DISASTER MANAGEMENT

The security on Indian Railways is being managed by 3 agencies – District Police, Government Railway Police and Railway Protection Force. The District Police and the Government Railway Police function under administrative control of respective State Government and their role is prevention and detection of crime [except those covered by the Railway Act and the Railway Property (Unlawful Possession) Act] and tackling of law and order problems. Due to this coordination amongst the different agencies is very essential to effectively tackle a Disaster situation.

Railway Protection Force is an ‘Armed Force of the Union’ constituted by an Act of Parliament, the Railway Protection Force Act 1957, for the protection and security of railway property, passenger area & passengers and for matters connected therewith.

10.2 Role of RPF in Disasters :-

In case of any disaster especially serious train accidents, fire incidents, explosion in trains or on railway premises, terrorist acts, hijacking of train etc. RPF has to play lead role in coordination with other Departments of Indian Railways and various agencies of State and Central Government.

In cases of CBRN Disasters, or a natural calamity, RPF has to provide support services in rescue, rehabilitation and mitigation efforts.

RPF has a major role in crowd control and arranging fire fighting infrastructure by coordinating with the State Governments/District Administration. The deployment of the RPF may be done on need basis to provide relief, rescue and rehabilitation consequent to a Terrorism Disaster. The Dog Squad may need to be deployed even for preventive checks on terrorist strikes.

10.3 Current Preparedness :-

As per guidelines of the High Level Committee, Disaster Management Team of 15 RPF personnel has been constituted on each Division of Indian Railways. The team is equipped with following equipment:

- i. Torches and other lighting arrangements.
- ii. Nylon ropes and poles for segregating the affected areas from unwanted visitors and spectators.
- iii. Loud-hailer for making announcement.
- iv. Stretchers and first aid equipment.
- v. Wireless sets for inter-communication.
- vi. Cameras for photography of clues.
- vii. Luminous jackets.

Members of this team have been trained in providing the basic level support in crowd control and functional support in case of Disasters. RPF staff will ensure safe custody and disposal of the luggage of passengers affected by train accidents in coordination with commercial staff as recommended by the High Level Committee.

Coordination with State Police and civil authorities is ensured at the divisional and zonal level by concerned RPF officials. Regarding clearance from State police in case of railway accidents due to suspected sabotage, on a reference made by the DG/RPF, the Ministry of Home Affairs has directed Home Secretaries of the State for taking necessary action. This letter of the Ministry of Home Affairs has already been circulated to all the General Managers vide letter No. 2002/Sec(Cr.)/45/47 dated March 27, 2003 of the Security Directorate.

To ensure availability of maximum possible RPF personnel in case of disaster/serious train accidents, off duty RPF personnel are to be called on duty in such situations.

In liaison with, the National Disaster Management Authority (NDMA), 'training for trainers' has been organized so as to develop in house expertise on training. 30 categories of security equipment has been identified as required by RPF to upgrade their effectiveness. These need to be gradually procured.

10.4 Integrated Security Scheme :-

An Integrated Security Scheme has been sanctioned for installation at 195 stations of Indian Railways. The system envisages multi-layered surveillance of vehicles, luggage and passengers in station premises. The system comprises of following broad categories:

- Internet Protocol based CCTV surveillance system with intelligence video analytics.
- Access control,
- Personal and baggage screening system,
- Bomb Detection and Disposal System

Installation at 195 major stations is planned to be completed by the end of 2010.

10.5 Crowd Control and Management:-

For effectiveness in this, RPF, GRP and District Police have to act in a synchronized manner in consultation with magisterial authorities. Chapter 10 (Maintenance of Public Order and Tranquility) of the Criminal Procedure Code (Cr.P.C.) Part-A deals with 'Unlawful Assemblies'. Legal procedures are outlined in Sections 129 to 132 of the Cr.P.C. for dealing with Unlawful Assemblies. These provisions empower Members and Officers of Armed Forces (RPF is an Armed Force of the Union) to deal with Unlawful Assemblies.

One of the intelligent video analytics to be incorporated in the Integrated Security System is related to signal for crowd density within station premises when it exceeds the prescribed limit. This will enable RPF personnel and railway authorities to get timely information when heavy crowd builds up within station premises and plan follow-up action. Pictures stored on CCTV system will be of immense help in identifying miscreants and in ensuring effective legal action.

10.6 Explosion in trains and railway premises :-

One of the key components of the Integrated Security System is explosive detection and disposal. It provides for effective detection and disposal capability with RPF. Explosive detection and disposal, being a highly skilled and challenging job, requires Bomb Detection and Disposal

Squad comprising of personnel. Such RPF personnel have been identified on each zonal railway and they are being trained in phased manner by the National Security Guard (NSG). Preventive measures to be taken in such situation have been separately circulated vide Security Directorate Secret letter No.2003/Sec(Spl.)200/14 dated 16.01.2008.

10.7 Terrorist acts & Hijacking of trains:-

Procedures have been outlined in the Crisis Management Plans of the Government of India, of the Ministry of Home Affairs and of the Ministry of Railways to tackle such situations. Above mentioned secret documents are available with concerned Authorities and action has to be ensured in accordance with the provisions mentioned in the above mentioned plans.

Ministry of Home Affairs is the Central Nodal Ministry to tackle hostage or terrorist situations requiring specialized handling. National Security Guard (NSG) has to be requisitioned in such situations. Crisis Management Plan of the Ministry of Railways envisages management of such crisis by the National Crisis Management Committee (NCMC) and Crisis Management Group (CMG) at the Railway Board level and by the zonal management group at the zonal level.

Coordinated efforts have to be ensured by all security agencies present at the spot. Senior most official available at the spot shall handle situations in accordance with conditions of the crisis at local level and instructions received from concerned Crisis Management Groups at Zonal and National levels. Quick Reaction Teams (QRTs) of RPF personnel should be available round the clock at bigger stations which will be of immense help to tackle such situations during initial phases specially in cases of terrorist attacks.

DISASTER COMMUNICATION SYSTEM

11.1 Communication on Railways for Disaster Management

A comprehensive Communication System on the Railways to encompass all requirements of the Railways Disaster Management is required to be set up. Railways have their own extensive communication systems which would be used for Disaster Management too. However, we need to have back-ups especially to ensure 100% communication availability in case of any type of man made or natural disasters. Sharing of OFC network, where required with others may be ensured by tie ups in advance. This will be also inter-linked with the communication system with outside agencies of the concerned Central and State Governments, IMD etc.

Preparatory work may be done for quick installation of communication system (satellite system) between Railway control set up for flood and affected locations/station. This can even be on make shift raft, boat etc. Similar arrangements can also be made in earthquake affected areas.

There should be a provision for Telecommunication with Relief Camps as and when and where these are set up.

11.2 Communication between stake holders

Under the Head of the item of Infrastructural Development (Item 3.3.2) under the Sub-Head “Networking and Communication” NDMA’s Guidelines on Chemical (Terrorism Disaster provide) in item (iii) and in (iii) (c) page 30 that “Effective Communication and Networking (Human and Functional) between various stake-holders and sensitive organizations is currently inadequate and needs to be established with the Security Agencies (CISF, Police etc.) manning sensitive locations like Railway stations.”

In item iii (e) page 30, it is further laid down that dedicated communication system is to be established for Rail Transportation to monitor movement of Toxic Chemical Agents. A mechanism is to be developed like a Geographic Information system (GIS) for continuous monitoring of such Transport Vehicles along their route. This may require to be dove-tailed with the FOIS network of the Railways, once the TMS/FOIS is extended for booking (preparation of RRs) and movement of chemical items in wagons to be included in FOIS.

11.3 Back up Communication on Railways :

To handle any disaster by the Railways and to utilize its resources efficiently, Communication is an essential requirement. Where required, back up (alternatives) should be adequately available.

In chapter 2 of the DM Plan of the Railways (in item 2.2) one of the strengths of the Railways to handle a disaster is its own communication network. In handling a crises or a disaster, reliability of communication has to be cent per cent.

At the Divisional level, the control rooms have to communicate with the stations, the telephone exchange have to function and the OFC and Quad cable network has to have reliable back ups to be able to be effective. The reach of reliable communication network has to be extended to cover even the Meter and Narrow gauge sections.

Where there is no back up of the Railways owned OFC network, an arrangement of sharing with Government/Non Government organization and other service providers has to be planned in advance. Or else, the alternative of satellite communication be resorted to. However, the speed of reconnecting a failed communication by which ever means is of essence.

Further to provide better communication facilities during disaster, it is necessary that either the Railnet a intranet network of IR is extended to every railway station of Indian Railways. Alternatively other means of communication is provided on all the stations. This will ensure quick setup of voice, video and data transmission facility at stations during any eventuality since IR's own V-Sat Hub is now established at Thomson Road, New Delhi, voice/data/video communication facilities from this centre to different railways and divisions need to be planned and catered to.

11.4 Modernization of Communication on the Railways through Satellite :

Feasibility of satellite based updating of trains status as well as field imagery relating to the disaster site needs to be examined.

Instead of relying on GPS/GSMR which support mobile telephony and which have uneven signal strength in various regions dependent on the revenue earning models followed by the Service Providers, a more reliable system based on up linking with ISRO 3C satellite may be examined.

