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Railway Accidents and Safety Measures

Lesson 1

Railway Accidents

1. Introduction

- 1.1 Indian Railways attach paramount importance to ensuring safety in railway working. However, before, we discuss 'Safety' it is desirable to know as to what are the various types of railway accidents and what action is required to be taken if and when an accident takes place.
- 1.2 In this lesson following aspects relating to railway accidents will be discussed.
- (i) Definition of railway accidents.
 - (ii) Classification of accidents.
 - (iii) Reporting of accidents.
 - (iv) Relief and restoration equipment.
 - (v) Action to be taken for relief and restoration.
 - (vi) Holding of inquiries into accidents.
 - (vii) Accident related disciplinary cases.
 - (viii) Trend of accidents of last 5 years.

2. Definition Of A Railway Accident

In railway terminology, the term 'accident' envelopes a wide spectrum of occurrences which not only affect safety but also cause interference with normal working.

These occurrences which may not necessarily mean a mishap, include failures of railway equipment such as engines, rolling stock, permanent way, signals etc.

- 2.1 "Any occurrence which does or may affect safety of the Railway, its engines, rolling stock, permanent way, works, passengers or staff or which affects the safety of others or which does or may cause delay to trains or loss to the Railway" is defined as an accident.
- 2.2 Workshop accidents covered by Factories Act, 1948, are not included as accidents for the purpose of these rules.

3. Classification Of Accidents

However, it is accidents which fall in the categories of collisions, derailments, accidents at level crossings, fires in trains etc., resulting in loss of life, which agitate the public

mind and come in for severe criticism. By and large rail users judge the record of safety of rail travel by the incidence of these accidents.

Railway accidents may be either ‘train accidents’ or ‘yard accidents’.

3.1 A Train Accident has been defined as an accident involving a train, when running under a particular number or a distinct name from a fixed point of departure to a fixed destination.

3.2 Train Accidents have further been classified as ‘consequential’ or ‘indicative’: ‘Consequential Train Accidents’ include:

- (i) Collisions, including side collisions,
- (ii) Derailments,
- (iii) Manned level crossing gate accidents,
- (iv) Unmanned level crossing accidents,
- (v) Fire in trains, and
- (vi) Miscellaneous.

“Indicative Accidents’ include:

- (i) Averted collisions,
- (ii) Breach of block rules, and
- (iii) Passing signal at danger.

3.3 Serious Accident:

Accident to a train carrying passengers which is attended with loss of human life or grievous hurt to passengers, or with serious damage to railway property of over Rs. 25 lakhs 2 crore; or any other accident which in the opinion of the Chief Commissioner or Railway Safety requires the holding of an inquiry by Commissioner of Railway Safety is defined as a ‘serious accident’.

3.4 All accidents have been classified in categories ‘A’ to ‘R’ excluding ‘I’ and ‘O’ for purposes of reporting:

Classification	Sub Class	Nature of accident
A	A1 to A5	Collisions.
B	B1 to B7	Fire or Explosion.
C	C1 to C9	Level Crossing Accidents.
D	D1 to D6	Derailments.
E	E1 to E2	Other train accidents,

F	F1 to F4	Averted collisions.
G	G1 to G4	Breach of block rules.
H	H1 to H2	Passing signal at danger.
J	J1 to J10	Engine/rolling stock failure.
K	K1 to K7	Permanent Way failure.
L	L1 to L4	Electrical failures.
M	M1 to M7	S & T wrecking.
N	N1 to N3	Train wrecking
P	P 1 to P3	Casualties.
Q	Q1 to Q6	Other incidents.
R	R1 to R5	Miscellaneous.

3.5 Each of the above classes is further subdivided, such as A1, A2, etc. depending upon nature and consequences of the accident as indicated below:

Sub Class	Nature of accident
A1	Collision involving passenger carrying train resulting in loss of life, grievous hurt, damage of more than RS. 25 lakhs 2 crore, interruption for more than 24 hours
A2	Collision involving freight train resulting in loss of life, grievous hurt, damage of more than Rs. 25 lakhs, interruption for more than 24 hours.
A3	Collision involving passenger carrying train not falling under A-1 above
A4	Collision involving freight train not falling under A-2 above.
A5	Other collisions in yards etc. not involving a train.

