

# C O N T E N T S

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## CHAPTER I

### SAFETY RECORD OF INDIAN RAILWAYS

- 1.1** Indian Railways is the largest railway network under a single management in the world. It has a route kilometrage of nearly 63,327 kms., an operating fleet of 4,72,710 wagons (in terms of 4-wheelers), 48,597 coaching vehicles and 8,153 locomotives.
- 1.2** During 2006-2007, on an average, 18,371 trains, including 8,984 passenger carrying trains were run daily. Nearly 17 million passengers were booked daily and 744.48 million tonnes of freight traffic was loaded during the year. With such a massive utilisation of assets, safety is of paramount importance for operational efficiency. A very high priority is accorded to safety to enable Railways to achieve still greater heights of performance.

#### Consequential Train Accidents

- 1.3** The term 'accident' envelopes a wide spectrum of occurrences with or without significant impact on the system. Consequential train accidents include mishaps with serious repercussion in terms of loss of human life or injury, damage to railway property or interruption to rail traffic of laid down threshold levels and values. These consequential train accidents include collisions, derailments, fire in trains, road vehicles colliding with trains at level crossings, and certain specified types of 'miscellaneous' train mishaps.

#### Incidence of Train Accidents

- 1.4** The number of consequential train accidents decreased from 233 (excluding one train accident on Konkan Railway) during 2005-2006 to 194 (excluding one train accident on Konkan Railway) during 2006-2007. The number of train accidents per million train kilometres, which is the universally accepted safety index, also dropped from 0.28 in 2005-06 to 0.23 in 2006-2007. The continuous reduction in the number of train accidents per million train kilometres which has fallen from 5.5 in 1960-61 to 0.23 in 2006-07, is indicative of sustained improvement in safety performance. A table showing the trend of train accidents on Indian Railways since 1960-61 is attached as Appendix I.

- 1.5 Out of 194 (excluding 1 train accident on Konkan Railway) train accidents that took place during 2006-2007, 170 took place on the broad gauge, 16 on the metre gauge and 8 on the narrow gauge. Freight trains were involved in 51 accidents and passenger trains in 143 accidents.

**Damage to Railway Property**

- 1.6 The cost of damage to railway track and rolling stock and interruption to through communication on account of train accidents during the last 5 years have been as under:-

Year	Cost of damages (Rs. in Lakhs)		Interruption to through Communication (in hrs.)
	Rolling Stock	Permanent Way	
2002-2003	3158.4	617.3	2,388
2003-2004	4348.6	826.0	2,806
2004-2005	2225	497.1	1,692
2005-2006	2443.4	941.5	1,904.47
2006-2007*	2321.7	871.3	1,148.13

\* Excludes KRC & Metro Railway, Kolkatta.

**Casualties**

- 1.7 The number of casualties in train accidents is essentially fortuitous and not strictly susceptible to comparison. List of the major accidents during 2006-07 which were attended with death of 10 or more persons is attached as Appendix II. The position of casualties in train accidents during the last 5 years has been as under:-

Year	Killed				Injured			
	Passengers	Rly. Staff	Others	Total	Passengers	Rly. Staff	Others	Total
2002-2003	157	29	232	418	658	41	283	982
2003-2004	135	4	155	294	302	31	159	492
2004-2005	50	5	181	236	191	12	209	412
2005-2006	168	9	138	315	483	31	113	627
2006-2007*	38	6	164	208	227	24	151	402

\*Excludes KRC & Metro Railway, Kolkatta.

## Causes of Consequential Train Accidents

**1.8** Broad causes of consequential train accidents which occurred on Indian Railways during the last 5 years, i.e., 2002-2003 to 2006-2007 are as under:-

S.No	Broad Causes	2002-03	2003-04	2004-05	2005-06	2006-07
1.	Failure of Railway Staff	186	161	119	120	85
2.	Failure of Persons other than Railway Staff	118	107	78	86	84
3.	Failure of Equipment					
	(a) Rolling Stock	6	6	5	1	4
	(b) Track	11	9	7	6	5
	(c) Electrical	1	1	2	--	--
	(d) S&T	--	2	--	1	--
4.	Sabotage	10	18	4	5	8
5.	Combination of factors	2	2	1	--	1
6.	Incidental	15	17	16	11	7
7.	Could not be established	2	2	2	3	--
8.	Under Investigation	--	--	--	1	1
	<b>Total</b>	<b>351</b>	<b>325</b>	<b>234</b>	<b>234</b>	<b>195*</b>

\* Including one accident on Konkan Railway.

Note: 'Incidental' causes include acts of nature like falling of boulders, sinkage of track due to heavy rain and cattle getting run over, etc.

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## CHAPTER II

### ACCIDENT COMPENSATION

#### Liability

- 2.1 The liability of the railway administration in the event of a consequential train accident attended with casualties has been defined in Section 124 of the Railways Act, 1989 as under:-

*“When in the course of working a railway, an accident occurs, being either a collision between trains of which one is a train carrying passengers or the derailment of or other accident to a train or any part of a train carrying passengers, then whether or not there has been any wrongful act, neglect or default on the part of the railway administration such as would entitle a passenger who has been injured or has suffered a loss to maintain an action and recover damages in respect thereof, the railway administration shall, notwithstanding anything contained in any other law, be liable to pay compensation to such extent as may be prescribed and to that extent only for loss occasioned by the death of a passenger dying as a result of such accident, and for personal injury and loss, destruction, damage or deterioration of goods owned by the passenger and accompanying him in his compartment or on the train, sustained as a result of such accident”.*

- 2.2 With effect from 1.8.1994 under Section 124-A of the Railways Act, 1989, the railway administration has also become liable to pay compensation for loss of life or injury to bonafide rail passengers who become victims of untoward incidents such as terrorist acts, violent attack, robbery, dacoity, rioting, shoot-out or arson by any person in or on any train carrying passengers, waiting hall, cloak room, reservation or booking office, platform, any place within the precincts of a railway station or the accidental falling of any passenger from a train carrying passengers. Section 124-A of the Railways Act, 1989 reads as under:-

*“When in the course of working a railway an untoward incident occurs, then whether or not there has been any wrongful act, neglect or default on the part of the railway administration such as would entitle a passenger who has been injured or the dependent of a passenger who has been killed to maintain an action and recover damages in respect thereof, the railway administration shall, notwithstanding anything contained in any other law, be liable to pay compensation to such extent as may be prescribed, and to that extent only for loss occasioned by the death of, or injury to, a passenger as a result of such untoward incident:*

*Provided that no compensation shall be payable under this section by the railway administration if the passenger dies or suffers injury due to:-*

- (a) *suicide or attempted suicide by him;*
- (b) *self-inflicted injury;*
- (c) *his own criminal act;*
- (d) *any act committed by him in a state of intoxication or insanity;*
- (e) *any natural cause or disease or medical or surgical treatment unless such treatment becomes necessary due to injury caused by the said untoward incident.”*

**Explanation:** For the purpose of this section, “passenger” includes

- (i) a railway servant on duty; and
- (ii) a person who has purchased a valid ticket for travelling by a train carrying passengers, on any date or a valid platform ticket and becomes a victim of an untoward incident.