We can have the train status to be fed directly into a central server for direct dissemination on station display systems. However, a better arrangement would be that this information is fed through the FOIS back bone to the divisional servers supporting COA, and should be sent to the stations only through the NTES after being verified and cross matched with the referential data stored therein, purely as a validation exercise. This will take care of the updating of status of trains being regulated on the affected route and adjacent routes.

As far as actual accident sites are concerned, it needs to be examined if we can have a standing arrangement with ISRO that they would deploy one of their own satellite or get into a hospitality arrangement with any of the satellite of any country with which ISRO are already having special arrangements, for continuous updating of imagery every 45 minutes or so, taking into account the orbit frequency of any such satellite.

11.5 Incident Command System (ICS) :

The National Policy on Disaster Management lays down guidelines for a chain of command in a structured unit to handle various types of Disasters as under :-

A traditional command structure exists in the administrative hierarchy which manages disasters in India. It has been planned to strengthen and professionalize the same by drawing upon the principles of the ICS with suitable modifications. The ICS is essentially a management system to organize various emergency functions in a standardized manner while responding to any disaster. It will provide for specialist incident management teams with an incident commander and officers trained in different aspects of incident management, such as logistics, operations planning, safety, media management, etc. It also aims to put in place such teams in each district by imparting training in different facets of incident management to district level functionaries. The emphasis will be on the use of technologies and contemporary systems of planning and execution with connectivity to the joint operations room at all levels.

The Railways have their own ICS as they have had to deal with crises like situations and mini-disasters in the day to day operational working and especially with handling of train accidents. With the setting up of the Rescue Centric Training Institute at Bangalore, the ICS structure will get streamlined.

11.6 Coordination – Integrated Command System of Railways with Integrated Operations Centre of MHA :-

Traditionally the Control Room in each Division monitors on a “Real Time” basis the train operations. This Control Room is manned round the clock and has representatives of all the departments concerned with train operations as also with abnormalities which may affect train running. The “Command and Control” of the Divisions Control Room is with the operating department who plan, execute and monitor the running of trains (both freight and coaching trains). The assistance of a number of departments, viz. Mechanical (Power), Electrical (Power and OHE Traction Distribution), Mechanical (Carriage and Wagon), Civil Engineering (track maintenance and monitoring), Commercial (passenger information interface), Signal and Telecom (through a ‘Test Room’), Security (RPF) etc is given round the clock in the Operations Control Room.

This control room of the affected divisions on the Railways will act as the “Incident Command System” (ICS) to monitor information of the Disaster and to coordinate the organization of various emergency functions, (rescue, relief, mitigation etc) in the disaster areas.

The ICS of the Divisions will coordinate with the “Zonal ICS” where a similar control room exists, called the Emergency Control in the Headquarters of each Zonal Railway. The “Zonal ICS” will establish liaison with the IOC of the MHA right from the stage of receipt and issue of “Orange or Red Alerts” and also for providing/requesting help in relief/rescue/mitigation to other departments (or State Government) or from them respectively.

The Zonal ICS will constantly update the position periodically to Railway Board.

DISASTER INFORMATION FLOWS AND ALERTS OF DISASTER

12.1 Standard Operating Procedures (SOPs) :

The Ministry of Home Affairs (MHA), as the nodal Ministry is responsible for coordinating response and relief efforts with various Ministries/Departments of the Government of India, State Governments and District Authorities. They have prepared the Standard Operating Procedures (SOPs) for handling man made disasters (for eq. Terrorism related disasters) for which they are earmarked as the lead Ministry for disaster response, relief and mitigation.

All Central Ministries, State Governments, District Authorities and other stakeholders will prepare SOPs in consonance with the National and State Plans. The SOPs will be prescribed for activities like search and rescue, medical assistance and casualty management, evacuation, restoration of essential services and communication at disaster sites, etc. the other important activities are provision of food, drinking water, sanitation, clothing and management of relief camps. Detailed SOPs will also be devised by all concerned for dispatch, receipt and deployment of central resources.

12.2 Levels of Disasters :

The Standard Operating Procedures (SOPs) will determine the levels of disasters and for issuing alerts to electronic messaging systems to various agencies about disasters have been formulated by Ministry of Home Affairs. These SOPs will be reviewed periodically for disaster response management in case of natural and man-made disasters.

12.3 Integrated Operation Centre of MHA : Integrated Operation Centre (IOC) has been set up in the Ministry of Home Affairs to handle disaster situations on a 24X7 basis. IOC is responsible for initiating incident alert messages when a disaster is likely to occur or when it has actually taken place.

12.4 Categorization of Alerts :

A Standard Operating Procedure has been prepared for alerts of events of different types and identifies the situations when alerts are to be sent by the IOC.

Specific hazards have different categories of alerts. Accordingly, a uniform system has been devised by categorizing each type of alert in stages – **Yellow, Orange and Red.**

12.5 Action Plan for Communication of Alert Messages :

Whenever a crisis is about to be faced, Government of India has laid down systems for warning its respective departments through an 'Alert'. It should be understood that mere issue of an 'Alert' (Yellow or Orange) is not an indication of the occurrence of a Disaster. This only signifies the existence of a crisis for which provisions of the Crisis Management Plan would come into operation.

The Action Plan for Alert Messages lays down as under :

- (i) All concerned Ministries/Departments/Organisations/Agencies will report events to IOC, MHA.

- (ii) While generating and transmitting alerts to IOC, MHA, the concerned agency, will indicate the category of the event as well as its corresponding stage (Red/Orange/Yellow).
- (iii) For natural calamities and other crisis situations categorization of Alerts is as under :-

(a) AVALANCHES (Defence Research & Development Organisation)

| Category | Description | Stage |
|-----------------|--|--------------|
| Low | Generally favourable condition. Triggering is generally possible only with high additional loads and on very few extreme slopes. Only sluffs possible and reach valley in small sizes. Valley movement is safe. Movement on slopes with care. | Yellow |
| Medium | Partly un-favourable condition. Triggering is possible on most avalanche prone slopes with low additional loads and may reach the valley in medium size. Movement on slopes with extreme care. Valley movements with caution. Avoid steep slopes. Routes should be selected with care. | Yellow |
| High | Unfavourable condition. Triggering possible from all avalanche prone slopes even with low additional loads and reach the valley in large size. Suspend all movements. Airborne avalanches likely. | Orange |
| All round | Very unfavourable condition. Numerous large avalanches are likely from all possible avalanche slopes even on moderately steep terrain. Suspend all movements. Airborne avalanches likely. | Red |

(b) TSUNAMI (Department of Ocean Development)

| Category | Description | Stage |
|------------------------|--|--------------|
| No Yellow Stage | | |
| Moderate | When an earthquake of greater than 6.0 is reported and/or a Tsunami watch alert is received from JMA/PTWC. | Orange |
| Great | When change in water level after an earthquake is reported by National Institute of Ocean Technology, ITWC would issue a Tsunami Warning * as per laid down channels. | Red |

* The warning may be withdrawn after a better assessment of the level of rise in water level.

(c) **LANDSLIDES(Geological Survey of India)**

| Category | Description | Stage |
|-----------------|---|--------------|
| IV | Landslides of small dimensions that occur away from habitations and do not affect either humans or their possessions. These may occur near infrastructural installations, agricultural and forestlands and may not affect them in a significant manner. These slides may include small incidents that block communication routes for short periods or do not affect the society in a significant manner. | Yellow |
| III | Landslides which are fairly large and affect infrastructural installations like strategic and important highways and roads rail routes and other civil installations like various appurtenant structures of hydroelectric and irrigation projects. The landslides that enter large water bodies like reservoirs of hydroelectric projects and could damage some of components of these projects. | Orange |
| II | The landslides that may occur on the fringes of inhabited areas and result in limited loss of life and property. Landslides, which result in blockade of courses of relatively smaller natural drainages. If the blockade is of relatively smaller dimensions its impact would be of a lower order. Although a threat potential is there, it may not be immediate. | Orange |
| I | Landslides of large dimensions that are located over or in close vicinity of inhabited areas like urban settlements or fairly large rural settlements. Activity on these slides can result in loss of human lives, dwellings on large scale. These slides may also inflict heavy losses on urban infrastructure. The slides that block busy pilgrimage routes during peak times resulting in hardships to thousands of pilgrims and some times resulting in loss of human life. Landslides which result in blockade of courses of relatively large natural drainages. If the blockade is fairly large it could lead to formation of a very large reservoir of water behind it. Formation of a large landslide dam could result in sudden flooding of areas located upstream. Abrupt breaching of landslide dam would suddenly release enormous quantities of water in the downstream areas leading to flash floods that could result in loss of life and damage to property on large scale. | Red |

