Aspects of Disaster Management

Prof/RST

CONCEPT OF DISASTER ON RAILWAYS:

Disaster Risks in India:

- India is vulnerable, in varying degrees, to a large number of natural as well as manmade disasters.
- 59% 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 the7500 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.

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.
- Definition of Disaster 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 available with them to provide relief/rescue and mitigation on the occurrence of a disaster.

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 gangmen spread out all over the Indian Railways.
- Scouts and Guides,Dedicated Rescue/Restoration and Medical Equipment on Rails

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 manmade disasters.
- Different types of disasters are described along with a few examples, below:

(a) Natural Disaster:-

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

(b) Train Accident related Disaster:-

- Collisions (with a huge number of casualties), Train marooned (flash floods), derailments on 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 a Train on fire, Railway installations etc.,
- bomb blast at Railway Station/Train,Chemical (Terrorism) Disaster, Biological, Radiological and Nuclear Disaster.

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. are termed as Disasters.
- No more Relief and Rescue Centric.
- Holistic Approach adopted to incorporate :
- Prevention
- Mitigation
- Preparedness
- Rescue and 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.

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, eitheron 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.”

Nodal department for Policy Formulation on DM on Indian Railways:

- Disaster Management plan of Ministry of Railways,
- Zonal and Divisional plans has to be prepared by the safety department in coordination with the concerned departments of the railways and all other stake holders.
- The Hospital DM plans and the Security arrangements (drills etc) shall be prepared and coordinated by the Medical and the Security department respectively.
- The Management of Floods, Cyclones, Earthquakes, Landslides, etc, and preventive action/mitigation shall be coordinated by the Civil Engineering Department.
- The Rescue and Restoration centric DM including preparation of plans and procurement of specialized equipment and rescue centric training of personnel has to be coordinated by the Mechanical Department.

Authority to declare a Disaster on Railways:

- Railway Board has nominated GM, AGM or CSO (when GM/AGM are not available) of a Zonal Railway for declaring an untoward incident as Railway Disaster.
- With the adoption of the above definition of Railway disaster as envisaged, 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.

National Level

- The overall coordination of disaster management vests with the Ministry of Home Affairs (MHA).
- The Cabinet Committee on Security (CCS) and the National Crisis Management Committee (NCMC) are the key committees involved in the top-level decision-making with regard to disaster management.
- The NDMA is the lead agency responsible for the preparation DM plans and the execution of DM functions at the national level. Figure 2-1 provides a schematic view of the basic institutional structure for DM at national level.
- The figure represents merely theinstitutional pathways for coordination, decision-making and communication for disaster management and does not imply any chain of command.