### **Quantum of Compensation**

**2.3** Payment of compensation is governed by the Railway Accidents and Untoward Incidents (Compensation) Amendment Rules, 1997. Under these Rules, the amount of compensation payable in case of death is Rs.4 lakhs. For injuries, the amount varies from Rs.32,000/- to Rs.4,00,000/- depending on the nature of injury sustained.

**2.4** Ex-gratia relief is given by the Railway Administration soon after an accident at the rate of Rs.15,000/- to the next of the kin of the deceased. In case of grievous injury, the ex-gratia is paid at the rate of Rs.5,000/- for upto 30 days of hospitalization. If the injured victims require indoor treatment for more than 30 days, additional ex-gratia is paid at the rate of Rs.1,000/- per week or part thereof for further six months, and if further indoor treatment is required, additional payment of Rs.500/- per week or part thereof is made for another period of six months. Ex-gratia in case of simple injury is Rs.500/-. The ex-gratia relief is intended to meet the immediate expenses and is not taken into account at the time of final settlement of compensation claims. In case of serious or special circumstances, the quantum of ex-gratia can be enhanced.

### **Application for Compensation**

2.5 Under Section 125 of the Railways Act, 1989, it has been provided :-

“(1) An application for compensation under Section 124 or 124-A may be made to the Railway Claims Tribunal-

- (a) by the person who has sustained the injury or suffered any loss, or
- (b) by any agent duly authorised by such person in his behalf, or
- (c) where such person is a minor, by his guardian, or
- (d) where death has resulted from the accident, or untoward incident by any dependent of the deceased or where such a dependent is a minor, by his guardian.

(2) Every application by a dependent for compensation under this section shall be for the benefit of every other dependent.”

2.6 The application for compensation will be decided by Railway Claims Tribunal. 21 benches of the Tribunal have been set up at different parts of the country and they are functioning from 08.11.1989.

Applicant can now file claims at Railway Claims Tribunal (i) having jurisdiction over the place of residence of the applicant, or (ii) the place where the passenger purchases his ticket, or (iii) where the accident or untoward incident occurs, or (iv) where the place of destination station lies, as against only at the place of occurrence of accident earlier.

#### **Interim Relief by Railway Administration**

2.7 Under section 126 of Railways Act, 1989, it has been provided that if a person who has made an application for compensation under section 125, desires to be paid interim relief, he may apply to the railway administration for payment of interim relief along with a copy of the application made under that section.

2.8 The table given below shows the number of passengers killed and/or injured in train accidents and the amount of compensation paid to the victims in the last five years:-

<u>Year</u>	<b>Number of Passengers</b>		<b>Compensation paid</b>
	<b>Killed</b>	<b>Injured</b>	<b>(Rs. In Lakhs)</b>
<b>2002-2003</b>	157	658	505.40

<b>2003-2004</b>	135	302	757.07
<b>2004-2005</b>	50	191	513.63
<b>2005-2006</b>	168	483	221.63
<b>2006-2007</b>	38	227	500.89

Note: The above figures exclude KRC & Metro Railway, Kolkatta.

The amount of compensation paid during the year relates to the number of cases settled and payment made during that year and not the accidents that occurred during the year.

### **Liability for accidents at Level Crossings**

**2.9** No liability accrues in the case of collisions between trains and road vehicles at unmanned level crossings in which railway passengers are not involved and cases of persons run over by trains.

**2.10** However, the victims or their dependants can claim compensation under Law of Torts by moving Motor Vehicle Accident Tribunals and the compensation is paid if any contributory negligence is proved on the part of railway administration. The Tribunal decides the quantum of compensation on merits of each case. The amount of ex-gratia paid is counted towards amount of compensation awarded by a Court of Law. However, Supreme Court of India in a judgment arising out of Civil Appeal No. 3033 of 1990 (Union of India v/s United Insurance Co. Ltd and Others) ruled that the driver and owner of the bus and the railways can all be joint tortfeasors, if proved.

**2.11** As regards accidents occurring at manned level crossings, prima facie due to the negligence of railway staff, ex-gratia payment is made to the victims by the railway as per the following rates:-

(i)	In case of death	Rs.6,000/-
(ii)	Grievous Injury	Rs.2,500/-
(iii)	Simple injury	Nil

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## **CHAPTER III**

**ACCIDENTS INQUIRED INTO**  
**BY THE COMMISSION OF RAILWAY SAFETY**

- 3.1** The Commission of Railway Safety functions independent of the Ministry of Railways under the administrative control of the Ministry of Civil Aviation and deals with matters pertaining to Safety of rail travel and train operation and is charged with certain inspectorial, investigative and advisory functions as laid down in the Railways Act, 1989. The Commission is headed by the Chief Commissioner of Railway Safety at Lucknow. Working under the administrative control of the Chief Commissioner of Railway Safety, there are 9 Commissioners of Railway Safety, each one exercising jurisdiction over one or more than one Zonal Railways and the Metro Railway, Kolkata and Konkan Railway Corporation Limited.
- 3.2** The principal functions of the Commission of Railway Safety are:
- (i) Inspection of new railway lines prior to authorisation for passenger traffic,
  - (ii) Periodical inspection of open lines or of any rolling stock,
  - (iii) Approval of new works and renewals affecting passenger carrying trains,
  - (iv) Inquiry under the Railways Act, 1989 into the cause of any accident on a railway,
  - (v) General advice on matters concerning safety in train operations.
- 3.3** Section 113 of Railways Act, 1989 requires intimation of serious accidents to be sent to the Commissioner of Railway Safety. Under the Statutory Investigation into Railway Accidents Rules, 1998 issued by the Ministry of Civil Aviation, a statutory inquiry by the Commissioner of Railway Safety is obligatory in every serious accident to a train carrying passengers which is attended with loss of human life, or with grievous hurt, as defined in the Indian Penal Code, to a passenger or passengers in the train or with serious damage to railway property of the value exceeding Rs.25 lakhs. While holding statutory inquiry, the Commission not only examines affected passengers but also invites members of the public to give evidence in person during the inquiry or to write to the Commission. Some of the serious accidents at manned or unmanned level

crossings attended with loss of life or with grievous injury to persons travelling in road vehicles are also inquired into by the Commission of Railway Safety.