(d) **CYCLONE (India Meteorological Department)**

| Category | Description | Stage |
|------------------------|---|--------------|
| Cyclone Alert | Issued 48 hrs. before the commencement of bad weather when a system is located about 500 km or more away from the coast. The forecast may not contain information about landfall and hence it is still of informatory type but at the same time meant to trigger preparatory actions. During this stage, Disaster Managers plans on the course of action required to be initiated once the system moves closer to the coast. | Yellow |
| Cyclone Warning | These messages are issued 24 hours before commencement of bad weather and are of a “serious nature” . During this stage the system is monitored closely and the expected place & time of landfall and the districts along the coastal areas likely to be affected are clearly indicated in the warning messages. The location of the system at this stage may still be 300 km – 500 km away from the coast. Disaster Management Machinery is expected to be geared up fully during this phase. | Orange |
| Post landfall outlook: | <p>During this phase warning messages are issued about 12 hours before actual landfall and are of a “very serious nature”. At this stage, it is expected that the Disaster Management machinery is in full operational mode to face the impending disaster. All preparedness action should have been completed by this time. MHA would be closely monitoring steps taken by the concerned State Governments regarding evacuation and relief activities like food, sanitation etc.</p> <p>This phase is fit to be classified as “Great Danger” and all warning messages issued to MHA Control Room are required to be forwarded to senior officials of the PMO.</p> | Red |

(e) **EARTHQUAKE (India Meteorological Department)**

| Category | Description | Stage |
|-----------------|-----------------------|--------------|
| Slight | $M \leq 5.0$ | Yellow |
| Moderate | $5.0 \leq M \leq 6.9$ | Orange |
| Great | $M \geq 7.0$ | Red |

(f) **FLOOD (Central Water Commission)**

| Category | Description | Stage |
|-----------------|--|--------------|
| IV | Low Flood (Water level between Warning Level and Danger Level) | Yellow |
| III | Moderate Flood (Water level below 0.50m, less than HFL and above Danger Level) | Yellow |
| II | High Flood (Water level less than Highest Flood Level but still within 0.50m of the HFL) | Orange |
| I | Unprecedented Flood (Water level equal and above Highest Flood Level (HFL)) | Red |

(g) **RAILWAYS (Ministry of Railways)**

| Category | Description | Stage |
|-----------------|---|--------------|
| Minor | 50 or more casualties (inclusive of death and injuries) | Yellow |
| Medium | 51-99 deaths. | Orange |
| Major | 100 or more deaths, or where additional assistance is sought by the Ministry of Railways. | Red |

(h) **FOREST FIRE (Ministry of Environment & Forests)**

| Category | Description | Stage |
|-----------------|---|--------------|
| Ordinary Fire | Localised fires which can be controlled by the concerned territorial Conservator of Forests. | Yellow |
| Medium Fire | Where large forest area is under fire, which can be controlled by the State Government and no Central intervention is sought by the State Government. | Orange |
| Major Fire | Large fire, which may result in substantial loss of human lives, massive environmental degradation or loss of wildlife. | Red |

12.6 Action on Division/Zones on Orange/Red Alert :

On the issue of an Orange Alert (or of a higher level) the Responders have to be activated as required for relief etc as under :-

- Mobilisation of Gangmen
- Hospitals to mobilize Doctors and Para-medical staff
- Civil Defence units to be activated

- RPF and RPSF deployment
- Scouts and Guides for colony care and passenger guidance
- Operation and manning of the disaster control room
- Coordination amongst various stake holders through advance warnings
- Communication system to be ensured and back ups to be in readiness for immediate use when required.
- TA Units Deployment; In case the existing railway staff may not be able to maintain train services to be operational, the TA units have to be mobilized. It takes 2-3 days for the deployment of the TA unit after issue of their mobilization order; hence advance warning is of essence.

12.7 Monitoring/Reporting of Effects of Disaster :

The Safety Dte. in the Board would be given information regarding Orange/Red Alerts. On the declaration of an incident as a Disaster by a State Government or District Administrator or even by the GM/AGM of the Zonal Railway, the CSO would give time to time updates to the Safety Control in Railway Board of the Situation. Assistance of other departments would be made available by the GM to the Safety Department on the zonal Railways.

12.8 Standard Operating Procedure (SOP) on Railways :

National Disasters :-

The Civil Engineering Department at the field level and on the Divisions gets information through advance warning sent by the respective Government Departments on the possibility of Floods, Cyclones, Earthquakes, Landslides etc. Depending on the gravity of the disaster/crises/calamity expected the information would be passed on to the Divisional officers through the Emergency Control which will act as the ICS. Where train operations have to be suspended or regulated the operating departments would be suitably advised. After making the train regulation plan the divisional control would advise the commercial and security departments for management of the welfare of passengers. Alerts to the passengers would be issued through the PR Department of the Railway in the Print and Electronic Media.

The DRMs on the divisions shall ensure coordination amongst the departments for ensuring running of train services (including relief special trains) as also relief arrangements for the passengers and for the Welfare of Railways own staff. Assistance of other Divisions and from the Zonal Railways would be taken through the Headquarter of the Zonal Railways (i.e. by involving the General Manager). Coordination with the IOC of MHA and NDMA/NDRF would be through the Emergency Control of each zonal Headquarter.

Man-made Disasters :-

Different forms of terrorism fall under the ambit of these disasters. A major role has to be played by the Security Department of the Railways who will coordinate with the State Governments and when required the Para-military and other forces. The Security Control of the division will act as the ICS. The Headquarter Security Control will coordinate with the IOC of MHA.

A similar system would be followed as above in organizing regulation of train services by the operating department at the divisional, zonal level and also in the Railway Board.

CRISIS MANAGEMENT PLAN – CMP

13.1 Difference between a Crisis and Disaster :-

A Crisis indicates either an impending calamity, or the occurrence of an incident which would adversely affect the society and human population.

A Disaster is a much bigger occurrence of an event which would cause large scale devastation, damage to property and loss of human life etc.

While a Crisis may or may not turn into a Disaster, the opposite is normally true, but with the condition the crises situation is more in the initial stages.

13.2 Crisis - Types :-

There can be broadly 4 types of crisis situation which the Ministry of Railways may be confronted with:-

(a) National level crisis developed in the Railways and is specific to railways, which is to be managed with the help and assistance of other Ministries. All India Railway Strike is only such crisis identified in the CMP 2007 for which Ministry of Railways is the nodal ministry.

(b) National level crisis affects the country including Railways and different ministries/departments have to help and assist each other based on their strengths. Cyclone, Earthquake etc. can be such crisis where railways have to assist by running special trains. Ministry of Home Affairs has to assist railways under security related crisis situations like sabotage, bomb blasts, etc.

(c) Crisis situation which is not a national level crisis affects railway system, which is to be managed with the help and assistance of other Ministries/departments. Chemical explosion in train, fire in train, train falling in river, etc may be such situations.

(d) Crisis situation which is not a national level crisis affects railway system, which can be managed with the help of internal resources from the railways only.

13.3 National Level Crisis :-

The Crisis Management Plan deals with National level crisis situations as under:

- (i) **All India Railway Strike** – Ministry of Railways is the nodal ministry
- (ii) **Terrorism/Security related Crisis** – Ministry of Home Affairs is the nodal ministry but Railways have to maintain liaison and flow of information.
- (iii) **Natural Factor(s) related Crisis leading to traffic disruption** - Ministry of Home Affairs is the nodal ministry but Railways have to maintain liaison and flow of information for assistance to restore the affected railway system.

- (iv) **Crisis where railways have to help other ministries** by way of rail transport. Ministries concerned will make their own Crisis Management Plans bringing out the assistance that the Railways will be required to provide to them.

13.4 Drill for handling Crises :-

The Crisis Management Plan (CMP) is intended to deal with the afore-mentioned crisis situations only. The drill to be followed in the Ministry of Railways (Railway Board) as well as on the Zonal Railways in respect of crisis group, functioning of the Control room, communication etc., are basically the same for all crisis situations and the same general drill will follow, to be supplemented by the special instructions depending upon the nature of the crisis.

MANAGEMENT OF CYCLONES

14.1 Cyclone vulnerability in India

A long coastline of about 7,516 km of flat coastal terrain, shallow continental shelf, high population density, geographical location, and land physiological features of its coastal areas makes India, in the North Indian Ocean (NIO) Basin, extremely vulnerable to cyclones and its associated hazards like storm tide (the combined effects of storm surge and astronomical tide), high velocity wind and heavy rains.

Though the frequency of Tropical Cyclones (TCs) in the NIO covering the Bay of Bengal and the Arabian Sea is the least in the world (7% of the global total), their impact on the east coast of India as well as the Bangladesh coast is relatively more devastating. This is evident from the fact that in the last 270 years, 21 of the 23 major cyclones (with a loss of about 10,000 lives or more) worldwide occurred over the area surrounding the Indian subcontinent (India and Bangladesh). This is primarily due to the serious storm tide effect in the area.

Thirteen coastal states and Union Territories (UTs) in the country, encompassing 84 coastal districts, are affected by tropical cyclones. Four states (Tamil Nadu, Andhra Pradesh, Orissa and West Bengal) and one UT (Puducherry) on the east coast and one state (Gujarat) on the west coast are more vulnerable to hazards associated with cyclones.

About 8% of the area in the country is prone to cyclone-related disasters. Recurring cyclones account for large number of deaths, loss of livelihood opportunities, loss of public and private property and severe damage to rail infrastructure.