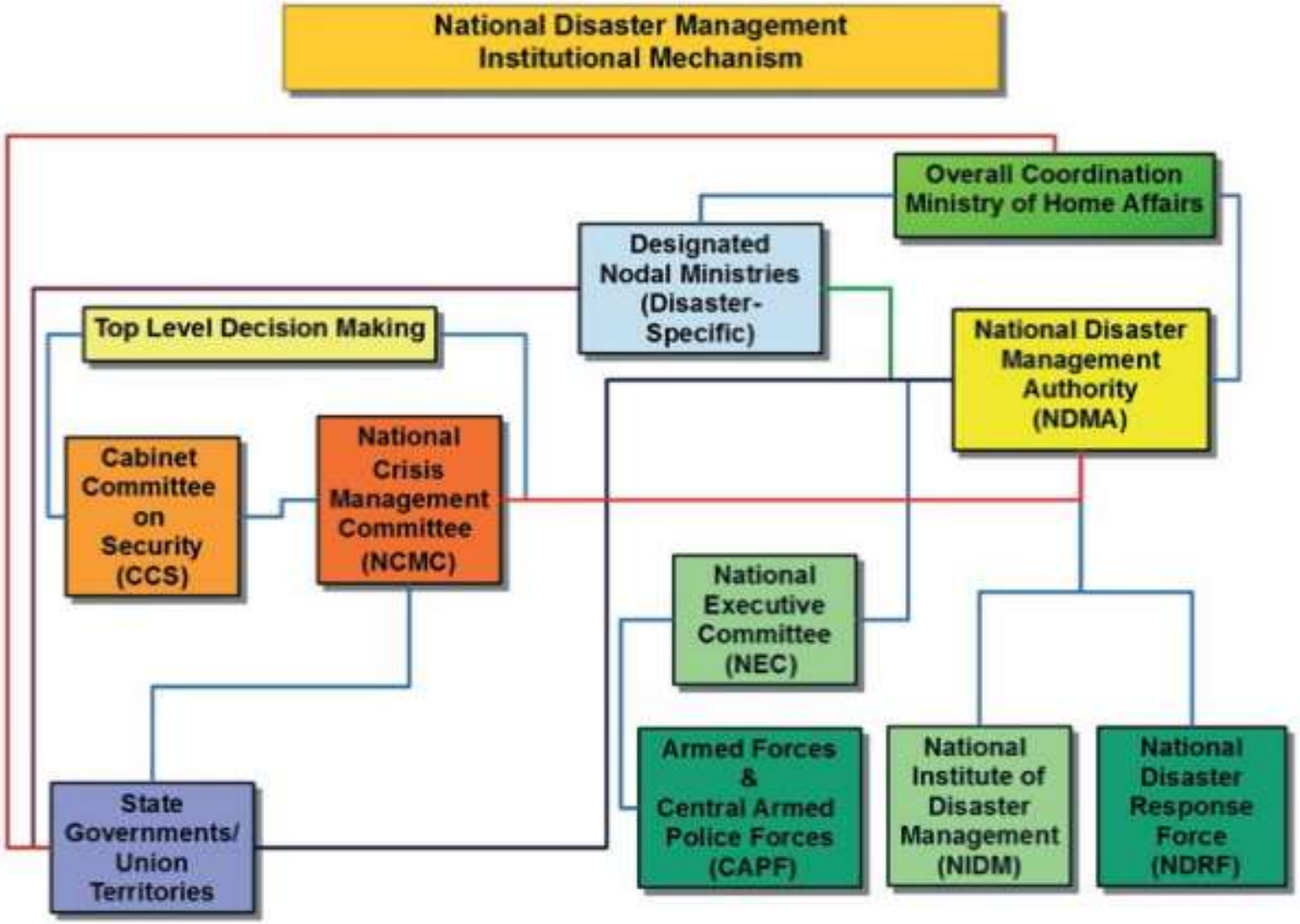

Figure 2-1: National-level disaster management - basic institutional framework

National Disaster Management Authority (NDMA)

- The Government of India established the NDMA in 2005, headed by the Prime Minister. Under the DM Act 2005, the NDMA, as the apex body for disaster management, shall have the responsibility for laying down the policies, plans, and guidelines for disaster management for ensuring timely and effective response to disaster.
- The guidelines of NDMAwill assist the Central Ministries, Departments, and States to formulate their respective DMplans.
- It will approve the National Disaster Management Plans and DM plans of the Central Ministries / Departments.

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 railways cost for attending to rail disasters.
- Railways may also have to provide rail transportation logistics for transporting NDRF team even in case of non-railway exigencies.

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Coordination with NDRF

- The Railway Board has empowered DRMs/CSOs 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.
- NDRF Head quarter office, New Delhi will draw an annual calendar for zone/division-wise meeting between NDRF Battalion Commandants and Railway Safety officials for better coordinationand management during disasters/major train accidents.
- NDRF battalion should carry out at least one or two mock exercises/coordination meeting with each zonal Railway in a year, for which an annual calendar will be issued by Board in consultation with NDRF HQs office.