- 3.4** The Commission, in its discretion, may hold inquiry into any other accident.
- 3.5** During 2006-07, the Commission of Railway Safety inquired into 25 consequential train accidents/incidents. During the year, Commission of Railway Safety inquired into 4 Collisions, 6 Derailments, 1 accident at Manned level crossing, 3 at Unmanned level crossings, 1 case of Fire in train, 6 Miscellaneous accidents and 4 cases of Unusual occurrences. Brief particulars of these accidents are indicated in Appendix IV.
- 3.6** The Commissioner of Railway Safety stops or discontinues his inquiry when ever a Commission of Inquiry under the Commission of Inquiries Act, 1952 is appointed.
- 3.7** Justice Sagir Ahmed Commission was set up on 13.02.2001 to inquire into the collision of 3005 UP Howrah-Amritsar Mail with derailed wagons of DN Ajitwal – New Bongaigaon goods train on 02.12.2000 in Ambala -Ludhiana Section of Northern Railway. The report of the Commission is awaited.

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## CHAPTER IV

### SAFETY MEASURES

- 4.1 Keeping in view the fact that the Railways will have to lift more originating traffic during the coming years, there is a growing emphasis on strengthening of infrastructure on the Railways. This is a continuous process and the investments made and strategies adopted in the past have vindicated this by way of reduction in the number of consequential train accidents over the years.

#### **Railway Safety Review Committee-Recommendations**

- 4.2 Railway Safety Review Committee set up in 1998 under the Chairmanship of Justice H.R. Khanna, a retired Supreme Court Judge, submitted Part-I of its report in August 1999, and Part-II in February 2001. Of the total 278 recommendations made in both the parts of the Report, 240 have been accepted fully or partially and 38 recommendations could not be accepted due to various reasons.
- 4.3 Out of accepted recommendations, 189 have already been implemented till March, 2007. The remaining fully or partially accepted recommendations are at various stages of implementation depending upon availability of resources and success of trials, etc.

#### **Special Railway Safety Fund**

- 4.4 In one of the major recommendations, Railway Safety Review Committee had recommended that the Central Government should provide a one-time grant to the Railways to wipe out arrears in renewal of over-aged assets within a fixed time frame. In order to implement this recommendation, Central Government set up in 2001 a non-lapsable Special Railway Safety Fund (SRSF) of Rs.17,000 crores to wipe out arrears in renewal of over-aged assets of track, bridges, signalling gears and rolling stock, etc. within a fixed time frame of 6 years. It also includes certain safety enhancement measures such as track circuiting of maximum number of stations, aids necessary for improving safety of rolling stock, up-gradation of training facilities including training aids in training institutions, simulators for locomotive drivers, development of computer based

training modules, etc. The currency of the above fund has been extended by one year upto 2007-08.

- 4.5** The actual expenditure under SRSF, during the period 2001-02 to 2006-07 was Rs. 14920.88 crores against an allocation of Rs. 14868.66 crores (RE) during this period. During 2006-07, against the allocation of Rs. 2153 crores in the revised estimate, actual expenditure of Rs.1955.60 crores (Provisional) has been incurred under SRSF. Most of the works contemplated under the fund are expected to be completed by 2007-08.
- 4.6** A high level committee was constituted in September, 2002 to review Disaster Management system over Indian Railways and to give recommendations for its strengthening and streamlining. This committee has given 111 recommendations, all of which have been accepted for implementation. 83 recommendations have since been implemented up to November, 2007 and balance recommendations are in various stages of implementation.

#### **Track**

- 4.7** The track forms the backbone of railway transportation system and therefore needs to be maintained in a safe and fit condition. To this end, it is essential to carry out not only the track maintenance operations, but also to renew the track as and when it becomes due for renewal. Out of the total Special Railway Safety Fund of Rs. 17,000 crore, Rs.7670 crore (45%) was earmarked for track renewal and an amount of Rs.7968.21 crore has so far been spent on track renewal upto March, 2007.
- 4.8** A total of 16538 kms. of track renewal arrears was sanctioned under SRSF out of which 16223 kms. renewal has been completed as on 31.03.2007 (including work done as Gauge conversion etc.). The track renewal arising after 01.04.2001 (upto 01.04.2001 is included in SRSF) are being renewed under Depreciation Reserve Fund. Sufficient funds are being made available to cater for annual accruals.
- 4.9** Track structure is upgraded at the time of renewals. Sleepers are being upgraded from wooden, steel and CST-9 to PSC sleepers. Heavier section and high tensile

strength rails are being used. Presently 52 kg/60 kg 90 UTS rails are used in place of 90R, 72 UTS rails. Similarly, welded rails are used in place of earlier fish plated joints. As on 01.04.2007, following track structure existed on Broad Gauge (Main Line):

- ❖ Long Welded Rails are laid in about 82% track.
- ❖ PSC sleepers are laid in about 90% track.
- ❖ 52kg/60kg 90 UTS rails are laid in about 79% track.

For improving the quality of track, various types of on-track machines are in use. For improving maintenance and better asset reliability, Railways are continuing to eliminate fish plated joints on tracks by welding the joints to convert all single rails into long welded rails to the extent possible. During relaying/construction of new lines/gauge conversion also, long welded rails are laid on concrete sleepers to the extent possible. Mobile Flash Butt Welding is introduced in construction projects for this purpose. Turnouts are also being improved systematically. Concrete sleepers are being used for turnouts alongwith cast manganese steel (CMS) crossings and curved switches made of heavier rail sections for greater reliability, durability and higher permissible speeds. It is also planned to lay Thick Web Switches on Group 'A' routes and routes having annual GMT more than 20 and where CC+6+2T or CC+8+2T loaded wagons are plying.

- 4.10** Other measures taken in this direction include use of modern diagnostic aids like ultrasonic rail flaw detectors (USFD), track recording cars, use of on-track machines for maintenance of track to higher standards, controlling/reducing rail and weld failures and ensuring quality of rails during manufacture. Mechanised maintenance units (MMU) are also under trial. To control the failure of rails, installation of in-motion Wheel Impact Load Detectors (WILD) at several key locations on Indian Railways has also been planned.

### **Rolling Stock**

- 4.11** All diesel/electric sheds and major ROH Depots have been equipped with ultrasonic testing equipment for timely detection of flaws developing in the axles.
- 4.12** Some workshops have organised special training courses to train staff about the correct procedure of carrying out ultrasonic tests.
- 4.13** Most of the workshops and some of the sheds/depots have also achieved ISO: 9001 certification for their Quality Management System.