14.2 National Cyclone Risk Mitigation Project

The National Cyclone Risk Mitigation Project (NCRMP), to be implemented with financial assistance from the World Bank, is envisaged to have four major components:

- Component A: Improvement of early warning dissemination system by strengthening the Last Mile Connectivity (LMC) of cyclone warnings and advisories. Railways need to obtain advance warnings from the systems developed.
- Component B: Cyclone risk mitigation investments. On the Railways, along the high risk coastal rail infrastructure lengths, a similar protection needs to be planned where required.
- Component C: Technical assistance for hazard risk management and capacity-building, where required on the railway infrastructure.
- Component D: Project management and institutional support by advance coordination by the Sr. DEN/PCEs of the Divisions and Zonal Railways is essential to be able to obtain it at short notice.

14.3 Coordination by Railways regarding Cyclones Risk Management, Advance Warnings and Mitigation :-

The Zonal Railways in the high risk zone of cyclones (four states – Tamil Nadu, Andhra Pradesh, Orissa and West Bengal), one UT (Puducherry) on the east coast; and one state on the west coast (Gujarat) have to be in close coordination with the respective Government departments for handling all phases of the cyclones. These include :-

- Cyclone risk mitigation investments on rail track, colonies in the vicinity of high risk area.
- Capacity building on rail tracks/bridges and important rail installations both for reducing devastation from a cyclone, and for relief, restoration etc.
- Advance warning of a cyclone. Action for regulation mainly of Passenger trains follows thereafter.

The Railway infrastructure is located in the vulnerable States in part either in a densely populated area or alternately where no significant population exists. While in the former case the resources of the District/State Government would also be concentrated for rescue/relief/mitigation, in the latter case the Railways would have to depend mostly on their own resources for restoration of railway track.

MANAGEMENT OF FLOODS

15.1 Vulnerability to Floods

Floods have been a recurrent phenomenon in India and cause huge losses to lives, properties, livelihood systems, infrastructure and public utilities. India's high risk and vulnerability is highlighted by the fact that 40 million hectares out of a geographical area of 3290 lakh hectares is prone to floods. On an average every year, 75 lakh hectares of land is affected, 1600 lives are lost and the damage caused to crops, houses and public utilities is Rs. 1805 crores due to floods.

Eighty percent of the precipitation takes place in the monsoon months from June to September. The rivers bring heavy sediment load from the catchments. These, coupled with inadequate carrying capacity of the rivers are responsible for causing floods, drainage congestion and erosion of river-banks. Cyclones, cyclonic circulations and cloud bursts cause flash floods and lead to huge losses. The fact that some of the rivers causing damage in India originate in neighbouring countries, adds another complex dimension to the problem.

15.2 Institutional Framework

As per the constitutional provision, Flood Management (FM) is a state subject and as such the primary responsibility for flood management lies with the states.

There is a need to be set up a central organisation to lay down policy and implement FM measures in consultation with the states and other stakeholders as floods are not confined to one state and flooding in one state leads to flooding in adjoining states. Accordingly, it has been proposed to set up River Basin Organisations to deal with the management of water resources at river basin level. It is also proposed to set up a National Flood Management Institute (NFMI) at an appropriate location in one of the flood prone states, to impart training to engineers, administrators, personnel of the police departments, Non-governmental Organisations (NGOs) and Community Based Organisations (CBOs) etc.

The MOWR alongwith other department is responsible for the technical aspects of FM besides others. The Ministries of Agriculture, Civil Aviation, Environment and Forests, Health, Space, Earth Sciences, Mines, Railways etc. also have important role in management of floods in their respective fields.

15.3 India Meteorological Department

The IMD established in 1875, is responsible for the National Meteorological Services and the principal government agency in all matters relating to meteorology, seismology and allied subjects. The IMD is mandated as follows :

- *To warn against severe weather phenomena like tropical cyclones, north-westerly dust storms, heavy rains and snow, cold and heat waves etc., which cause destruction of life and property.*

For the convenience of administrative and technical control, there are six Regional Metrological Centres (RMCs) located at Mumbai, Chennai, New Delhi, Kolkata, Nagpur and Guwahati.

15.4 Activities for Minimizing Flood Risk and Losses

(a) By Central/State Governments :

These activities include identification and marking of flood prone areas on maps, preparation of close contour and flood vulnerability maps, formulating plans for expansion and modernization of flood forecasting and warning systems, identification of priority flood protection and drainage improvement works, identification of reservoirs for review and modification of operation manuals and rule curves and undertaking special studies on problems of river erosion.

(b) Increase in Water Ways :

Examining adequacy and if required, increasing the water ways of bridges/culverts under railway embankments (and roads) by the Ministry of Shipping, Road Transport and Highways (MOSRTH), Ministry of Railways, Ministry of Defence, National Highways Authority of India, Border Road Organisation and State governments.

15.5 Action Plan for Alignment, Location, Design and Provision of Waterway on Railways Embankments :-

Roads and Railway embankments cut across the drainage lines and may lead to increase in vulnerability of the area, through which they pass and to flooding and drainage congestion, if they are not properly aligned, located and designated. In-adequate waterway in the form of vents/culverts/bridges/ causeways is another cause of increase in vulnerability to floods. Further, breaches in them may result in huge loss of life and properties. Insufficient height of rail embankments may result in overtopping and breaches.

The Ministry of Shipping, Road Transport and Highways (MOSRTH), MOR, MOD, NAHI, BRO, State Governments/SDMAs will ensure that national highways, state highways, district and other roads are aligned, located and designed properly with respect to height and width and provided with adequate waterway in the form of vents, culverts, bridges and causeways so as to make them flood safe and not increase the vulnerability of the area to flooding and drainage congestion.

The safety of existing roads/railway embankments against floods will also be checked by the MOSRTH, MOR, MOD, NHAI, BRO and state governments/SDMAs/DDMAs and if found inadequate, measures by way of increasing height and width and augmenting water way by constructing additional bridges/culverts/causeways or by adding more spans to existing ones, will be taken up.

15.6 Flood Forecast :-

Forecasts (stage/inflow) are issued whenever the river stage at the Flash Flood site exceeds or is likely to exceed a specified level called warning level of the site which is fixed in consultation with the concerned state government. The warning level is generally 1 m below the danger level of the site, although there is no-common format designed for issuing flood forecasts by various fields divisions, as forecasts are issued according to the users convenience. In the forecast, the current date and time of issue of forecast, present water level/inflow and anticipated water level/inflow with corresponding date and time are normally included.

15.7 Dissemination of Flood Forecasts and Warnings

On reaching a critical point, the final flood forecasts are then communicated to the user agencies such as the concerned administrative and engineering authorities of the state/central governments including railways, defence and other agencies connected with flood protection and DM by special messenger/telegram/wireless/ telephone/fax/e-mail.

15.8 The Central Water Commission's Flood Forecasting Network in India :

The CWC's FF network covers most of the flood prone inter-state river basins in the country. The CWC is presently issuing flood forecasts for 175 stations of which 147 stations are for river stage forecast and 28 for inflow forecast.

15.9 Flood Preparedness :-

Based on NDMA's guidelines, a lot of data is to be collected by the Civil Engineering Directorate, Railway Board, so as to plan flood protection works and to reduce vulnerability. Board has asked RDSO to compile the Flood vulnerable areas in Formation, Cutting Bridges and Buildings etc. vide Questionnaire in Annexure after chapter 16.

15.10 Action Plan :-

The following Action Plan should be followed by the Zonal Railway :-

- Flood/weather forecasting in consultation with IMD and other agencies like CWC, State Government, local bodies etc.
- Development of system of collecting data using modern techniques, Monitoring of land slides, flood danger to bridges, bridge approaches causing interruption to traffic.
- Identification of flood prone areas, RAT, RAW and information prone to erosion/breaches and marking them on railways system map. Monitoring of behaviour of rivers which pose danger to railway embankment.
- Documentation of records of flood and breaches.
- Flood Insurance of Railway properties – A pilot project to be taken by each Railway through help of suitable consultants.
- Mechanism for coordination with State Government and other Central Agencies on flood control and erosion etc.
- Sanction and execution of Anti Erosion works of track, formations, bridges etc.
- Improvement to water ways of bridges in track formation (if necessary) including sanction and execution of works.
- Development of Flood Shelters for staff and passenger at suitable locations in the areas prone to repeated floods.
- Implementation of Bye-laws for buildings in flood prone areas including modifications of Works Manual.
- Training on Flood Management to officials in various Railway Training Schools and institutions by devising suitable syllabus.
- Emergency response team on floods.

- Study of silting pattern resulting in reduction in reservoir/Dam's water holding capacity over years to forecast and extrapolate future impact on track due to over flow and need of additional waterway.
- Study of changed water encatchment area due to construction of highways, Dams.
- Study of changed rainy season month on a particular region.

MANAGEMENT OF EARTHQUAKES

16.1 Earthquake Risk in India :

India's high earthquake risk and vulnerability is evident from the fact that about 59 percent of India's land area could face moderate to severe earthquakes. During the period 1990 to 2006, more than 23,000 lives were lost due to 6 major earthquakes in India, which also caused enormous damage to property and public infrastructure. The occurrence of several devastating earthquakes in areas hitherto considered safe from earthquakes indicates that the built environment in the country is extremely fragile and our ability to prepare ourselves and effectively respond to earthquakes is inadequate. India witnessed several earthquakes like the Uttarkashi earthquake of 1991, the Latur earthquake of 1993, the Jabalpur earthquake of 1997, and the Chamoli earthquake of 1999. These were followed by the Bhuj earthquake of 26 January 2001 and the Jammu & Kashmir earthquake of 8 October 2005.