4. Reporting Of Accidents

Accident Manual of Zonal Railways contain details of each sub-class, as also a list of officials to whom the accident message is to be addressed for each particular type of accident.

4.1 All concerned message:

Station Master of the station nearest to the site of accident, on receiving information about an accident, immediately advises the 'Control Office' and asks for assistance required. He also issues an 'All Concerned Message' indicating the sub-classification of the accident and other relevant details. Control Office further conveys the accident

message to officials listed in the Accident Manual.

4.2 Telephonic advice to Zonal Headquarters:

On receipt of information of an accident in divisional control office, the Deputy Chief Controller in control office telephonically advises Central Control Office in Zonal Headquarters of 'train Accidents'.

4.3 Telephonic advice to Railway Board:

On receipt of information of a 'Train Accident' from divisional control office, nominated officers in Zonal Headquarters telephonically advise nominated officers in Railway Board in respect of 'Consequential Train Accidents'.

4.4 Report to Commissioner of Railway Safety:

In case of following accidents, Station Master nearest the sites of accident, also sends advice to Civil authorities such as District Magistrate, Superintendent of Police and Officer In-Charge of Police Station concerned.

Railways also sends notice of the accident to State Government and Commissioner of Railway Safety concerned as per Section 113 of Railway Act 1989 in respect of:

- (i) Serious accidents.
- (ii) Collision of a passenger carrying train.
- (iii) Derailment of a passenger carrying train.
- (iv) Any accident attended with loss of human life, grievous hurt or serious loss of property.
- (v) Any accident notified for this purpose by the Central Government.

4.5 Other non-railway officials to be advised:

Depending upon the nature of accident, Military authorities, Postal department, Inspector of Explosives are also advised. In case of serious accidents Public Relation Officer conveys information to public through press and Electronic Media.

5. Relief And Restoration Equipment:

It is the moral and legal responsibility of railways to render medical aid to persons injured in a railway accident. As such after occurrence of an accident, railway undertakes medical aid to injured along with relief and restoration operations. Safety organization on railways co-ordinates relief and restoration operations after an accident.

Indian Railways have elaborate facilities to ensure quick 'relief and restoration' in case of an accident. These include:

- (i) Accident Relief Medical Vans (ARMVs),
- (ii) Accident Relief Medical Equipment (ARME),

- (iii) Accident Relief Trains (ARTs),
- (iv) Break Down cranes (BDs),
- (v) First Aid Boxes,
- (vi) Fire Fighting Equipment.

Location, composition and beats of ARMVs, ARMEs, ARTs and BDs are given in the Accident Manual of each Zonal Railway. The list of standard equipment for each of these is also given in the Accident Manual. Officers in charge for each of these ensure that these are always kept fully equipped and in good fettle.

Mock drills are periodically organized to ensure their timely turning out and proper upkeep.

5.1 Accident Relief Medical Vans (ARMVs):

In order to ensure expeditious medical aid, ARMVs are stationed every 160 to 200 kms. Apart from major junctions for quick dispatch to an accident site. ARMVs are stabled in a siding in the passenger yard having direct exit in both Up and Dn directions so that it is possible to dispatch it with a locomotive within 15 minutes of being ordered. Medical officers are always in readiness to accompany the ARMV. In an accident involving a passenger carrying train, other officers also leave by the ARMV which is dispatched first.

ARMVs are to be turned out within 20 minutes by day and 30 minutes by night after being ordered.

5.2 Accident Relief Medical Equipment (ARMEs) :

In addition to ARMVs, chests containing medical equipment are kept at nominated junction stations 75 to 100 kms. apart. ARMEs can be Scale – I or Scale – II depending on the of equipments provided and are transported by train to the accident site. Tools, stores and equipment provided in ARMVs and ARMEs are periodically reviewed. The content of surgical equipments and list of medicines stocked are periodically updated as a result of latest and more sophisticated ones available.