### **Workshops**

- 4.14** Periodic overhauling of coaches, wagons, electric locos, diesel locos, EMUs, tower cars and break down cranes, which is vital for ensuring their reliability and safety, is undertaken in workshops. During 2006-07, the workshops increased the POH outturn of coaches, including AC coaches and EMUs, as shown below:

<b><u>Rolling Stock</u></b>	<b><u>2005-06</u></b>	<b><u>2006-07</u></b>	<b><u>% increase</u></b>
<b>BG Coaches</b>	<b>24795</b>	<b>25959</b>	<b>4.69</b>
<b>BG AC Coaches</b>	<b>2977</b>	<b>3177</b>	<b>6.72</b>
<b>BG Diesel Elect. Loco</b>	<b>396</b>	<b>407</b>	<b>- 2.78</b>
<b>BG Elect. Loco</b>	<b>390</b>	<b>419</b>	<b>7.44</b>

- 4.15** To adhere to laid down standard practices, regular quality audits of workshops are conducted by RDSO. During 2006-07, RDSO conducted quality audit of 3 workshops.
- 4.16** Several modifications were undertaken in workshops during 2006-07 to incorporate enhanced safety features in rolling stock, such as fitment of twin beam headlight, automatic flasher lights and air dryers on diesel locos, conversion of coaches from Vacuum brake to Air brake system, fitment of emergency windows, Mid Life Rehabilitation of coaches, provision of crashworthy features in coaches, retrofitment of existing air brake wagon stock by high speed bogies, retrofitment of high capacity draft gear & high tensile coupler in wagons.

### **Locomotives**

- 4.17** Flasher lights have been installed on all diesel locomotives to give indication to drivers of train approaching from the opposite direction on double line sections in case of mishap for prevention of further accident. All main line locomotives have been provided with auto flasher lights, which start blinking and brakes apply automatically whenever there is any discontinuity in the brake pipe due to train parting or any other reason.
- 4.18** Microprocessor based Speed Recorders, on account of having digital memory instead of paper recording, have higher reliability as compared to the conventional electromechanical speed recorders. Second-to-second analysis of driver's actions performed during the preceding three hours can be carried out in case of any eventuality. All BG main line locomotives have been provided with Microprocessor based Speed Recorders.
- 4.19** 4000 Horse Power GM Locomotives are equipped with Multi Resetting Vigilance Control Device, which monitors the alertness of the driver through all normal actions performed by him while driving, such as use of throttle handle, braking, horn etc. If driver performs no action for 20 seconds at a stretch, he gets an audio-visual indication, and if still, he does not react, the brakes come on automatically within 10 seconds. For conventional ALCO locomotives, this feature, as part of the Microprocessor based control, is being provided in all new locomotives and in existing locomotives in phased manner.
- 4.20** Air dryers are being fitted in diesel locomotives for removing moisture from the compressed air system resulting in better functioning and reliability of the air brake system of loco as well as trailing stock. About 2700 locomotives have already been fitted with air dryers.
- 4.21** An ergonomic design of loco cab has been developed by DLW in association with NID Ahmedabad to provide easy approach to various control handles/buttons. New Locomotives have already been manufactured with improved design. Existing locomotives cabs are also being upgraded in a phased manner.

- 4.22** Self propelled Accident Relief Trains (ARTs) and Accident Relief Medical Vans (ARMVs) have been stationed at strategic locations for speedy relief operations in case of train accidents. Accident Relief Medical Vans (ARMVs) have been upgraded to the speed of Mail/Express trains.

### **Coaches**

- 4.23** With a view to enhance fire retardant properties in materials used in railway coaches, specifications have been upgraded by RDSO to include features like toxicity index, flame retardance and loss of visibility due to smoke. Specifications for compreg board for coach flooring, fabric seat upholstery, Rexine for seats and berths, curtains, NFTC/asbestos free limpet sheet for roof ceiling, LP sheets for side wall paneling, PVC flooring and densified thermal bonded polyester blocks for cushioning in seats and berths have been developed duly incorporating the fire retardant features. Development of specification for fire retardant PU foam for seats and berths, FRP window, window guides & sills and UIC vestibules etc. is also presently in hand. Use of coach furnishing materials with these properties is aimed at giving reasonable time for occupant evacuation in cases of fires in trains before toxicity as a result of combustion and loss of visibility due to smoke etc. hinder evacuation.
- 4.24** Two emergency windows per AC coach have been provided to facilitate quick evacuation of passengers in the unfortunate event of an accident. The number of emergency windows in new non-AC coaches has been increased from 2 to 4 per coach. All existing Non-AC coaches have also been retrofitted with two extra emergency windows.
- 4.25** Progressive fitment of tight lock Center Buffer Couplers (CBC) in lieu of screw coupling on new manufacture of ICF design coaches has been carried out with a view to prevent the coaches from climbing over each other in unfortunate event of an accident. 27 such rakes of ICF design coaches have been so far manufactured. All LHB design coaches have a provision of tight lock CBC. Use of CBC is planned to be further increased in the coming years.

- 4.26** For enhancing safety and reliability of passenger coaches, the suspension systems are being redesigned with air springs at secondary stage capable to maintain constant height at variable loads. Air springs have been developed and are being fitted on all the newly built EMU & DMU coaches for sub-urban trains. Their adoption on mainline coaches also is now proposed to be started.
- 4.27** Besides evolving a crashworthy coach design for new manufacture, decision has been taken to provide crash-buffers in SLRs and Power Cars that are generally placed at the end of train formation. These Crash Buffers absorb significant amount of energies in the event of accidents enhancing passenger protection. First lot of these crash buffers is under procurement.

### **Freight Stock**

- 4.28** Cast Iron Brake Blocks have been phased out and Composition Brake Blocks have been inducted. These have much higher service life and are more reliable and cost effective.
- 4.29** Vacuum brake wagons with fabricated UIC bogies, which are less reliable and less efficient are being phased out with more reliable and efficient air brake stock with cast steel Casnub bogies.
- 4.30** All new procurement of wagons is with air brake system and this has helped in improving the productivity and safety of train operation.
- 4.31** All 4-wheeler CRT wagons (which were derailment prone) have been phased out.
- 4.32** All air brake Guard's Brake Vans have been equipped with quick coupling arrangement that permits quick coupling of detachable gauge (forming part of personal equipment of Guards) for checking the brake pipe continuity and air pressure thus ensuring safety of train before starting the journey.
- 4.33** Presently, the air brake system provided on wagons is under frame-mounted types. This system is susceptible to dropping of long components like pull/push

rods which may endanger safety of train operations. To overcome this problem, Bogie Mounted Brake System (BMBS) is being developed for Indian Railways.