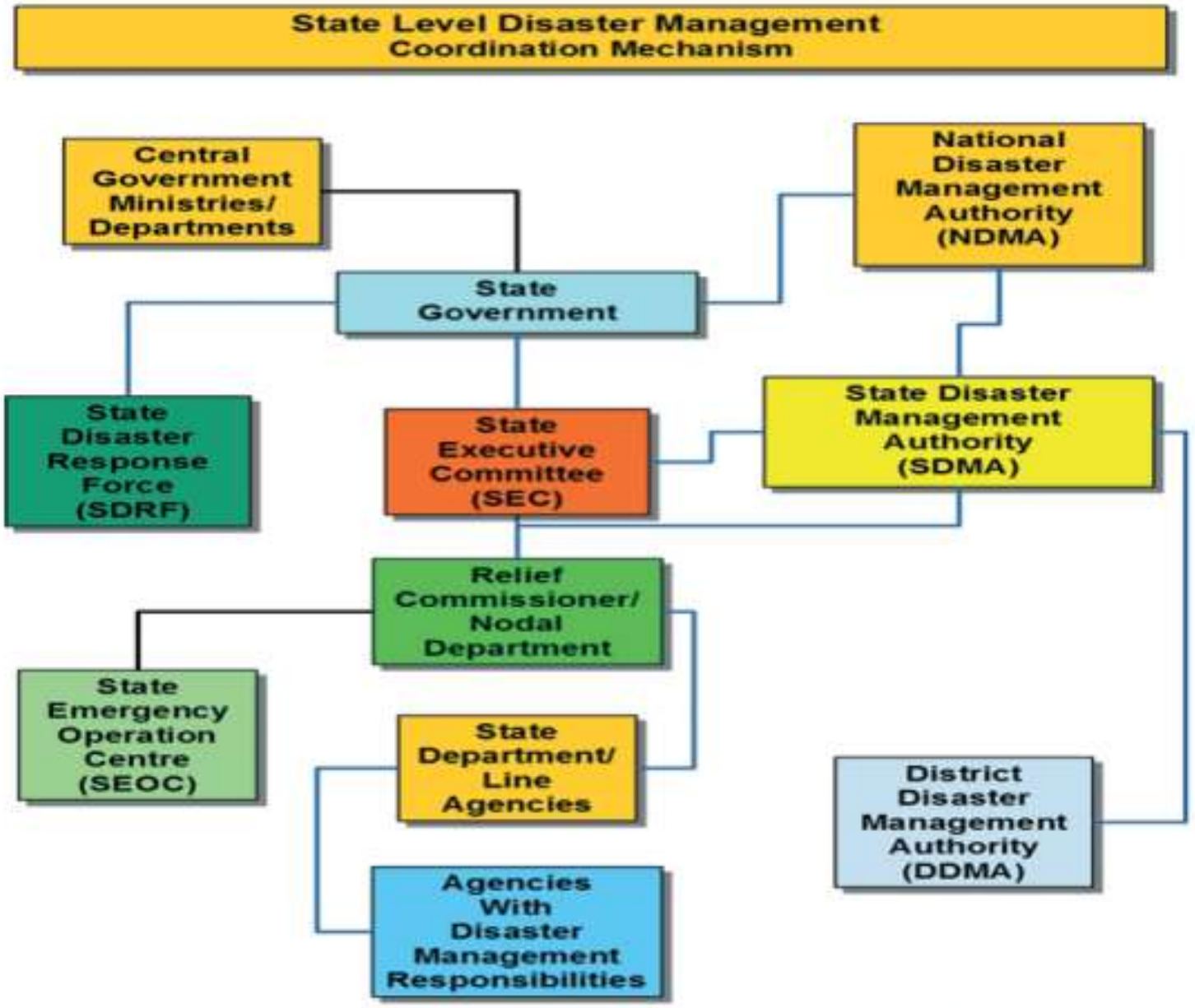

Figure 2.2 : State level Disaster Management – Basic Institutional framework

Reducing Risk and Enhancing Resilience

- The National Policy suggests a multi-pronged approach for disaster risk reduction and mitigation consisting of the following:
- Integrating risk reduction measures into all development projects
- Initiating mitigation projects in identified high priority areas through joint efforts of theCentral and State Governments
- Encouraging and assisting State level mitigation projects
- Paying attention to indigenous knowledge on disaster and coping mechanisms
- Giving due weightage to the protection of heritage structures

- For each hazard, the approach used in national plan incorporates the four priorities enunciated in the Sendai Framework into the planning framework for Disaster Risk Reduction under the five thematic areas for action.

1. Understanding Risk
2. Inter-Agency Coordination
3. Investing in DRR – Structural Measures
4. Investing in DRR – Non-Structural Measures
5. Capacity Development

Hazard-wise Responsibility Matrices for Disaster Risk Mitigation

- For the DM plans to succeed, it is necessary to identify various stakeholders/agencies and clearly specify their roles and responsibilities.
- However, the central agencies will play a pro-active role in disaster situations.
- In the domains of DM planning, preparedness, and capacity building, the central agencies will constantly work to upgrade Indian DM systems and practices as per global trends.
- This section covers the hazards relevant to Indian Railways listed below:

1) Train Accidents
2) Cyclone and Wind
3) Floods
4) Seismic
5) Tsunami
6) Landslides and Snow Avalanches

Central Ministries for Coordination of Response at National level

	Disaster	Nodal Ministry/ Dept./ Agency
1.	Biological Disasters	Min. of Health and Family Welfare (MoHFW)
2.	Chemical Disasters and Industrial Accidents	Min. of Environment, Forests and Climate Change (MoEFCC)
3.	Civil Aviation Accidents	Min. of Civil Aviation (MoCA)
4.	Cyclone, Tornado, and Tsunami	Min. of Home Affairs (MHA)
5.	Disasters in Mines	Min. of Coal; Min. of Mines (MoC, MoM)
6.	Drought, Hailstorm, Cold Wave and Frost, Pest Attack	Min. of Agriculture and Farmers Welfare (MoAFW)
7.	Earthquake	Min. of Home Affairs (MHA)
8.	Flood	Min. of Home Affairs (MHA)
9.	Forest Fire	Min. of Environment, Forests and Climate Change
10.	Landslides and Avalanche	Min. of Home Affairs (MHA)
11.	Nuclear and Radiological Emergencies	Dept. of Atomic Energy, Min. of Home Affairs (DAE, MHA)
12.	Oil Spills	Min. of Defence/Indian Coast Guard (MoD/ICG)
13.	Rail Accidents	Min. of Railways (MoR)
14.	Road Accidents	Min. of Road Transport and Highways (MoRTH)
15.	Urban Floods	Min. of Urban Development (MoUD)