5.3 Accident Relief Trains (ARTs):

ART is made up of 7 to 8 bogies and consists of a crane, hydraulic jacks, re-railing equipment, gas cutters, cold cutters, etc. In order to ensure quick restoration after an accident, ARTs like ARMVs are stationed at every 160 to 200 kms. apart at major junctions. Like ARMVs, ARTs are also stabled in sidings having direct exit in both Up and Dn directions. Tools, stores and equipment provided in ARTs are periodically reviewed. 65 Ton steam cranes which were earlier being used have now been replaced by 140 Ton diesel cranes. These cranes are capable of lifting a locomotive or a loaded 8 wheeler wagon. ARTs are to be turned out within 30 minutes by day and 45 minutes by night after being ordered.

5.4 Break Down Vans (BD vans):

With electrification of trunk routes use of cranes for re-railing operation has become time consuming process due to downing of OHE and slewing of electric masts. In order to get over this problem railways have gone in for using hydraulic jacks and MFD equipment for re-railing operations in smaller accidents involving wagons. These are kept in Brake Down Vans and are sent to the sites of smaller accidents.

5.5 First Aid Boxes:

All stations and each guard is provided with First Aid Boxes, for dealing with medical emergencies that may be encountered. The custodian of these boxes ensures that these are replenished from time to time before the dates of stocked medicines become expired.

5.6 Fire Fighting Equipment:

All stations and each railway installation is provided with Fire Fighting Equipment for dealing with fire cases that may break out. The custodian of these fire extinguishers see that these are refilled periodically.

6. Action to be taken for relief & restoration:

Details of action to be taken by various officials in case of serious accidents are given in the Accident Manual. In case of a serious accident following actions are undertaken in order of priority:

- (i) Saving life, rescue and immediate medical aid.
- (ii) Quick relay of information to all concerned.
- (iii) Transporting the injured to nearest hospital.
- (iv) Supply of necessary materials to accident site.
- (v) Protection of passengers' belongings, railway property,
- (vi) Preservation of clues regarding cause of accident.

6.1 Serious Accident in a Block Section:

In case a serious accident involving casualties occurs in the block section, railway officials normally available at the accident site will be Guard, Engine Crew and Commercial Staff such as Train Conductor, TTEs etc. In addition to above on duty staff available on the train, there are also likely to be some other railway officials, either on duty or on leave, travelling by the train. Following action should immediately be taken by them.

6.2 Duties of the Guard of the train:

- (i) Note the time or the accident.
- (ii) Inform driver through walkie-talkie set.

- (iii) Protect adjacent line/lines if required and the line on which the accident has taken place.
- (iv) Send information through quickest means to the Control Office and SMs on either side of the block section. For this purpose,
 - (a) Walkie – talkie communication provided with stations should immediately be used.
 - (b) Otherwise field telephone should be used.
 - (c) If a train comes on the other line which is not blocked the same should be stopped and information sent through the driver.
 - (d) Assistant driver or brakes-man may be sent to the next station to convey information of the accident.
- (v) Save lives and render first aid.
- (vi) Call for Doctors and seek their assistance.
- (vii) Seek assistance of railway staff and other volunteers from train for attending to the injured.
- (viii) Arrange for transportation of injured to hospital.
- (ix) Ensure that field telephone is constantly manned.
- (x) Make quick assessment of assistance needed and advise Control Office or nearest Station Master.
- (xi) Preserve clues regarding probable causes of the accident.
- (xii) Arrange protection of passengers belongings and railway property with the help of RPF, GRP.

6.3 Duties of the Engine Crew:

- (i) Note the time of accident.
- (ii) Switch ON the ‘Flasher light’ of the locomotive and light the fuse, if required.
- (iii) Informs the guard on walkie-talkie set.
- (iv) Protect the adjacent line, if required, and the train in front.
- (v) Take necessary action to keep the loco safe.
- (vi) Render all possible assistance to the guard.

6.4 Duties of Officer – in – Charge site (OC site):

In case some railway officials are travelling by the accident involved train, the senior-most official takes charge as Officer – in – Charge site (OC site).