- 4.34** All the close circuit rakes are provided with 100% brake power at the time of intensive examination. Such closed circuit rakes are permitted to run upto 4500/6000 kms. on nominated circuits, subject to certain checks after unloading/loading. As loss of brake power on such closed circuit rake is not more than 10%, it ensures 90% brake power through out the run.
- 4.35** Reliability of rolling stock also depends on the quality of spares and repair work. The zonal railways have been directed to procure safety related materials from RDSO approved sources only. The performance of the approved sources is monitored periodically.
- 4.36** Occurrence of hot boxes is a cause of concern since each case is a potential safety hazard and may lead to serious accident. For timely detection of hot axle cases, schedule of technical requirements for development of “Hot Box Detector” and “Acoustic Bearing Detectors” for application on Indian Railway is under preparation.
- 4.37** Four Wheeler Tank wagons, being prone to derailments, are being phased out by 2012-13.

#### **Training of Running Staff**

- 4.38** Training of drivers on simulators facilitates monitoring of their response and reaction time, which can be relayed to them for guidance and improvement. Training on this equipment exposes drivers to the intricate problems in the complex train-track dynamics and thus helps in improving driving techniques.
- 4.39** With the induction of sophisticated technology in locos and rolling stock, training of staff has been given thrust with better training facilities. Supervisors/staff are being sent for induction/refresher courses to improve their skills.

- 4.40** To provide right ambience for the running staff to take rest at outstations, the running rooms are being upgraded by providing proper ventilation, desert coolers, reading lights for individual beds, clean toilets, phones, etc.
- 4.41** HOER provisions are being followed and proper rest is being ensured before booking the drivers for train duty.

### **Signalling**

- 4.42** Signalling plays a vital role in not only promoting safety and minimizing the impact of human error in train operation, but also in enhancing line capacity through the introduction of modern signalling systems. Indian Railways have therefore undertaken technological upgradation in signalling.
- 4.43** Track Circuit is a device which detects the presence of a train on a track section at the station and thereby prevents reception of a train on an occupied line due to human error. A total of 31,000 (approx.) locations on interlocked stations are to be provided with track circuiting. The work has so far been completed on about 24,500 locations as on March, 2007 and it is in progress at about 4,600 locations. During 2007-08, track circuiting has been provided at 924 locations upto November,2007.
- 4.44** In order to improve efficiency and safety in train operations at the stations and to reduce human error, replacement of over-aged signalling systems is being done on priority with modern signalling systems such as Panel Interlocking, Electronic Interlocking and Route Relay Interlocking along with Multi Aspect Colour Light signalling. Out of a total of 5,822 interlocked stations, 3,641 stations have already been provided with Panel Interlocking, Electronic Interlocking and Route Relay Interlocking Systems. Further, replacement works on about 1,040 stations are likely to be completed upto the year 2011. During 2007-08, replacement of over-aged signalling systems has been carried out at 210 stations upto November, 2007.
- 4.45** Interlocking of level crossing gates is being done based on the volume of road-rail traffic to enhance safety. The interlocking of 8,064 level crossing gates

has been completed upto March, 2007. Further, interlocking works at about 840 level crossing gates are likely be completed upto March, 2009. During 2007-08, 201 level crossing gates have been interlocked upto November, 2007.

- 4.46** Provision of telephones at manned level crossing gates improves safety as it enables gatemen to communicate with the station master. Out of 16,600 manned level crossing gates, telephonic communication has already been provided at 16,073 level crossing gates upto March, 2007. Telephone communication will be provided at balance gates on Broad Gauge by 2008. During 2007-08, 151 level crossing gates have been provided with telephone upto November,2007.
- 4.47** Verification of complete arrival of train is done by the station staff manually. With the increased traffic, manual verification of last vehicle has become difficult. Block Proving Axle Counter (BPAC) electronically verifies the clearance of block section. The system has already been installed on 908 block sections as on March 2007 and about 3000 block sections identified for installation of BPACs are proposed to be covered during the XI Plan Period (2007-2012). During 2007-08, Block Proving Axle Counters have been provided at 173 block sections upto November, 2007.

#### **New Initiatives**

- 4.48 Train Protection and Warning System (TPWS):** In conformity with the accepted recommendations of Railway Safety Review Committee (RSRC), Train Protection and Warning System (TPWS) for providing an aid to driver to prevent cases of 'Signal Passing at Danger' (SPAD) is being introduced. TPWS is being provided over 250 Route Kilometres on important sections of Northern, North Central and Southern Railways. The System is targeted for operation in the year 2008.
- 4.49 Anti Collision Device -** Anti Collision Device (ACD) developed by Konkan Railway Corporation is installed on locomotives, Guard Vans/Luggage-cum-Parcel Vans to prevent train collision in block section and to minimize the extent of damages caused by collisions on running lines. Installation of this device has been undertaken on Northeast Frontier Railway (NFR) (1736 RKms). Installation of ACD on Katihar-Dibrugarh-Ledo section of NFR has been carried out. Increase in level of coverage and setting right the deficiencies in the system is

under progress. Only after successful completion of the project on NFR, it is proposed to provide the ACD system on other Railways.

**4.50 Computer based Centralised Traffic Control (CTC) and Train Management and Information System (TMS) :** The work on Ghaziabad – Kanpur section with CTC/TMS will be completed by 2009 under the German Bank funded project. This system provides efficient rail services, giving the commuters accurate information on real time basis about the status of train services. All train movements are displayed on a video projection screen in control room. TMS on Mumbai suburban section of Western Railway has been commissioned. The work of TMS on Central Railway is likely to be completed by 2009.

**4.51 Train Actuated Warning Device (TAWD):** Provision of Train Actuated Warning Device (TAWD) for giving audio/visual warning to road users about an approaching train, from a distance of 2 Kms. is being undertaken on trial basis. The work has been sanctioned at 90 level crossing gates including 20 unmanned LC gates on a limited trial basis using Digital Axle Counter based technology. As on November, 2007, TAWD has been provided at 64 level crossing gates.

**4.52** Progress made in respect of provision of important safety aids as on 31-3-2007 is as under:

	<b>System</b>	<b>As on 31-3-2006</b>	<b>As on 31-3-2007</b>
1.	Track Circuits.		
	Fouling Mark to Fouling Mark.	4776	4926
	Fouling Mark to BSL (St.)	3964	4144
	Fouling Mark to BSL ( T/O )	3480	3751
	Fouling Mark to Home (St)	3884	4053
	Fouling Mark to Home ( T/O)	3421	3586
	Loop Line	3395	3746
2.	L.C. Gates ( Interlocking. )	7781	8064
3.	Centralised electrical operation of Points & Signals.	3230	3641
4.	Auxiliary Warning System (T. Kms.)	706.22	706.22
5.	Block proving by Axle counters	632	908
6.	Second distant signals (Stns.)	1185	1110
7.	Data Loggers (Stns.)	1737	2105

### **Telecommunication**

#### **Mobile Train Radio Communication**

- 4.53** Mobile Train Radio Communication (MTRC) system for providing full duplex communication system for operational and maintenance purposes has been sanctioned in 3,200 Route Kilometres out of a total of all A, B & C routes of 1,60,000 Route Kilometres approximately. This system has been successfully commissioned on Howrah-Pradhankunta (260 RKMs) and is working satisfactorily. Installation of the system on Delhi-Ambala (198 RKMs) and Mathura-Jhansi (270 RKMs) has been completed and it is being commissioned. Balance sanctioned works are expected to be completed by 2008.