Strengthening Disaster Risk Governance

UNDP defines disaster risk governance as follows (UNDP 2013):

- "The way in which public authorities, civil servants, media, private sector, and civil society at community, national and regional levels cooperate in order to manage and reduce disaster and climate related risks.
- This means ensuring that sufficient levels of capacity and resources are made available to prevent, prepare for, manage and recover from disasters.
- It also entails mechanisms, institutions and processes for citizens to articulate their interests, exercise their legal rights and obligations, and mediate their differences."

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.
- 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.

Information common to all divisions of a Zonal Railway may be replicated uniformly in DM Plans of all divisions of the Zonal Railway.Divisional DM plan should contain information about the following:-

1) Role and responsibilities of officers and other stake holders at the accident site and in the divisional control room.
2) Site Management plans
3) Do's and don'ts in handling various types of accidents involving chemicals, oil and natural gas, nuclear materials etc.,
4) Precautions to be taken in case of fire accidents.
5) Action plan for Management of Crowd at stations during festivals and events of mass gathering.
6) Details of Incidence Response System
7) Passenger care and Managing of Dead Bodies.
8) Media Management

9) Vulnerability profile of the division from various natural disasters like Earth Quakes,Tsunami, Floods, Avalanches, Landslides, Cyclones etc.,
10) Details of Vulnerable bridges and their location.
11) Telephone Nos. including Mobile Nos. of all important railway officials at both Zonal & Divisional level and telephone Nos. of all stations, blocks etc.
12) Location of ART&ARME/SPART and of adjoining division and of adjoining Zonal Railways.
13) Inventory of medical facilities within Division, Doctors, Hospitals including their specialisation/No of beds, Nursing Home, Ambulances etc.,
14) Details of District & State Officials
15) Details of Fire service stations.
16) Details of Defence establishment including Army, Navy & Air Force.
17) Details of Helipads/location where a small plane or helicopter can land.
18) Contact details of Oil and Gas companies and Chemical industries.

19) Details of social organisation/NGOs.
20) Inventory of agencies with earth moving equipment like road crane, bulldozer, boats, diving equipment etc.
21) Details of skilled divers with their name and contact details.
22) Details of road transport facilities, distance map superimposed on division map, detailed road maps etc.
23) Details of forensic personal.
24) List of materials in ART&ARME.
25) Details of para military establishments.
26) List of Government and private helicopter service providers/their contact numbers.
27) Contact numbers of Scouts and Guides.
28) Contact details of St.John Ambulace services

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 (including the NPDM) 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.

Nodal Department 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 and on Safety Information Management System (SIMS) in an interactive format so that the information can be shared and its retrieval is simpler.

CAPACITY BUILDING TO HANDLE DISASTER

Capacity Development – An Overview

- Capacity development covers strengthening of institutions, mechanisms, and capacities at all levels of all stakeholders.
- The United Nations International Strategy for Disaster Reduction(UNISDR) defines 'Capacity Development' for DRR as follows:
- “The process by which people, organisations and society systematically stimulate and develop their capability over time to achieve social and economic goals, including through improvement of knowledge, skills, systems, and institutions – within a wider social and cultural enabling environment.” (UNISDR, 2009)

Capacity Development Themes

- The capacity development covers all aspects of disaster management. The key aspects and broad thematic areas for capacity development is applicable to these dimensions of DM.
- National Institute of Disaster Management (NIDM) and other Institutions
- The NIDM, in partnership with other research institutions has capacity development as one of its major responsibilities, along with training, research, documentation and development of a National level information base.
- It will network with other knowledge-based institutions and function within the broad policies and guidelines laid down by the NDMA.
- It will be organise training for trainers, DM officials and other stakeholders.

Capacity Development of Local Bodies – Rural and Urban

- The capacities of Panchayats and ULBs have to be developed in the sphere of disaster management.
- Without adequate capacity development, the local bodies cannot contribute effectively to disaster management or in ensuring the proper implementation of DM plans.
- Training Communities Enhancing the capacity of communities, as they are the first responders to disasters, is a significant part of the capacity development process.