- (i) Take charge of the situation and organize rescue and relief activities promptly and efficiently.
- (ii) Save lives and render first aid.
- (iii) Call for Doctors and seek their assistance.
- (iv) Seek assistance of railway staff and other volunteers on the train.
- (v) Arrange transportation of injured as hospital.
- (vi) Make quick assessment of assistance needed and advise Control Office or nearest Station Master.
- (vii) Arrange protection of passengers, belongings and railway property with the help of RPF, GRP.
- (viii) Preserve clues regarding probable causes of the accident.
- (ix) Ensure joint readings of track and rolling stock involved are taken as per rules.

6.5 Duties of Station Master of the nearest station:

- (i) On receiving information about the accident; the Station Master of adjacent station promptly communicates the same to Control Office.
- (ii) He immediately protects the Block Section concerned by putting the commutator of the Block Instrument in “Train on line” position and also putting the slide collar on the slide control of the Advanced Starter concerned.
- (iii) Each Station Master’s office has a list of doctors/hospitals displayed prominently. SM informs doctors and hospital authorities regarding the accident and seeks their help.
- (iv) SM organizes drinking water, tea, refreshments and food as required. These are sent to accident site through quickest means.
- (v) SM maintains close liaison with Control Office and OC site and carries out orders as conveyed.

6.6 Duties of the Control Office:

- (i) Order ARMV and ART.
- (ii) Advise all officers concerned as per standard list available in Control Office.
- (iii) ARMV and ART are moved on top priority.
- (iv) An Operating Officer, assisted by the Chief Controller, promptly takes charge in the Control Office to coordinate relief measures.
- (v) Control Office is manned round the clock by officers till restoration is completed.
- (vi) Proper liaison on phone is maintained with OC site as well as Zonal Headquarters.

- (vii) A log book is maintained of messages received/sent, action taken and progress of relief work.
- (viii) Arrangements are made to work the unaffected portion of the train to the nearest major station.
- (ix) Special train to take passengers to their destinations is also arranged. All possible help is extended to passengers for trans-shipment of their luggage etc.
- (x) All possible help is organized for transportation of injured passengers to hospital.
- (xi) Regulation, diversion, rescheduling, short termination and cancellation are planned for trains due to run via the accident effected route.

7. Role Of Different Departments During Serious Accidents:

In ordinary accidents involving freight trains the main departments involved are Operating, Mechanical, Civil, Electrical and S&T. However, in serious accidents involving casualties, other departments which play an important role are Medical, Commercial and Security. In case of railway accidents involving casualties, the initial 5 to 6 hours are extremely crucial as far as saving lives of injured passengers are concerned. For this purpose, contact telephone numbers of all Officers and supervisors are available with control office staff of their respective departments.

Officers and staff required to go to an accident site keep a small suitcase ready with adequate clothes and duplicate toilet kit etc. so that valuable time is not lost in case of an accident. In case of an accident to a passenger carrying train, ARMV is ordered immediately irrespective of whether information regarding casualties is available or not. In such cases Branch Officers go to the accident site. Only one officer of each department stays back in divisional hqtrts. along with skeleton supervisory staff.

7.1 Medical Department:

First and foremost duty of Medical department is to rescue injured passengers with the help of other passengers, railway staff and volunteers. First aid is rendered and medical assistance available in ARMV is also given. Those who are in critical condition are transferred to the nearest hospital. Along with this dead bodies are also taken out. A list of passengers extricated from coaches is compiled.

Senior most railway doctor at site makes a quick assessment of extra assistance of medicines and manpower required. For this purpose additional doctors with medicines are sent from adjoining divisions depending on the severity of accident. Teams in charge of taking injured to hospitals then take over and carry on further. They compile a list of passengers extricated from coaches and name of hospital to which they have been taken.

7.2 Commercial Department:

7.2.1 Role of Commercial department:

Commercial department provides relief and succor to passengers of the ill fated train. This includes:

- (j) Taking the injured to hospitals.
- (ii) Arranging for photographs of dead/injured.
- (iii) Safe custody of passengers' belongings.
- (iv) Tran-shipment of remaining passengers.
- (v) Payment of Ex-gratia
- (vi) Arranging for food and water at site.
- (vii) Taking care of perishables in VPU.
- (viii) Taking care of relatives of passengers.
- (ix) Manning of the Command Post.

7.2.2 Site management:

Commercial staff who reach the accident site collect the current reservation chart from TTEs who were on duty in the affected train and cross check names against the list.