16.2 Nodal Ministry :-

The Ministry of Earth Sciences (MoES), as the nodal ministry will prepare the Earthquake Management Plan covering all aspects like earthquake preparedness, mitigation, public awareness, capacity building, training, education, Research and Development (R&D), documentation earthquake response, rehabilitation and recovery.

16.3 Monitoring Seismic Activity and Safety Codes :-

The Indian Meteorological Department (IMD) will be the nodal agency for the monitoring of seismic activity. The Bureau of Indian Standards (BIS) will be the nodal agency for preparing earthquake-resistant building codes and other safety codes. All such key stakeholders, including central ministries and departments and State Governments/SDMAs will develop detailed DM plans, recognising the seismic risk in their respective jurisdictions, based on the Guidelines, of NDMA.

Given the high seismic risk the earthquake vulnerability in India, the NDMA Guidelines require the Railways alongwith all other stakeholders to ensure that, hereafter, all new structures are built in compliance of earthquake-resistant building codes and town planning bye-laws. This will be taken up as a national resolve.

16.4 Structural Safety Audit and Strengthening :-

The NDMA Guidelines emphasize the need for carrying out the structural safety audit of existing lifeline structures and other critical structures in earthquake-prone areas, and carrying out selective seismic strengthening and retrofitting.

The critical factors responsible for the high seismic risk in India and consequently the prioritised six sets of critical interventions, have been presented as the six pillars of earthquake management. They will help to :

1. Ensure the incorporation of earthquake-resistant design features for the construction of new structures.

2. Facilitate selective strengthening and seismic retrofitting of existing priority and lifeline structures in earthquake-prone areas.
3. Improve the compliance regime through appropriate regulations and enforcement.
4. Improve the awareness and preparedness of all stakeholders.
5. Introduce appropriate capacity development interventions for effective earthquake management (including education, training, R&D, and documentation).
6. Strengthen the emergency response capability in earthquake-prone areas.

16.5 Institutionalization Earthquake-Resistant Design and Construction :

The Railways alongwith all central ministries and departments and State Governments will facilitate the implementation and enforcement of relevant standards for seismically safe design and construction of buildings, bridges, flyovers, ports and harbours, and other lifeline and operationally important structures including track infrastructure etc. falling within their administrative control.

16.6 Need for Seismic Strengthening of Existing Structures :

There are approximately 12 crores buildings in the country in seismic Zones III, IV and V. A review of the vulnerable buildings on the Railways needs to be similarly done. Out of these how many are critical to Railways operational needs have to be separately identified. Most of these buildings are not earthquake-resistant and are potentially vulnerable to collapse in the event of a high intensity earthquake. As it is not practically feasible or financially viable to retrofit all the existing buildings, these Guidelines recommend the structural safety audit and retrofitting of select critical lifeline structures and high priority buildings. Such selection will be based on considerations such as the degree of risk, the potential loss of life and the estimated financial implications for each structure, especially in high-risk areas, i.e. in seismic Zones III, IV and V, where structures have to conform to IS-1893 specifications.

16.7 Preparedness by Railways :

The review of earthquake vulnerability and of structural audit of existing critical structures (operationally essential) is coordinated by CE Directorate in Railway Board. RDSO has been assigned the job of collection of data and prepare a plan for developing the specification etc for new buildings and identify existing ones which need retro-fitment. On the Zonal Railways and the Divisions the subject is to be coordinated by the PCE and Sr. DEN's.

Action to be taken by the Railways/PUs on these guidelines are briefly summarized in Annexure (after this chapter) in a tabular form to facilitate this review. Zonal Railway, may also keep the effect of Cyclones and Landslides in mind in such vulnerable areas while reviewing preparedness on each item covered in NDMA guidelines.

A detailed study will have to be done by RDSO to work out the actual requirements and investment planning, if any, that may be needed to fulfill the end objectives. For effective handling of the information and details of a railway, each division is to be taken as a unit.

Summary of NDMA Guidelines on Earthquakes and Floods

| Railway Infrastructure | Earthquake Proneness Review | Flood Proneness Review |
|--|---|---|
| <p>Railway Track Formation (incl. station Yards, bridges/culverts, ROBs/RUBs, etc.</p> <p>Buildings housing signaling gears like RRI, SSI etc.</p> <p>Buildings in open line maintenance work centers like loco sheds, Coaching depots etc.</p> <p>Station buildings</p> <p>Control room, other important office building, etc.</p> <p>High-rise residential buildings, other important residential buildings</p> <p>Railway hospitals</p> | <p>New Construction Must be earthquake resistant</p> <p>Existing Infrastructure</p> <ul style="list-style-type: none"> - Identify existing railway infrastructure falling under various seismic zones. - Review for earthquake resistant adequacy based on age, foundation and other details. - Retrofit/rebuild to make it earthquake resistant. - Training of Engineers (at various levels) - associated with design and construction of railway infrastructure. - Any other item that railway may like to add. | <p>New Construction: Railway Station building should be located in such a fashion that they are above the levels corresponding to a 100 year frequency or the maximum observed flood levels. Similarly they should also be above the levels corresponding to a 50 year rainfall and the likely subversion due to drainage congestion.</p> <p>Government offices buildings should be above a level corresponding to a 25 year flood or a 10 year rainfall with stipulation that all buildings in vulnerable zones should be constructed on columns or stilts.</p> <p>Railway track at levels well above the likely flood levels.</p> <p>Existing Infrastructure:</p> <p>Co-ordination with flood/rain forecasting agencies to get early warning so as to introduce patrolling. Speed restriction etc. as per the provisions in Railway’s SR.</p> <p>Inspections of Railway Affecting Works – to be streamlined and timely ensured.</p> <p>Review of waterways for adequacy and alignment and measures to modify, if needed.</p> <p>Status Note on the lessons learnt from the previous flood situations in the past 5 years.</p> <p>Bye-laws for buildings in flood plains.</p> <p>Making existing and new buildings and infrastructure capable of withstanding fury of floods.</p> <p>Any other item that railway may like to add.</p> |

Zonal Railways will review their new projects as well as the existing infrastructure to fall in line with NDMA guidelines. The Action Plan, including the prevention and post disaster response for cyclones, is very similar as for floods. Zonal railways should also keep the effect of cyclones and landslides in mind while reviewing preparedness on each item covered under NDMA guidelines. A multi-disciplinary team comprising of various departments such as Civil, S&T, Electrical, Mechanical, Medical, Security, Personnel and Finance will be constituted for this purpose by the respective zonal railways. Sr. ED/CE/RDSO has been nominated by the Board to monitor this work. CSOs will coordinate with PCEs and other concerned officers to see that necessary action is taken in a time bound manner which should be part of the disaster management plan of the railways both at the zonal and divisional levels.

NDMA's Guidelines on Management of Earthquakes' alongwith on 'Management of Floods' (August 07) were sent to RDSO for coordinating implementation on Indian Railways, as decided by Board (ME, ML, MM, FC & CRB).

Sr. ED(Civil)/RDSO is to submit Action Plan of all the Railways and Production Units to Railway Board. There is a need for RDSO to prepare the Action Plan early.

1.0 Position relating to existing Buildings (NDMA Guidelines on Earthquakes)

| S. No. | Divn. | Description of Building | Location | Description of deficiency for earthquakes | Retrofitting or replacement | Broad approach for retrofitting | Approx. Cost (Rs. Lakhs) | Whether work would be done under GM's power or shall be sent to Rly. Bd. for sanction | Remarks |
|--------|-------|-------------------------|----------|---|-----------------------------|---------------------------------|--------------------------|---|---------|
| | | | | | | | | | |

2.0 Position relating to Buildings (NDMA Guidelines on Floods)

| S. No. | Divn. | Description of Building | Location | Description of deficiency for flood | Modification or replacement | Broad approach for modifications | Approx. Cost (Rs. Lakhs) | Whether work would be done under GM's power or shall be sent to Rly. Bd. for sanction | Remarks |
|--------|-------|-------------------------|----------|-------------------------------------|-----------------------------|----------------------------------|--------------------------|---|---------|
| | | | | | | | | | |

3.0 Position relating to Bridges (NDMA Guidelines on Earthquakes)

| S. No. | Divn. | Description of Bridge | Location | Description of deficiency | Retrofitting or replacement | Broad approach for retrofitting | Approx. Cost (Rs. Lakhs) | Whether work would be done under GM's power or shall be sent to Rly. Bd. for sanction | Remarks |
|--------|-------|-----------------------|----------|---------------------------|-----------------------------|---------------------------------|--------------------------|---|---------|
| | | | | | | | | | |

4.0 Position relating to Bridges (NDMA Guidelines on Floods)

| S. No. | Divn. | Description of Bridge locations | Location | Description of deficiency | Requirement of actual work (increase in waterway & or raising or new openings) | Extra waterway required | Approx. Cost (Rs. Lakhs) | Whether work would be done under GM's power or shall be sent to Rly. Bd. for sanction | Remarks |
|--------|-------|---------------------------------|----------|---------------------------|--|-------------------------|--------------------------|---|---------|
| | | | | | | | | | |

5.0 Position relating to Formation (NDMA Guidelines on Floods)

| S. No. | Divn. | Description | Location | Description of deficiency | Requirement of actual work) | Approx. Cost (Rs. Lakhs) | Whether work would be done under GM's power or shall be sent to Rly. Bd. for sanction | Remarks |
|--------|-------|-------------|----------|---------------------------|-----------------------------|--------------------------|---|---------|
| | | | | | | | | |

6.0 Position relating to Protection of cuttings (NDMA Guidelines on Floods)

| S. No. | Divn. | Description of cutting | Location | Description of deficiency | Requirement of actual work) | Approx. Cost (Rs. Lakhs) | Whether work would be done under GM's power or shall be sent to Rly. Bd. for sanction | Remarks |
|--------|-------|------------------------|----------|---------------------------|-----------------------------|--------------------------|---|---------|
| | | | | | | | | |

Note: Requirement pertaining to other departments may be indicated separately in above proformas suitably.