National and State Disaster Resource Networks

- India Disaster Resource Network (IDRN) is a portal providing nation-wide inventory of DM-related resources covering almost all the basic needs.
- It is a web based platform, for managing the inventory of equipment, skilled human resources and critical supplies for emergency response.
- Primary focus of IDRN portal is to enable the decision makers to find answers on availability of equipment and human resources required to combat any emergency situation.
- At the State-level, Government of India has encouraged each state to establish its own State Disaster Resource Network (SDRN) portal on the pattern of IDRN.

Capacity Development - Ministries and States

- The Central Ministries, departments and agencies as well as the State Governments will take actions for capacity development of different stakeholders on the basis of proper capacity development needs assessment.
- 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.

Modernization of Relief/Rescue during Disasters:

- The National Policy on Disaster Management provides that all Central Ministries andDepartments 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.

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, Naphtha etc.
- Traditionally we have always made use of their fire fighting equipment along with the expertise in fire control available with them.
- Gradually, Railways have to develop both the expertise through training in the Railways Rescue, Relief Training Institute being set up at Bangalore and also procure latest technology fire fighting equipment.

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 161Accident Relief medical Vans (ARMV) – Scale I (Unit of accident relief trains situated at an average distance of every 300kms on main lines and 400 km on branch (lines),
- 320 Accident Relief Medical Equipment (ARME) – Scale II consisting of three sets of Portable Medical Kit for Accidents (POMKA).
- POMKAs are also available at all health units, sub-divisional and divisional/zonal hospitals.

- The system is committed to the primary goal or 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.
- 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.

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.

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.

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

ROLE OF SECURITY DEPARTMENT IN DISASTER MANAGEMENT

SECURITY SETUP OVER INDIAN RAILWAYS

- At present, a three tier security system of District Police, Government Railway Police (GRP) and Railway Protection Force (RPF) is prevailing over Indian Railways-
- GRP: GRP is a wing of the State Police responsible for prevention and detection of crime and maintenance of law and order in station premises, circulating area and trains.
- 50% of the cost on GRPs is shared by Railways with respective States.
- District Police: Security of tracks and bridges.
- RPF: Protection and security of railway property, passenger area, passengers and matters connected therewith.
- RPF functions under the Ministry of Railways.

ROLE OF RPF IN DISASTERS

- In case of any disaster affecting Railways viz. serious train accidents, fire incidents, explosion in trains or on railway premises, terrorist acts, hijacking of train, etc.,
- RPF will coordinate with other Departments of Railways, GRP/District Police and various Central and State authorities for speedier relief and rescue operations.
- In cases of Chemical, Biological, Radiological & Nuclear (CBRN) Disasters or a natural calamity, RPF will provide support services in rescue, rehabilitation and mitigation efforts.
- RPF will play an active role in crowd control along with GRP/District Police personnel and Commercial Department of Railways at disaster site.
- The deployment of the RPF may be done on need basis to provide relief, rescue and rehabilitation consequent to any disaster situation over railways.

Coordination-

- Coordination with GRP, State Police and Civil authorities is ensured at the Divisional and Zonal level by concerned RPF officials.
- An SOP on “Coordination and Flow of Information between RPF and State Agencies” has also been circulated to all zonal railways for information and necessary action [2014/Sec(Spl)/200/10, dated 10.09.2014].
- Disaster management Teams- As per recommendations of the High Level Committee, a Disaster Management Team of 15 RPF personnel has been constituted in each Division with provision of necessary equipment viz. torches and other lighting arrangements, nylon ropes and poles for segregating the affected areas from unwanted visitors and spectators, loud-hailer, stretchers and first aid equipment, wireless sets for inter-communication, cameras for photography of scene of incident, luminous jackets, etc.

Crowd Control and Management-

- For effective crowd control, RPF, GRP and District Police have to act in a synchronized manner in coordination with civil authorities.
- Close Circuit Television (CCTV) Cameras at stations and trains- 436 railway stations have been provided with CCTV cameras over Indian Railways.
- CCTV cameras have also been provided in few trains Upgradation of All India Security Help Line (182)- A 24x7 security helpline has been made functional through Security Control Rooms of RPF to provide round the clock security related assistance to passengers.

EXPLOSIVE DETECTION & DISPOSAL –

- At present, Railways relies upon the States and Central Security Agencies for bomb detection/ disposal over railways.
- Bomb detection system has been envisaged under Integrated Security System.
- It provides for development of detection capability in RPF.
- RPF personnel are being trained in phased manner in each Zonal Railways to develop capability in bomb detection.
- Presently, 272 sniffer dogs are available with RPF for detection of explosives
- **HANDLING OF 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.