#### **Communication for Managing Disasters and Crisis**

- 4.54** For establishing communication in case of emergency, Railways have decided to provide all modern telecom facilities such as Satellite phones, ISD connection, Railway helpline numbers, etc. Railways have also decided to provide Closed User Group (CUG) Mobile phones to officers and supervisors at field so that the same can be used in case of accidents for relief and rehabilitation work. It has also been decided to provide WLL (Wireless in Local Loop) exchange in all the Divisional ARTs (Accident Relief Trains). Directives have been issued to provide this facility through Railway's own V-SAT hub and small V-SAT terminals at all Divisional ARTs. Indian Railway Project Management Unit (IRPMU) is executing the work. IRPMU is finalizing the specification of suitable antenna for accident site which can be easily deployed. This work is likely to be completed by 30.06.2008.

#### **Improving reliability of Safety related Communication Circuits**

- 4.55** To improve the reliability of safety related communication systems, the old overhead alignments are being replaced with cable based communication system. For this purpose, optical fibre and copper cable have extensively been laid to provide communication backbone for train operations. Initially, 42,000 RKMs overhead alignments were available on Indian Railways. As the overhead alignment is having poor reliability and low efficiency, this has been replaced by 31,000 RKMs of OFC and 25,000 RKMs of Under Ground Quad Cable. About, 5,000 RKMs of OFC and 10,000 RKMs of Quad Cables works are in progress and are at different stages of completion.

## **Electrical Rolling Stock and allied Infrastructure**

- 4.56** All electric locomotives and EMUs/MEMUs have been provided with twin beam headlights for improving the visibility of the drivers during night time.
- 4.57** All electric locomotives have been provided with flasher light which gets automatically switched ON in case of train parting due to derailment or otherwise. RDSO has finalized the scheme so that LED based flasher light automatically switches ON due to uncoupling of electrical jumpers in case of parting/derailment in EMUs/MEMUs. Further, a decision has been taken to incorporate signal from pneumatic circuit in addition to electrical jumper for switching ON flasher light for which trials are being undertaken.
- 4.58** All newly manufactured electric locos & EMUs/MEMUs are provided with air dryers for removing moisture from the compressed air system resulting in improved reliability of the braking system. The air dryers are also being fitted on existing electric locos and EMUs/MEMUs retrospectively and this exercise is expected to be completed by the end of 2007-08.
- 4.59** Energy-cum-speed monitoring systems (ESMON) having digital memory are being provided on electric locomotives and EMUs/MEMUs which shall help in monitoring the performance of the drivers with regard to their skills in controlling speed and energy conservation.
- 4.60** All Wheel & Axles of electric locomotives and EMUs/MEMUs are tested with ultrasonic flaw detectors at specified intervals.
- 4.61** In order to arrest failure of the tyres, solid wheels are being progressively provided on EMUs/MEMUs. It has been decided that from 1<sup>st</sup> April, 2008 onward, there shall be a complete switchover to solid wheels of EMU/MEMU coaches whenever a tyre needs change.
- 4.62** Detailed instructions regarding maintenance practices and use of fire retardant material on electric locos, EMUs/MEMUs and passenger coaches have been issued and reiterated.

- 4.63** Cable Head Termination System are being progressively provided on electric locomotives and EMUs/MEMUs replacing the old generation condenser bushing.
- 4.64** Vigilance Control Device for keeping drivers vigilant exists on all 3-phase locomotives. After successful trial of this device on 30 conventional locomotives, decision has been taken to provide them on another 350 conventional locomotives.
- 4.65** Auxiliary Warning System (AWS) has been provided in EMU trains in Mumbai suburban area so that motorman maintains speed as per aspect of the signal.
- 4.66** Regenerative braking exist along with pneumatic braking system on 3-phase locos for the smooth control and enhancement of brake power thereby reducing the normal braking distance. On similar lines, Dynamic Braking Resistances (DBRs) are being progressively provided for all conventional electric locomotives. AC/DC EMU stock plying in Mumbai suburban area are also having regenerative braking system.
- 4.67** Simulator based training is being imparted for improving upon the driving skills and the reaction time of the drivers.
- 4.68** Ergonomically designed Loco cabs already exist on 3-phase electric locos and are being provided on all conventional electric locomotives for the comfort of the crew.
- 4.69** Layout of driving cab has been standardized and is being implemented on newly built AC EMU, MEMU & AC/DC EMU stock. Railways have also been advised to modify the driver cab of existing EMU/MEMU stock having the residual life of 15 years in their respective workshops during periodical overhaul.
- 4.70** Improvement in running rooms is being provided for stress free environmental to the outstation crew.

#### **Accident Relief Medical Equipment**

- 4.71** Indian Railways have an efficient disaster management system consisting of 174 mobile accident relief vans out of which 13 are self propelled vans. Another 325

Accident Relief Medical Equipment Scale –II (ARMEs) are located at strategic locations to provide relief. The mobile units are stabled in Railway yards ready to move out at short notice. The Accident Relief Medical Vans (Scale-I) are well equipped having facility, inter-alia, of carrying out emergency procedures also. Besides, Railway Hospitals and health units also have POMKA kits (Portable Medical Kits for Accidents) for use by medical teams at the accident site.

#### **Data base on Medical Facilities**

- 4.72** A data base regarding non railway medical facilities available along the railway tracks, has been compiled along with details such as distance, address, telephone numbers, the capacity and nature of facilities available, etc. The data is kept with Divisional Headquarters, Control Offices, etc. which can be accessed at short notice. This information is also available on Railnet. This measure has helped in establishing expeditious relief even before Railway teams could reach the accident spot.

162 nominated long distance superfast trains, having limited stoppages and 156 ‘A’ class stations have been provided with upgraded First aid facilities in the form of Augmented First aid boxes with added medicines, injectables and few resuscitative equipments. Frontline staff are being trained in first aid so that they can render first aid taking the help of these augmented first aid boxes at times of need.