The list of injured passengers admitted to various hospitals includes following details:

- (i) S.No.
- (ii) Name.
- (iii) Time/Date
- (iv) Train No./Coach No./Berth No./Ticket No.
- (v) Address.
- (vi) Status.
- (vii) Hospital.
- (viii) Ex-gratia paid.
- (ix) Persons accompanying.
- (x) Name of next of kin.

Whatever information in available is compiled. Remaining information is subsequently completed. Each special train carrying unaffected passengers is accompanied by a commercial supervisor. Free food is provided enroute.

7.2.3 Enquiry Counters:

Extra enquiry counters are opened at various stations for giving detail information of dead and injured passengers. These counters are opened at originating and destination station of the accident involved train and at all major junctions enroute the train's journey. Reservation Office provides a fresh print out of the reservation chart of the train originating station. Adequate publicity is given over TV & AIR regarding expected arrival time of passengers of the accident effected trains.

In addition to above, arrangements are made for regular announcements regarding:

- (i) Regulation,
- (ii) Diversion,
- (iii) Termination,
- (iv) Rescheduling,
- (v) Cancellation,

Of all Mail/Express/Passenger trains on affected route.

Additional refund counters are opened for cancellation/refund of tickets at all major stations throughout the railway. Extra booking counters are also opened for giving refund to passengers of short terminated trains as and when necessary.

7.2.4 Photographs and Ex-Gratia:

Arrangements are made for taking photographs of dead bodies, preferably in colour and from different angles. If possible, Video filming is done. Before photography or video filming each body is properly labeled with a unique serial no. prominently displayed in the photograph Ex- Gratia payments are made as follows to the injured passengers and the next kin of the dead.

- (i) Dead Rs. 15000/-
- (ii) Grievous injury Rs. 5000/-
- (iii) Simple injury Rs. 500/-

7.2.5 Catering arrangements:

Arrangement for food and drinking water are made for following categories of people:

- (i) Injured passengers admitted in hospitals.
- (ii) Unaffected passengers of the ill fated train.
- (iii) Relatives of dead or injured passengers.
- (iv) Railway Staff working at site.
- (v) Off duty railway staff.

(vi) Staff of other govt. organizations or local volunteers who may be helping out.

7.3 Security Department:

RPF personnel ensure that they form a protective ring around the accident affected area and undesirable persons are not allowed to come near. RPF staff from adjoining divisions are also used if required.

Luggage of the dead and injured passengers are properly labelled and stocked, coach-wise if possible. Thereafter, these are guarded by RPF personnel so that later they can be handed over to their rightful claimants. Extra care is taken of minor children, especially if they are found to be uninjured and unaccompanied; or if their behaviour is noticed to be unnatural.

7.4 Operating Department:

Two special trains are required to be started from the accident site, one carrying unaffected passengers of the front portion and the other carrying unaffected passengers of the rear portion of the accident affected train.

Special trains are also run from the originating and destination stations covering the entire route of the accident involved train for bringing relatives of the dead and injured to the accident site.

7.5 Signal & Telecommunication Department:

Release of additional Railway and DOT microwave channels between site and divisional control as also between divisional control and Zonal Hdqrs. For faster and reliable communication.

7.6 Personnel Department:

Personnel department takes care of relatives of dead and injured passengers who arrive at the accident site. Apart from payment of ex-gratia, the procedure for filling of claims compensation forms is also explained to the victims families along with details of documentation required to be submitted by them. Complimentary passes are also given for their travel back to their home town.

Following compensation is paid to accident victims:

- (i) Dead Rs.4 lakhs.
- (ii) Injured Rs. 32000/- to 4 lakhs depending on the severity

8. Accident Inquiries:

8.1 Objective of holding an accident inquiry:

All failures are examined even if they have not affected a running train to see how they can be prevented in future. The aim is to ensure that railways reach a stage of no failures. The objective of an accident inquiry is to find out the cause of an accident so that:

- (i) Those responsible for negligence or breach of rules may be punished,
- (ii) If there is any inherent defect in the system of working, steps may be taken to effect necessary improvements.