DISASTER COMMUNICATION SYSTEM

- 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.

Incident Response System (IRS):

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 Railway hierarchy which manages disasters
in Indian Railways. It has been planned to strengthen and professionalize the same by drawing
upon the principles of the IRS with suitable modifications.

DISASTER INFORMATION FLOWS AND ALERTS OF DISASTER

Standard Operating Procedures (SOPs) :

- An Integrated Operation Centre (IOC) has been set up in the Ministry of Home Affairs (MHA),North Block, New Delhi, to handle disaster situations on a '24x7' basis.
- In the case of disasters such as cyclones, flood, avalanche, tsunami, etc, own early warning agencies would be able to render an advance warning, which would be followed by a 'watch' period.
- However, in the case of disasters like an earthquake or a rail accident, the event would be sudden and there will be no early warning or 'watch' period.

Categorization of Alerts :

While there is a need to keep appropriate levels of the Government informed, there is also a requirement to prevent 'information overload' at apex levels, as also thwart undue alarm.

- Hence,for the purpose of keeping the Prime Minister's Office (PMO) / Cabinet Secretariat and/or senior officers of the MHA /NDMA /NDRF /ESF / Ministries /States /UTs informed, a uniform system of Alerts has been devised. This system envisages the Alerts being categorized into 'Yellow', 'Orange' and 'Red' depending on the magnitude, severity and/or effect of each type of disaster.

The 'Emergency Support Function' (ESF) Ministries / Department will be as follows:-

- Ministry of Communication.
- Ministry of Health & Family Welfare.
- Ministry of Defence.
- Ministry of Power.
- Ministry of Transport.
- Ministry of Urban Development.

- Department of Food & Public Distribution.
- Ministry of Drinking Water & Sanitation.
- Ministry of Information & Broadcasting.
- Atomic Energy Regulatory Board.
- Ministry of Petroleum & Natural Gas.

SOP and Protocol for Transmitting Alerts:

(a) AVALANCHES:

- Early Warning / Forecasting agency: Snow & Avalanche Study Establishment,
  Chandigarh.

Alert Categorization:

- Low/Medium danger - Yellow.
- High - Orange.
- All Round - Red.

SOP and Protocol for Transmitting Alerts:

TSUNAMI - INCOIS

Early Warning / Forecasting Agency: Indian Tsunami Early Warning Centre (ITEWC)

(of the Earth System Science Organization – Indian National Centre for Ocean Information Services (INCOIS), Hyderabad).

Alert Categorization:

o Watch - Yellow.

o Alert - Orange.

o Warning - Red.

LANDSLIDES.

Early Warning / Forecasting Agency: Geological Survey of India.

Alert Categorization:

o Category-III - Yellow.

o Category-II - Orange.

o Category-I - Red.

EARTHQUAKE (National Centre for Seismology)

- Warning Agency: National Centre for Seismology, Ministry of Earth Sciences, Hyderabad.

Alert Categorization:

o Slight & Moderate - Yellow.

o Strong - Orange.

o Major, Great & Giant - Red.

FLOOD (Central Water Commission)

Early Warning / Forecasting Department: Central Water Commission

Alert Categorization:

o Above normal - Yellow.

o Severe - Orange.

o Extreme - Red.

RAILWAYS (Ministry of Railways)

Warning Agency: Ministry of Railways

Alert Categorization:

oMinor - Yellow.

oMedium - Orange.

oMajor - Red.

Category	Description	Stage	Alerts transmitted to
Minor	Consequential Passenger Train Accident not resulting in a casualty.	Yellow	• JS (DM), AS (DM) &NDRF
Medium	1-25 casualties/deaths	Orange	• HS/AS (DM)/JS (DM)/PS to HM/PS to MOS. • Nodal Officers of NDMA & NDRF. • All designated officers in PMO/Cabinet Secretariat.
Major	26 or more deaths due to rail accident	Red	• HS/AS (DM)/JS (DM)/PS to HM/PS to MOS. • Nodal Officers of NDMA & NDRF. • All designated officers in PMO/Cabinet Secretariat.

✓ Alert messages will be followed by **Situation Reports (SITREP)** to be sent twice a day or more frequently depending on unfolding events.

FOREST FIRE

Warning Agency: Ministry of Environment, Forests & Climate Change

Alert Categorization:

o Ordinary Fire - Yellow.

o Medium Fire - Orange.

o Major Fire - Red.