#### **Checks against miscreant activities in train and passenger areas**

- 4.73** During the year 2007-08, several initiatives have been taken by the Indian Railways for providing better security to the passengers in trains and passenger areas in addition to protection of railway property. 96 Railway Stations and 96 trains have been identified as Model Stations and Model Trains, respectively, from security point of view to make them free from crime against passengers. The situation over these model stations and trains are being reviewed by the Security Directorate of Railway Board directly. Four different Flying Squads at the level of Deputy Inspector General / RPF have been constituted which are conducting surprise checks and inspecting the above railway stations and trains and submitting their reports directly to the Director General/ RPF for further administrative action.

- 4.74** Analysis of crime statistics regarding increasing trend in the incidents of Drugging or administering drug-laced eatables to unwary passengers was also made. This revealed that tentacles of the menace have even reached South Western and Southern Zones, which were earlier free from any such crime. The victims were found mostly poor labourers especially from Bihar and Eastern U.P and uniformed personnel travelling in the general compartments. Though this offence falls under the IPC to be looked into by the Government Railway Police, various steps have been taken by the Railway Protection Force to ensure safe journey of the railway passengers.
- 4.75** During the last six months, RPF personnel distributed pamphlets on random basis to the travelling passengers, made announcements through loudspeakers at almost all important stations and inside the coaches of the trains to create awareness amongst the passengers not to take any eatables or drinks from any unknown passenger during their journey. Videography of general compartments of important trains is also carried out at the time of departure at originating station and enroute main stations to keep a record of the passengers travelling in the compartment to facilitate identification of the culprit if any untoward incident is reported. Projection of slides in cinema halls and announcement on FM Radio Channels to create awareness amongst the general public has also been started at some places. The RPF staff are also being deployed to escort on an average 1450 important trains daily all over the country and are also deployed in the passenger area to augment the efforts of the State Governments. The RPF train escorting staff are specially briefed to keep secret vigil in the general compartments to detect the drugging cases. Army Headquarters have also been requested to advise their personnel against the menace of drugging.
- 4.76** ‘Rail Mitra Yojana’ has also been started w.e.f. 16<sup>th</sup> August 2007 at important railway stations through which many victim passengers are being provided assistance by RPF. On many occasions, RPF personnel deployed in trains and stations rescued minor girls and boys who have been lost or kidnapped and handed over them to their parents. Help of many NGOs has also been taken at

some important railway stations viz. Delhi, Samastipur, Patna in this regard to rehabilitate the rescued destitute children.

- 4.77** In the course of providing security to passengers and passenger areas, RPF has detected many IPC offences and arrested the criminals red-handed. The arrested criminals were handed over to GRP for further legal action. On the initiative of RPF in augmenting passenger security, from July 2004, i.e., after amendment of RPF Act and the Railways Act, 285 cases of drugging, 619 cases of luggage lifting, 165 cases of carrying illegal arms, 188 cases of chain snatching, 250 cases of pick pocketing, 1149 cases of trafficking of contraband goods, 65 cases of offences against women and 765 cases of other IPC related offences were detected by RPF personnel. In addition, 3080 minor girls and boys were also rescued and handed over to their parents or NGOs. Contribution of RPF is also evident as number of cases relating to railway property reported and registered as well as the value of property stolen decreased during 2006-2007 in comparison to 2005-2006. At the same time, RPF could arrest more than 9552 criminals with recovery of stolen railway property worth Rs. 3.19 crores.
- 4.78** The professional skills of the RPF personnel are being constantly upgraded through intensive training in areas like Crime Control, Gender Sensitization, Human Rights, Customer Care and Disaster Management. While upgrading the existing training facilities, new training facilities have also been created on some Zones. Procurement of modern security gadgets and installation of CCTVs at sensitive and important Railway stations are also being done on priority.
- 4.79** Considering the present security scenario of the country and the additional & new responsibilities entrusted to RPF to provide security to travelling passengers in trains and passenger areas, increase in the strength of RPF is being considered. As an interim measure, 2661 non-gazetted posts have been created. During the year 2007, in order to fill the vacancies, process for recruitment of 6500 Constables and 900 Sub-Inspectors has been initiated and the same is expected to be completed soon.
- 4.80** Many steps to prevent terrorist activities on Railways have also been taken up. A Committee comprising officers from Railways, RPF, Intelligence Bureau (IB),

National Security Guard (NSG), Central Industrial Security Force (CISF) and Delhi Police has been set up to prepare a 'Composite Security Plan for Railways' and the committee is to submit its recommendations soon.

### **Development of Human Resources**

**4.81** Human resource development plays an important role, especially in training of staff with “state-of-the-art” equipments and specialization in their nature of work. Development of human resources is a continuous process and due to fast changes in the systems and processes, training has assumed greater importance. Some of the steps taken in this direction are as under:-

- (i) A comprehensive training needs analysis is usually done in respect of all the staff through a series of meeting.
- (ii) Training Modules for Induction, Refresher, Promotional and Specialized courses are reviewed after every 3-4 years.
- (iii) Special emphasis is being given in training for some of the safety categories which include competency based training.
- (iv) Yoga and meditation lessons have been introduced in training centres especially for safety categories staff to cope with stress involved in their job.
- (v) Training has been made more interesting and interactive for the running staff and supervisory staff.
- (vi) Special emphasis is given through adopting training methodology such as on the job training, simulator training, multi-media interactive packages on the PC as well as computer based tutorials, etc.

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**Appendix-I****TRAIN ACCIDENTS ON INDIAN RAILWAYS SINCE 1960-61**