MANAGEMENT OF LANDSLIDES AND SNOW AVALANCHES

17.1 Landslide Risk

Landslides are one of the natural hazards that affect at least 15 percent of the land area of our country –an area which exceeds 0.49 million km. Landslides of different types are frequent in geodynamically active domains in the Himalayan and Arakan-Yome belt of the North-Eastern parts of the country as well as in the relatively stable domains of the Meghalaya Plateau, Western Ghats and Nilgiri Hills. In all, 22 states and parts of the Union Territory of Puducherry and Andaman and Nicobar Islands are affected by this hazard. The phenomenon of landslides is more pronounced during the monsoon period.

17.2 Nodal agency of Government of India :-

The Geological Survey of India was declared the nodal agency for landslides by the Government in January 2004. The responsibilities of the Ministry of Mines/Geological Survey of India as the nodal ministry/agency include coordinating all the activities related to landslide hazard mitigation, and monitoring the occurrence of landslide in the country.

As per the Disaster management Act, the responsibility to cope with natural disasters is essentially that of state governments and the role of the central government is a supportive one in terms of supplementing physical and financial resources.

17.3 Monitoring and Forecasting of Landslides

The monitoring and forecasting of landslides, which are two of the least developed fields of landslide management practice will be given special attention as a part of mitigating the risk arising from landslide hazard. Monitoring of landslides includes :

- i) Surface measurements of landslide activity.
- ii) Sub-surface measurements of landslide activity.

17.4 Management of Snow Avalanches :-

The recording of avalanche data and their clearance is carried out by the Border Roads Organisation. The forecasting and control of snow avalanches are generally dealt with by the Snow and Avalanche Studies Establishment. According to the management of this hazard will be a collaborative work of the National Disaster Management Authority, District Administration, Border Roads Organisation, Snow and Avalanche Studies Establishment, and academic institutions active in carrying out research in this field.

Till the Kashmir Project is fully completed the Railway infrastructure is not likely to be affected by this except at a few locations in Himachal Pradesh.

17.5 Organisations Associated with Landslide Hazard Management

There is a need to set up a central organisation that will deal exclusively with all the fields of landslide management in a comprehensive manner has been accepted by Government of India. The central government through the Ministry of Mines will, therefore, set up a centre for landslide research, studies and management in one of the landslide prone states to ensure a wider view of landslides as a component of the environment and bring the existing pool of expertise in earth sciences (coastal stability, seismology and meteorology included) to bear upon this new initiative.

On the Railways, RDSO has still to undertake any study to identify vulnerable areas of rail infrastructure prone to landslide hazards. This work will be initiated by the CE Dte., Railway Board who will lay down guidelines for RDSO to undertake the study.

17.6 Action Plan :-

Although management of landslides requires coordinated and multi-faceted activities among many stakeholders in the total disaster management cycle, one important recommendation for follow up by Civil Engineering Dte., Railway Board is the landslide hazard zonation mapping in macro and meso scales after identification and prioritization of the areas in consultation with the Border Roads Organization, State Governments and local communities.

MANAGEMENT OF BIOLOGICAL DISASTERS

18.1 Causes of Biological Disasters :-

Biological disasters might be caused by epidemics, accidental release of virulent microorganism(s) or Bioterrorism (BT) with the use of biological agents such as anthrax, smallpox, etc. The existence of infectious diseases have been known among human communities and civilisations since the dawn of history.

In recent times travelling has become easier for which Railways have made a significant contribution. More and more people are travelling all over the world which exposes the whole world to epidemics. As our society is in a state of flux, novel pathogens emerge to pose challenges not only at the point of primary contact but in far removed locations. The Marburg virus illustrates this. The increased interaction between humans and animals has increased the possibilities of zoonotic diseases emerging in epidemic form.

18.2 Biological Warfare (BW) and Bio-Terrorism (BT) :-

The historical association between military action and outbreaks of infections suggest a strategic role for biological agents. The advances in bacteriology, virology and immunology in the late 19th century and early 20th century enabled nations to develop biological weapons. The Biological and Toxin Weapons Convention, however, resolved to eliminate these weapons of mass destruction. Despite considerable enthusiasm, the convention has been a non-starter.

18.3 Mitigation :-

The essential protection against natural and artificial outbreaks of disease (bio-terrorism) will include the development of mechanisms for prompt detection of incipient outbreaks, isolation of the infected persons and the people they have been in contact with and mobilisation of investigational and therapeutic countermeasures. In the case of deliberately generated outbreaks (bio-terrorism) the spectrum of possible pathogens is narrow, while natural outbreaks can have a wide range of organisms. The mechanism required however, to face both can be similar if the service providers are adequately sensitized.

18.4 Nodal Ministry and support of other Ministries :-

The response to these challenges will be coordinated by the nodal ministry-Ministry of Health and Family Welfare (MOH&FW) with inputs from the Ministry of Agriculture for agents affecting animals and crops. The support and input of other ministries like Ministry of Home Affairs, Ministry of Defence, Ministry of Railways and Ministry of Labour and Employment, who have their own medical care infrastructure with capability of casualty evacuation and treatment, have an important role to play. With a proper surveillance mechanism and response system in place, epidemics can be detected at the beginning stage of their outbreak and controlled.

18.5 Handling CBRN Disaster – Training :

For handling and to provide medical relief for all CBRN disaster which (include a Biological Disaster) and mitigation of BW and BT affected Railway staff, need to be incorporated in the Hospital DM Plan.

Training of a skeleton numbers of Medical Doctors in each Divisional Railway Hospital to manage CBRN casualties is to be planned.

MANAGEMENT OF CHEMICAL DISASTERS

19.1 Guidelines by NDMA :

National Disaster Management Authority (NDMA) has issued guidelines on the management of chemical disasters. These guidelines are directed more towards their prevention and mitigation of their effects, if these happen than on rescue and relief operations afterwards.

The main stakeholders in the management of chemical disasters are Ministry of Environment and Forests (MoEF; the nodal ministry); Ministry of Home Affairs (MHA); Ministry of Labour and Employment (MoLE); Ministry of Agriculture (MoA); Ministry of Shipping, Road Transport and Highways (MoSRT & H); Ministry of Defence (MoD); Ministry of Chemicals and Fertilizers (MoC&F); Ministry of Petroleum and Natural Gas (MoP &NG). Department of Atomic Energy (DAE);

19.2 Salient features of NDMA Guidelines :

The growth of chemical industries has led to an increase in the risk of occurrence of incidents associated with hazardous chemicals (HAZCHEM). With their proliferation, the demands on its transportation by rail has gone up significantly. Common causes for chemical accidents are deficiencies in safety management systems and human errors, or they may occur as a consequence of natural calamities or sabotage activities. Chemical accidents result in fire, explosion and/or toxic release. The nature of chemical agents and their concentration during exposure ultimately decides the toxicity and damaging effects on living organism in the form of symptoms and signs like irreversible pain, suffering, and death. Meteorological conditions such as wind speed, wind direction, height of inversion layer, stability class etc. also play an important role by affecting the dispersion pattern on toxic gas clouds. The Bhopal Gas tragedy of 1984 – the worst chemical disaster in history, where over 2000 people died due to the accidental release of the toxic gas Methyl Isocyanate, is still fresh in our memories.

19.3 Genesis of NDMA's Guidelines on Chemical Disasters :

Effective Chemical Disaster Management (CDM) is possible by the adoption of preventive and mitigation strategies as most chemical disasters are preventable in comparison to natural disasters that are difficult to predict and prevent.

In the NDMA's Guidelines comprehensive instructions for installations and storages (including isolated storages of HAZCHEM) that contain good engineering practices for safety, accident reporting, investigation and analysis cheklists and safety promotional activities as important tools for effective CDM, are provided.

In the guidelines are instructions related to chemical accidents during transportation of HAZCHEM. The areas covered include:

- Preparation of a highway DM plan.
- Modification of rules pertaining to transport emergencies.

- Specific roles and responsibilities of MAH units, transporters, drivers, authorities and aspects related to emergency communication systems and training of various stake holders.
- The need for the development of an efficient pipeline management system.