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
- backups 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 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)

Monitoring/Reporting of Effects of Disaster :

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 provide 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.

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 IRS.
- Where train operations have to be suspended or regulated the operating departments would be suitably advised.

Man-made Disasters:-

- Different forms of terrorism fall under the ambit of these disasters.
- A major role has to 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 IRS.
- The Headquarter Security Control will coordinate with the IOC of MHA.

MEDIA MANAGEMENT

AUTHORITY TO DEAL WITH THE MEDIA

- At the Railway Board level, only Ministers, Chairman, Members, Secretary Railway Board, Director Public Relations (DPR), Director Information & Publicity (DIP) or any other Officer(s) especially authorized by the Minister of Railways may give information or be accessible to the representatives of the media.
- At the Railway/PU Headquarters level, the General Managers and the CPROs are authorized to meet the media in a formal Press Conference or informally depending upon the importance of the nature of the information to be given.
- At the Divisional Level, Divisional Railway Mangers (DRMs) are permitted to meet the representatives of the media approaching them for factual information on specific subjects.
- It is made clear that no unauthorized person should speak to or interact with the media, as it may amount to un-becoming of a railway servant.

PUBLICITY DURING ACCIDENTS/OTHER UNUSUAL OCCURENCES

- In the event of accidents, resulting in damage/causalities, the image of Railways invariably suffers because of adverse reactions in public and media.
- In such situations, Railways must display greater responsibility not only in relief and rescue operations but also in interacting with the media with correct and updated information.

Management of cyclones: Cyclone vulnerability in India

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.Early warning to station masters and passengers is the key to informing concerned stake-holders in the DM Plan.

Management Of Floods:

- Board has advised RDSO to compile the Flood vulnerable areas in Formation, Cutting Bridges and Buildings etc. along with a questionnaire.Ministry of Railways has asked RDSO to coordinate IR activities for implementation of National Disaster Management Authority's guidelines on 'Management of floods (Jan.08) by zonal railways and production units. NDMA Guidelines have been made available to all zonal railway and production units.

Action Plan forFloods::-

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 catchment area due to construction of highways, Dams.

- Study of changed rainy season month on a particular region.
- Installation of Flood water level monitoring system.

Management Of Earthquakes:

Preparedness by Railways:-

- 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.
- Outline/gist of RDSO action plan should be included in the DM Plan, for implementing by Zonal Railways, in a given time frame.

Management Of Landslides And Snow Avalanches:

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.

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 Directorate of Railway Board is the landslide hazard zonation mapping in macro and micro scales after identification and prioritization of the areas in consultation with the Border Roads Organization, State Governments and local communities.

Management of Chemical Disasters

- 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:

I. Explosives

II. Gases, Compressed, liquefied or dissolved under pressure

III. Petroleum & other inflammable liquids

IV. Inflammable solids V. Oxidising substance

VI. Poisonous (Toxic Substances) VII. Radio-active substances

VIII. Acids & other Corrosives.

- Preventive Action in the Rail Route of Movement of Hazchem

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.

Management Of Biological Disasters:

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 counter measures.
- 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 pathogens.
- The mechanism required however, to face both can be similar if the service providers are adequately sensitized.

Management Of Chemical (Terrorism) Disasters:

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 nongovernmental 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, de-corporation, capacity building and infrastructure development.

(d) Community-centric mechanism for the management of chemical (terrorism) disasters.

Disaster Management Training on the Railways

- National Institute of Disaster Management (NIDM) has been envisaged as apex body onDisaster 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.

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.

FEATURES OF IRS

- IRS is categorized with features like management by objectives, unity of command and Chain of command, Organizational flexibility, span of control, unified command, accountability, Resource management, etc.

SUMMARY OF ACTION POINTS

- IRS constitutes an important part of the Disaster Response at the State and District level.
- These Guidelines will help the States and the Districts in their disaster response. It will also help to reduce chaos and confusion during response.
- Everyone will know all has to be done and who is in command.
- The important thing is to get the team members trained in their respective roles.
- A time bound strategy with fixed responsibilities is essential to achieve this objective.

DISASTER MANAGEMENT SYSTEM, STRATEGIES, CRITICAL ACTIVITIES AND AVAILABLE RESOURCES

- Disaster Management system and strategies on Indian Railways: The Indian Railways is having an organized system of relief for managing accidents with its own resources. Details of procedures and systems have been laid down in the Accident Manuals of the respective Zonal Railways.

The main areas of focus on disaster management are:-

a) Faster Response

b) Better facilities and equipment

c) Expanding resources to meet requirements in major accidents

d) Better customer focus

e) Training and Preparedness

f) ART management to undergo major changes covering rolling stock management, status of equipment, monitoring of utilization of assets and availability and consumption of stores etc.