8.2 Different types of inquiries:

Inquiries are divided into five classes, namely:

- (i) Judicial Commission of inquiry.
- (ii) Commissioner of Railway Safety's inquiry.
- (iii) Officers joint inquiry.
- (iv) Senior Subordinates joint inquiry.
- (v) Departmental inquiry.

8.3 Judicial Commission of Inquiry:

In very serious accidents involving heavy casualties Government appoints a judicial Commission to inquire into the cause of the accident and suggest means of preventing them in future. Commissions are appointed under Commission of Inquiries Act, 1952, and inquiry is conducted by a sitting or a retired judge of the Supreme Court of High Court.

8.4 Inquiry by CRS

Every accident to a train which is attended with loss of life or with grievous hurt to a passenger or which causes serious damage to railway property exceeding Rs. 25 lakhs is inquired into by CRS.

When the Chief Commissioner of Railway Safety considers holding of an inquiry into an accident necessary, he may either conduct the inquiry himself or direct the commissioner of Railway safety to do so, or even direct the railway administration to conduct an inquiry on his behalf.

8.5 Other than CRS inquiry:

In case of all other accidents, one of the following types of accident inquiries is conducted and report submitted:

- (i) Officers joint Inquiry.
- (ii) Senior Subordinates joint Inquiry.
- (iii) Departmental Inquiry.

An inquiry is conducted in cases of indicative accidents and also in following cases:

- (i) If system of working is suspected to be defective.

- (ii) If ordered by the Chief Safety Officer.
- (iii) If ordered by the Divisional Railway Manager.

8.6 Dispensing with an accident inquiry:

An accident inquiry may be dispensed with provided:

- (i) There is no reasonable doubt as to the cause of the accident.
- (ii) If any department accepts responsibility.
- (iii) It is not necessary to hold formal inquiries into all fatal or other accidents to passengers and trespassers or railway servants. Such accidents must, however be investigated by a railway official and police/medical reports obtained.

8.7 Time schedule for completion of inquiries:

The Accident Manual lays down different targets for completion of accident inquiries depending on the level of inquiry committees:

- (i) D - Date of accident.
- (ii) D+3 - Commencement of inquiry.
- (iii) D+7 - Completion of inquiry & Submission of report to DRM.
- (iv) D+10 - Submission of report to GM.
- (v) D+27 - Submission of report to CRS.

Apart from ensuring prompt finalization of accident inquiries, safety organization also ensures that the quality of accident inquiries are up to the requisite standard. These should not be finalized in a shoddy manner just to complete the formality of having held an inquiry. Efforts are also made to ensure that as far as possible findings given by the inquiry committee are unanimous and there are no dissent notes.

9. Accident Related D & Ar Cases:

Accident related disciplinary cases should be finalized, including imposition of penalty on the defaulting staff, if any, within an average of 90 days of occurrence of the accident. Finalization of accident cases is monitored by the Railway Board through monthly statements which show the time taken at each stage of finalization. This helps to identify and clear bottlenecks. Railways also send summarized position of D&AR cases finalized during each quarter giving penalty wise break-up.

Railway Board have issued instructions laying down following targets for completion of various types of D & AR cases depending on the severity of the offence:

- (i) NO railway staff responsible - 40 days
- (ii) Minor penalty imposed - 60 days

- (iii) Major charge sheet but minor penalty imposed - 90 days
 (iv) Major penalty imposed - 150 days

10. Commission Of Railway Safety:

10.1 Set up of the Commission:

Commission of Railway Safety is an independent organization which functions under the administrative control of the Ministry of Civil Aviation. It consists of the Chief Commissioner of Railway Safety who heads the organization, and 9 other Commissioners of Railway Safety each holding charge of a circle. Chief Commissioner is the principal technical adviser to the Government in all matters pertaining to the Commission. He directs the technical activities of the organization and supervises the work of the Commissioners.

10.2 Functions of the Commission:

Principal functions of the Commission are as follows:

- (i) Inspection of new railway lines prior to authorization for passenger traffic.
- (ii) Periodical inspection of open lines.
- (iii) Approval of new works and renewals affecting passenger carrying lines.
- (iv) Investigation into accidents.
- (v) General advice on matters concerning safety.