The approach to implementation of the NDMA's Guidelines are highlighted alongwith the key points for ensuring the implementation of the plans prepared by the central ministries, departments and states.

19.4 Guidelines on Chemical Disasters :-

Railway's guidelines/instructions relevant to the zonal railways have been issued separately in detail for taking necessary action and incorporating suitable provisions in their respective DM Plans. These guidelines will add to the existing safeguards listed in the Red Tariff on handling, storage and transportation of hazardous material.

19.5 Railways Red Tariff – Transport of Hazchem :

Indian Railways have also been transporting chemicals and hazardous materials e.g. petroleum products (petrol, Naphtha, HSD, etc.), Caustic soda, Alcohol, compressed gases (LPG gas etc.) Chemical manures, Acids, Matches etc. These goods are carried either in the SLRs or in the Parcel Vans or in the goods wagons. Quantum and type of transportation of such hazardous material varies from railway to railway and different zonal railways need to prepare themselves based on the type and extent of hazardous material being handled and transported by them.

Indian Railway's Rules for carrying dangerous (hazardous goods) by rail have been legislated in the Railway Red Tariff Rule 2000 as per which dangerous goods have been classified into following 8 classes:

1. Explosives
2. Gases, Compressed, liquefied or dissolved under pressure
3. Petroleum & other inflammable liquids
4. Inflammable solids
5. Oxidising substance
6. Poisonous (Toxic Substances)
7. Radio-active substances
8. Acids & other Corrosives.

Chapter I to VIII respectively deal with the above classes of dangerous goods which include General rules governing acceptance, handling, Carriage, storage, delivery and the list of commodities included in that class. Carriage of Goods of a hazardous nature other than those specified in these chapters shall not be accepted for transport by rail unless specially authorised by the railway administration as provided under these Rules.

Out of the above 8 classes of dangerous goods, classes II (Gases, Compressed, Liquefied or dissolved under pressure), III (Petroleum and other inflammable liquids) and VIII (Acids and other corrosives) are dealt in bulk on the railways whereas other classes of dangerous goods are dealt in piecemeal/small quantities in parcel vans/SLRs. Railways may refer to the specific paras pertaining to all these classes of dangerous goods.

19.6 Monitoring Movement of Hazchem :

Dedicated communication system is to be established for Rail Transportation to monitor movement of Toxic Chemical Agents. A mechanism is to be developed like a Geographic Information system (GIS) for continuous monitoring of such Transport Vehicles along their route. This may require to be dove-tailed with the FOIS network of the Railways, once the TMS/FOIS is extended for booking (preparation of RRs) and movement of chemical items in wagons to be included in FOIS.

19.7 Rescue Relief and Restoration Operations:

Railway's expertise in dealing with the mis-happenings like spillage, catching fire etc. of these dangerous goods is very limited. It is therefore imperative that the respective zonal railways will develop and nurture coordination with those agencies and Organisations on their system that have expertise in dealing with the hazardous material being handled and transported on the respective zonal railways. Contact details e.g. Name, Designation, Telephone Nos., Mobile Nos. etc. of such agencies should be available in the Divisional and Zonal Railway Disaster Management Plan so that these agencies can be called for without any delay during any untoward incident. Nominated staff of ARMVs, ARTs and few of the staff maintaining the rolling stock which is used for transportation of hazardous material may be trained and equipped with the equipment used for dealing with such material.

Divisions located on the "Hazchem Rail Transportation Highways" have to be in close touch with specialized services available with IOC/GAIL and Pvt. Chemical Factories and NGOs to be able to call upon their men and fire fighting fire extinguishers etc at short notices.

Vulnerability on this Highway needs to be reduced by the removal of Jhuggies from close to the track (say at least 15 m away).

MANAGEMENT OF CHEMICAL (TERRORISM) DISASTERS

20.1 Introduction :-

A terrorist attack involving chemical agents differs from a normal terrorist attack as it results in specific effects on health and can cause fatal injuries, create panic, and affect the morale of the community. The targets of terrorists include market places, densely populated areas, public functions, important dignitaries, water and electricity supplies, restaurants/food plazas, malls, places of entertainment, busy railway stations in metros and critical and sensitive military, civil and economic institutions.

Chemical terrorism is an act of violence to achieve professed aims using chemical agents. These chemical agents include poisonous gases, liquids or solids that have a deleterious effect on the biotic and non –biotic environment. Due to the relatively easy availability of hazardous chemicals in Major Accident Hazard units, storages and during transportation, terrorists can procure chemicals or even try to sabotage the facilities or transport vehicles as it offers them an easier and often more catastrophic method of anti-national activity. The mode of dispersal used for chemical agents would range from dissemination of aerosolised material to contamination of food and water.

20.2 NDMA's Guidelines :-

The possibility of a chemical terrorism attack can be minimized by spreading general awareness and building the capacity of the community, institutions, and governmental and non-governmental organisations.

The approach followed in the NDMA's Guidelines lays emphasis on :

- i) Security and surveillance measures for installations manufacturing/using/storing chemicals.
- ii) Strengthening intelligence regarding the movement of chemicals.
- iii) Preparedness for counter-terrorism measures :
 - (a) Issues regarding the safety of chemicals and risk reduction strategies etc.
 - (b) Strengthening of response through rescue and emergency medical resources.
 - (c) Preparedness of all emergency functionaries in terms of protection, detection, decontamination, decorporation, capacity building and infrastructure development.
 - (d) Community-centric mechanism for the management of chemical (terrorism) disasters.

20.3 CTD Preparedness Plan :-

Implementation of the Guidelines at the national level shall begin with the preparation of a detailed action plan (involving programmes and activities) by the nodal ministry (MHA) that shall promote coherence among different CTD management practices and strengthen mass casualty management capacities at various levels. The concerned ministries like MoD, MoEF, Ministry of Railways (MoR), MoL&E (through Employees' State Insurance Corporation (ESIC), MoA etc., will also

prepare their respective CTD preparedness plan as a part of all hazard DM Plans. The Railways has an important role in the management of mass casualties in the event of national calamities, they should also cater for developing additional capacities besides meeting their own requirements in their preparedness plan.

Railway Board has issued guidelines on precautions in handling, storage and transportation of chemicals. These are to supplement the guidelines laid down in the Red Tariff. The Commercial Department may keep the RPF official updated on the Goods Sheds which handle Hazchem so that adequate security systems can be strengthened. This may be a part of the Divisional DM Plans.

20.4 Preparedness for Emergency Response :-

Preparedness for an emergency response at the incident site requires protection, detection, and decontamination. RPF and the Medical Department have a role to play in the relief and mitigation efforts. SOPs are required for all the emergency responders working under the overall supervision of the incident commander. This may be identified in the zonal DM Plan as the DRM of the respective division on the Railways where CTD has occurred. SOPs will be included for field decontamination. A well-orchestrated medical response to CTD will be possible only by having a command and control function at the divisional level by the Medical Department. The CMO/CMS will be the main coordinator for the management of CTD.

20.5 Training for the Responders :-

The Medical Department of the Railways has little or no expertise in the effects of different chemicals. This needs to gradually developed initially in a skeleton number (one or two) of Doctors and Para-medics in each Divisional Railway Hospital through training.

20.6 Medical Preparedness for CBRN :-

This is covered already in the chapter 9 (item 9.2) under the heading “Medical Preparedness – MCE and Mobile Relief Arrangements”.

MANAGEMENT OF NUCLEAR AND RADIOLOGICAL EMERGENCY (DISASTER)

21.1 Nuclear/Radiological Emergency :

Any radiation incident resulting in or having a potential to result in exposure and/or contamination of the workers or the public in excess of the respective permissible limits can lead to a nuclear/radiological emergency.

After due consideration of the nature and consequences of the nature and consequences of all the possible scenarios, these radiological emergencies have been broadly classified into the following five categories :

- i. An accident taking place in any nuclear facility of the nuclear fuel cycle including the nuclear reactor, or in a facility using radioactive sources, leading to a large-scale release of radioactivity in the environment.
- ii. A ‘criticality’ accident in a nuclear fuel cycle facility where an uncontrolled nuclear chain reaction takes place inadvertently, leading to bursts of neutrons and gamma radiations.
- iii. An accident during the transportation of radioactive material.
- iv. The malevolent use of radioactive material as a Radiological Dispersal Device by terrorists for dispersing radioactive material in the environment.
- v. A large-scale nuclear disaster, resulting from a nuclear weapon attack (as had happened at Hiroshima and Nagasaki) which would lead to mass casualties and destruction of large areas and property.

Normally, nuclear or radiological emergencies (referred to in points (i) to (iv) above) are within the coping capability of the plant/facility authorities. A nuclear emergency that can arise in nuclear fuel cycle facilities, including nuclear reactors, and the radiological emergency due to malevolent acts of using Radiological Dispersal Devices are the two scenarios that are of major concern. The impact of a nuclear disaster (scenario at (v)) will be well beyond the coping capability of the local authorities and it calls for handling at the national level.

21.2 Vulnerability of Nuclear Facilities :

Identification of a Rail network close to a nuclear facility needs to be done by the zonal Railways.