Critical Activities for Disaster Management

- 167 ARMVs and 179 Accident Relief trains ARTs, are positioned at strategic locations which cover the entire rail network of Indian Railways for rushing to accident sites on top priority, along with doctors, para medical staff, rescue workers and engineers.
- 78 of ARTs also have Diesel Hydraulic cranes attached to them.
- ARTs and ARMVs are equipped with rescue and relief equipment.
- These are located so as to cover an area not beyond a distance of 150 to 200 kms reach within 2 to 3 hours normally.
- In addition, there are 320 stationary Accident Relief Medical Equipment (ARME) – Scale II consisting of three sets of Portable Medical Kit for Accidents (POMKA) units positioned at identified stations, placed 80-100 kms. apart in between ARMVs.

The main activities undertaken by Railway administration at accident site are:

- The medical team participates in rescue and stabilisation of injured passengers, those seriously injured are transported to nearby hospitals. The cost of such treatment is borne by the Railways.
- Deaths are certified by doctors and dead bodies are handed over to Police for further action such as autopsy etc. for medico-legal purpose.
- Railway doctors are deputed to the hospitals where the injured are admitted, to render necessary assistance, including supply of required medicines, etc.
- In addition to the above own resources, nearby ambulances and doctors with paramedics, fire brigades, other necessary resources are also requisitioned as per need for expeditious operations.
- Information like names, addresses and telephone numbers of nearby hospitals, local police, fire brigade, officials of Civil Administration etc are available at Stations/Divisional controls and immediate relief is sought at the time of accident.

- In case of serious accidents involving passengers, National Disaster Response Force (NDRF) is also requisitioned.
- 24X7 control room of Ministry of Home Affairs (MHA) or the control room of concerned ministry is contacted for mustering help from defence services including help of Air Force.
- Relief trains are arranged for clearing stranded passengers.
- Arrangements for supply of meals, drinking water, and beverages etc. are made not only for the injured, but also to other passengers of the affected trains.
- Once affected passengers are attended, accident site is restored back to normal traffic with thehelp of break-down cranes, hydraulic rescue equipment, etc.

- The accident inquiries are conducted within a time frame and preventive/corrective actions are taken accordingly.
- Timely information is given to the press to avoid misreporting and speculation about the casualties and the cause of the accident.
- Disaster Management plan at Divisional, Zonal and Ministry level are integrated with each other,
- and are comprehensive and fully prepared to handle disasters.

Rescue and Relief System on Indian Railways

- The Indian Railways is having an organized system of rescue and relief operations for managing accidents with its own resources. Details of procedures and systems have been laid down in the Accident Manuals of the respective Zonal Railways.
- Each Zonal Railway has its own Accident Manual for dealing with Railway accidents and unusual occurrences.

The Disaster Management Plan must include who is responsible for what activities in detail, to ensure the basis steps as below:

- Rapid access to the site of the accident.
- Effective site management by making best use of on-board and locally available resources.
- Quick extrication of victims.
- Speedy transportation of victims to hospital.
- Proper communication system both for assisting the stranded passengers as well as giving out timely information to the media.

Measures to prevent accidents

Signalling

- Track Circuiting
- Provision of Centralized Operation of Points and Signals
- Elimination of Semaphore Signalling
- Provision of Isolation and Elimination of Rudimentary Interlocking and
- Upgradation of Standard Interlocking
- Block Proving by Axle Counter

Centralized On-line Monitoring, Predictive Maintenance and Asset Management System

- Train Management System (TMS)
- Train Protection Warning System (TPWS)
- Train Collision Avoidance System (TCAS)

- Continuous Track Circuiting with Automatic Block Signalling
- Mobile Train Radio Communication
- Rail Fracture Detection System –
- Wheel Impact Load Detector (WILD)
- Better and Safer Coaches
- Retrofitment of crash worthy features such as crash buffers and anti-climbing modifications in conventional coaches.
- Fire detection and suppression system in AC coaches
- Fire detection and suppression in NAC coaches
- Automatic door closure mechanism in coaches
- Redesigning/refurbishing of interior of coaches and interior fittings for better occupant safety
- Provision of Road Over/Under Bridge
- Fire detection and suppression system at important installations.
- Vigilance Control Device
- All electric and Diesel locomotives are equipped with vigilance control devices (VCD) to ensure alertness of Loco Pilot.

References-

1.Disaster Management Plan- 2018 for the Ministry of Railways
2. DISASTER MANAGEMENT PLAN January 2020

Thank You