10.3 Jurisdiction of CRSs:

Jurisdiction of the nine circles is given below:

Circle	Hdqrts.	Railway
(i) Central	Mumbai	Central, West Central, Konkan
(ii) Eastern	Kolkata	Eastern, East Central
(iii) Northern	New Delhi	Northern, Delhi Metro
(iv) North-Eastern	Lucknow	North Eastern, North Central
(v) Northeast Frontier	Kolkata	Northeast Frontier, Kolkata Metro
(vi) Southern	Bangalore	Southern, South Central
(vii) South Central	Secunderabad	South Central, East Coast
(viii) South Eastern	Kolkata	Southeast Central
(ix) Western	Mumbai	Western, North Western

10.3 Technical Wing of the Commission:

There is a Technical wing in the Commission, which assists CCRS and other CRSs in their work. The technical cell consists of four Deputy Commissioners of Railway Safety, one from each discipline of Electrical, Signal and Telecommunication, Mechanical and Operating.

11. Trend Of Accidents:

A measure of gravity of serious accidents is the relatively high proportion of casualties that takes place. Survey of train accidents which follows is restricted mainly to five categories of accidents, namely, collisions, derailments, accidents at level crossing, fires in trains and miscellaneous accidents.

As a result of various safety measures, total number of accidents have come down from 532 during 1990-91 to 177 during 2008-09 despite increase in traffic. Accidents per million train kms. which is the universally accepted index of safety has also come down from 0.87 accidents/m/km. in 1990-91 to 0.20 accidents/m/km. during 2008-09.

11.1 The category-wise comparative position of train accidents since 1960-61 is as under:

Year	Col	Derail	L-xing	Fire	misc.	Total	Acc/mtkm
60-61	130	1415	181	405	-	2131	5.50
70-71	59	648	121	12	-	840	1.80
80-81	69	825	90	29	-	1013	2.00
90-91	41	446	36	9	-	532	0.86
02-03	16	218	96	14	07	351	0.44
10-11	05	80	53	02	01	141	0.14
15-16	03	64	35	00	04	106	0.10

11.2 The category-wises comparative position of train accidents during the last five years is as under:

Year	Col	Derail	L-xing	Fire	misc.	Total	Acc/mtkm
11-12	09	55	61	04	02	131	0.12
12-13	06	48	58	08	00	120	0.11
13-14	04	52	51	07	03	118	0.10
14-15	05	60	56	06	04	131	0.11
15-16	03	64	35	00	04	106	0.10
03-04	09	202	95	14	5	325	0.41

11.3 The cause-wise position during last five years is as under:

	2011-12	2012-13	2013-14	2014-15	2015-16
1. Human Failure	119	99	106	115	92
(i) Failure of Railway Staff	57	41	49	58	54
(ii) Failure of persons other than Railway Staff	62	58	57	57	38
2. Equipment Failure					
(i) Rolling Stock	3	7	-	-	-
(ii) Track	-	-	3	3	-
(iii) Electrical	-	-	-	-	2
(iv) S&T	-	-	-	-	-
3. Sabotage	6	3	3	2	1
4. Combination of Factors	1	-	3	-	1
5. Incidental	2	6	4	8	9
6. Cause not established	-	2	-	2	1
7. Under Investigation	-	3	1	1	-
Total	131	120	117	131	106

11.4 The comparative position of casualties suffered and compensation paid during the last five years is as under:

	2011-12	2012-13	2013-14	2014-15	2015-16
1. Passengers					
(i) Killed	100	60	42	118	40
(ii) Injured	586	248	94	324	126
(iii) Casualties per million Passenger carried	0.08	0.04	0.02	0.05	0.02
2. Compensation paid (In Lacs Rs.) (Approx.)	498.00	319.63	149.22	127.00	2 6 3 . 0 0

11.5 The comparative position of damage to railway property (RS. Crs.) during the last two years is as under:

	2014-15	2015-16
(i) Rolling Stock	6313.06	5089.42 in lacs of rupees
Cost of damage (in lakhs of Rs.)		
(ii) Permanent Way	894.45	834.33 in lacs of rupees
Cost of damage (in lakhs of Rs.)		
(iii) Interruption to through communication (Hours)	946.27	923.05

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