As regards the vulnerability of various nuclear fuel cycle facilities to terrorists attacks, these facilities have elaborate physical protection arrangements in place to ensure their security. The structural design of these facilities ensures that even in the event of a physical attack, the structural barriers prevent the release of any radioactivity outside the plant area itself and hence the public are not likely to be exposed to radiation.

While their radioactive strength is in itself a deterrent to pilferage, the radioactive sources can still be stolen and used in a Radiological Dispersal Device or Improvised Nuclear Device. Essentially, a Radiological Dispersal Device is a conventional explosive device in which the radioactive material has been so added that, on its being exploded, there would be dispersal of radioactivity in the environment.

A Radiological Dispersal Device is not a Weapon of Mass Destruction. Normally, the use of a Radiological Dispersal Device by itself would not result in fatalities due to radiation. The fatalities, if any, would primarily be due to the explosion. However, it may contaminate a reasonably large area, besides its main potential of causing panic and disruption.

Accidents during the transportation of radioactive materials are of low probability due to the special design features of the containers in which they are transported and special safety and security measures (to take care of all possible threats/eventualities, including the threat from misguided elements) which are laid down to be followed during actual transportation.

A network of 18 Emergency Response Centres has presently been established by the Bhabha Atomic Research Centre to cope with radiological emergencies in the public domain, like transport accidents, handling of orphan sources, explosion of Radiological Dispersal Devices etc. The task of these Emergency Response Centres is to monitor and detect radiation sources, train the stakeholders, maintain adequate inventory of monitoring instruments and protective gear, and provide technical advice to first responders and local authorities.

DISASTER MANAGEMENT TRAINING

22.0 Disaster Management Training on the Railways

22.1 National Institute of Disaster Management (NIDM)

National Institute of Disaster Management (NIDM) has been envisaged as apex body on Disaster Management training & research in the country under the Disaster Management Act, 2005. NIDM runs several multi-disciplinary training programmes including the programmes on transportation related disasters in which railway officers have also been invited to attend. Services of NIDM may be made use of, if required, for training railway officials in Disaster Management at IRITM, Lucknow. Most of the States also have DM Training Institutes funded by the Centre.

22.2 DM Training on Zonal Railways and Divisions

With the enactment of the Disaster Management Act, Indian Railways have also taken several initiatives to revamp Disaster Management training. Presently, training on disaster management of various tiers of railway officials does not envisage newer concepts like integration of disaster management into developmental planning, leveraging on the strengths of other non-railway agencies etc. Till now any training on the subject of Disaster Management implied subjects connected with Train Accidents only. There was no training given for natural calamities or for terrorism related items. With the adoption of this concept the training requirements for Lower, Middle and Higher Management officials of the Railways needs to be re-oriented to cover these concepts. Hence the subjects of Disaster Management are more vast and varied. However, even today some of the Railway staff need are given training only on the older concept, i.e. on a limited syllabi of Management of a train accident. Amongst the staff which falls in this category are the frontline staff (and their superiors) either traveling on the train or available on line.

It has also not yet been possible to harness availability and strengths of railway on-board staff who are the first railway responders during a serious train Accident. With this in view, Board have decided to revamp the Training on Disaster Management being imparted to several tiers of railway officials through Railway Training Institutes as indicated below:

| S.No. | Categories of Officials | New Training methodology and schedule |
|-------|--|--|
| 1 | Top Level Management (GMs, PHODs, DRMs and other SAG Officers) | 3-day Disaster Management Modules are to be delivered at IRITM/LKO @ once every 3 months. Frequency of Training: Once every five years for SAG Officers and above. |
| 2 | Middle Level Management (SG & JAG officers) | Some of the latest and relevant topics are to be included in the AMP and MDP programmes being delivered at RSC/BRC IRITM, LKO will also deliver special module being developed by them @ one every month. Frequency of Training: Every SG/JAG officer need to under go the module once every five years either at RSC as regular MDP/AMP course or special DM module at IRITM. |

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| 3 | Lower Level Management (SS & JS officers including serving Group B officers). | Disaster management training to be imparted at IRITM/LKO @ one course every month Frequency of Training: Once every five years. |
| 4 | Probationers and Group B officers attending induction courses | Topics listed in annexure 4 of detailed instructions are to be covered during the regular training programme at RSC/Vadodara. Frequency of Training: As part of the course. |
| 5 | Supervisors of all frontline departments (Mechanical, Electrical, Engg., S&T, Traffic Comm. & Optg.) | One-week course at ZRTIs @ one every month. Passing this course is compulsory for promotion to SE and above. Frequency of Training: Once every five years. |
| 6 | Railway Staff on board passenger carrying train (TS, Dy.TS, TTEs & catering staff of Commercial Department, Coach attendants and AC Mechanics from Electrical Departments, some of the selected coach cleaners of Mechanical Departments, some of the RPF escorting staff and catering staff of contractor wherever out-sourced). | Disaster Management being a multidisciplinary effort during field operations, training in groups of such on board staff is more desirable and efficient than training them category wise. Role of on board railway staff has been a matter of great criticism in most of the serious train accidents. On board staff are the first railway representatives to respond to any untoward incident and their empowerment will improve railways response in a big way. Such staff is to be trained in appropriate multidisciplinary groups at such locations in the divisions where there is concentration of such staff to obviate the need for their hostel accommodation, non-availability for longer periods, etc. Such training can be imparted at the selected country-wide locations to cover maximum number of staff in short period of time. This training can also be imparted in the Customer Care Institute . Only few select staff of Mechanical, Electrical (AC), RPF is to undergo this training who are deputed to escort trains. This training will be made mandatory in a phased manner for any staff to go on-board a passenger train. The staff of catering contractor is also to be imparted this training in Phase 2 to leverage their physical presence. Frequency of Training: Once every three years. |
| 7 | Nominated ARMV and ART staff of Mechanical and Medical departments | Composite training of Mechanical and Medical Staff for relief and rescue operations is planned to be given at upcoming disaster management railway institute at Bangalore. Doctors and paramedics nominated for ARMVs and other rescue operations should be exclusively trained on trauma care management either at some nominated specialised institutions or in-house. IRITM is one of the Training Institutes under consideration. Frequency of Training: Once every three years. |
| 8. | Disaster management team of RPF staff & other RPF personnel associated with relief rescue operations. | As per recommendation no. 46 of HLC on disaster management there should be a disaster management team of RPF on each division comprising about 15 men in different ranks. Such teams should be trained in providing necessary support on relief rescue operations. The existing 5 day training module should be appropriately revised to make it suitable to achieve the above objective. Each of the above teams should be trained on this module at RPF Academy at Lucknow. In addition, training module may be appropriately developed separately for RPF Officers and staff and should be imparted at RPF Academy at Lucknow. |

| | | |
|---|--------------|--|
| | | <p>The respective training modules should include role of RPF at the accident site, security at the railway premises like railway stations, trains etc.</p> <p>Frequency of Training: Once every three years for disaster management team of RPF. Once every five years for other RPF officers and staff.</p> |
| 9 | RPF Officers | Disaster Management training for RPF officers may be also organized in IRITM till such time the capability in RPF academy is developed. |

NOTE : Mechanical(Traction) is the Nodal Directorate in Railway Board for Train Accident Management which includes all aspects of Policy on ART/ARME/Cranes and rescue, extrication, fire fighting equipment etc. A nodal Training Institute for specialized rescue/extrication etc. for officers and for subordinates is being set up in Bangalore; the work on this Institute is being coordinated by Mechanical (Traction) dte. Railway Board.

IRITM/Lucknow has been nominated as the nodal centre for training on general aspects of Disaster Management for the senior and middle level officers (including Senior Management Level Officers). Training modules are being set up at ZRTI at Udaipur and Bhuli for Disaster Management training of other railway officials.

Respective Training Institutions on each zonal railway will ensure that the modules prescribed above are institutionalized and officials are imparted training to build the capacity on disaster management on human resource front.

MANAGEMENT OF RAIL DISASTER IN TUNNELS/ DEEP CUTTINGS OR IN A WATER BODY

23.1 Expertise To handle Rail Disasters in Tunnels etc. :

The Railways have no expertise or infrastructure to handle a train disaster if it occurs in a tunnel or in a deep cutting not approachable by land. No machinery, or earth moving equipment is available on the Indian Railways which would be mobilized for this job. Help of other stake holders or of NDRF has to be taken for this.

23.2 Ventilation arrangements in Tunnels :

Adequacy of ventilation arrangement and its efficient operation is always a matter of concern especially in very long tunnels. There are ventilation systems installed with alarms to warn the control rooms in case of a mishap.

In case a train stalls in long tunnel due to derailment/fire or any unusual condition, automatically alarm will be sounded in the control room to alert the Ventilation Operator/Controller or if Guard/Driver of a train or any other person gives such call on 'Emergency' Telephone the Ventilation Operator should control the ventilation in tunnel as per the procedure given.

23.3 Lighting Systems in Tunnels for use in emergency :

Depending on length of a tunnel, emergency lighting arrangements may be provided to give immediate assistance in handling a disaster.

23.4 Rail Disasters in a Lake, River, Sea etc. :

The Railways neither has the equipment (cranes operated from barges) nor trained manpower to extricate bodies from a train or coaches fallen down from a bridge on to a water body, viz lake, river or sea etc. Help of the NDRF has to be taken in such a situation.