<b>Year</b>	<b>Collisions</b>	<b>Derailments</b>	<b>Level Crossing Accdts.</b>	<b>Fire in trains</b>	<b>Misc.</b>	<b>Total</b>	<b>Million Train Kms.</b>	<b>Incidence of accidents per million train kms.</b>
1960 - 61	130	1415	181	405		2131	388.1	5.50
1961 - 62	124	1433	160	236		1953	396.2	4.90
1962 - 63	98	1316	168	55		1637	408.3	4.00
1963 - 64	93	1300	161	81		1635	421.9	3.90
1964 - 65	81	1035	146	31		1293	433.2	3.00
1965 - 66	74	962	123	42		1201	450.8	2.70
1966 - 67	67	876	104	50		1097	451.7	2.40
1967 - 68	66	892	111	42		1111	455.3	2.40
1968 - 69	47	684	129	48		908	460.1	2.00
1969 - 70	54	751	111	47		963	473.0	2.00
1970 - 71	59	648	121	12		840	466.5	1.80
1971 - 72	57	667	118	22		864	474.4	1.80
1972 - 73	59	598	131	25		813	473.1	1.70
1973 - 74	66	578	125	13		782	432.8	1.80
1974 - 75	66	696	140	23		925	430.1	2.20
1975 - 76	64	768	105	27		964	487.4	2.00
1976 - 77	45	633	86	16		780	511.6	1.50
1977 - 78	54	705	93	14		866	526.1	1.60
1978 - 79	55	778	86	12		931	504.1	1.80
1979 - 80	72	692	115	21		900	503.4	1.80
1980 - 81	69	825	90	29		1013	504.5	2.00
1981 - 82	87	936	84	23		1130	516.6	2.20
1982 - 83	54	653	70	20		797	530.9	1.50
1983 - 84	48	621	82	17		768	541.7	1.40
1984 - 85	39	678	65	30		812	541.1	1.50
1985 - 86	46	588	62	21		717	570.4	1.30
1986 - 87	28	538	65	13		644	582.3	1.10
1987 - 88	40	490	62	12		604	590.2	1.02
1988 - 89	30	457	55	3		545	602.2	0.90
1989 - 90	34	456	42	8		540	618.0	0.87
1990 - 91	41	446	36	9		532	617.1	0.86
1991 - 92	30	444	47	9		530	629.2	0.84
1992 - 93	50	414	51	9		524	632.3	0.83
1993 - 94	50	401	66	3		520	634.2	0.82
1994 - 95	35	388	73	5		501	641.9	0.78
1995 - 96	29	296	68	5		398	655.9	0.61
1996 - 97	26	286	65	4		381	667.1	0.57
1997 - 98	35	289	66	6		396	675.8	0.58
1998 - 99	24	300	67	6		397	686.9	0.58
1999 - 00	20	329	93	21		463	717.7	0.65
2000 - 01	20	350	84	17	2	473	723.8	0.65
2001 - 02	30	280	88	9	8	415	756.4	0.55
2002 - 03	16	218	96	14	7	351	786.2	0.44
2003 - 04	9	202	95	14	5	325	790.8	0.41
2004 - 05	13	138	70	10	3	234	810.1	0.29
2005 - 06	9	131	75	15	4	234	825.4	0.28
2006 - 07	8	96	79	4	8	195	847.8	0.23

**Major accidents during 2006-2007****(Attended with death of 10 or more persons)**

<b><u>S.No</u></b>	<b><u>Brief Particulars</u></b>	<b><u>Killed</u></b>	<b><u>Injured</u></b>
1.	Incidence of falling of debris of a Road Over Bridge known as 'Ulta Pul' during dismantling on a coach of Train No 3071 Howrah – Jamalpur Express at km 305/07-08 towards Sahibganj end of Bhagalpur station yard resulting into derailment of train on Sahibganj-Bhagalpur section of Malda Town Division of Eastern Railway on 02.12.2006.	36	16
2.	Dashing of Sahara Auto with 6 TLB Passenger at Unmanned level crossing No.34 between Tirumalpur-Kancheepuram stations of Arakkonam-Chengelpattu section of Chennai Division of Southern Railway on 31.10.2006.	17	--

Worst accidents in each category during the year are listed below :-

(A) **Collisions**

<b><u>S.No</u></b>	<b><u>Brief Particulars</u></b>	<b><u>Killed</u></b>	<b><u>Injured</u></b>
1.	Rear end collision of Up NZB (BCXL) goods load hauled by locomotives No. WDM2 No. 17144 and 16477 with banker engine WAG-7 No. 23728 during process of attachment to Up KSN Goods train at Aler station of Kazipet-Secunderabad section of Secunderabad Division of South Central Railway on 30.09.2006.	2	3
2.	Collision of Banker Loco with rear SLR of 6359 Up Ernakulam-Patna Express at Teegaon station of Nagpur – Amla section of Nagpur Division of Central Railway on 4.12.2006.	-	2
3.	Collision of TL-63 EMU with T-149 Empty Rake at Thane station of Mumbai – Kalyan section of Mumbai CST Division of Central Railway on 13.12.2006.	-	24

(B) **Derailments**

<b><u>S.No</u></b>	<b><u>Brief Particulars</u></b>	<b><u>Killed</u></b>	<b><u>Injured</u></b>
1	Derailment of 113 Dn. Surat – Bhusaval Passenger train at km 107/14 between Navapur and Kolde stations of Surat – Nandubar section of Mumbai Division of Western Railway on 10.11.2006.	-	107
2	Derailment of Panipat Goods Up Special between Kumandih and Hehegara at the Bridge No. 297 of Barkakana – Garhwa Road section of Dhanbad Division of East Central Railway on 12.01.2007.	8	7
3	Derailment of 2674 Up Coimbatore-Chennai Central Cheran Express at Vinnamangalam station of Jolarpettai – Katpadi section of Chennai Division of Southern Railway on 28.01.2007.	-	10

(C) **Manned Level Crossing Gate Accidents**

<b><u>S.No</u></b>	<b><u>Brief Particulars</u></b>	<b><u>Killed</u></b>	<b><u>Injured</u></b>
1.	Dashing of a Tractor with 2402 Express at Manned Level Crossing Gate No. 79 between Gahmar and Chausa Stations of Mughalsarai-Danapur Section of Danapur Division of East Central Railway on 28.04.2006.	2	1
2.	Dashing of an autorickshaw with 520 DN Passenger at Manned Level Crossing Gate No.3 Spl.E between Muzzaffarpur and Ram Dayalu Nagar Stations of Muzzaffarpur-Hajipur Section of Sonapur Division of East Central Railway on 18.09.2006.	3	3
3.	Dashing of a Tractor Trolley with Up LHM Goods at Manned Level Crossing Gate No.436 between Kanth and Mewanawada Stations of Moradabad-Saharanpur Section of Moradabad Division of Northern Railway on 30.11.2006.	2	--

(D) **Unmanned Level Crossing Gate Accidents**

<b><u>S.No</u></b>	<b><u>Brief Particulars</u></b>	<b><u>Killed</u></b>	<b><u>Injured</u></b>
1.	Dashing of tipper lorry with 2079 Express at Unmanned level crossing No.225 between Devaragdda-Byadgi stations of Hubli-Harihar section of Mysore Division of South Western Railway on 22.05.2006.	7	1
2.	Dashing of Sahara Auto with 6 TLB Passenger at Unmanned level crossing No.34 between Tirumalpur-Kancheepuram stations of Arakkonam-Chengelpattu section of Chennai Division of Southern Railway on 31.10.2006.	17	--
3.	Dashing of Jeep with 2 DR Passenger at Unmanned level crossing No.123-C between Degana-Khatu stations of Degana-Ratangarh section of Jodhpur Division of North Western Railway on 07.12.2006.	7	4

(E) **Fire Accidents**

**No serious accident took place during the year 2006-2007 in this category.**

(F) **Miscellaneous**

<b><u>S.No</u></b>	<b><u>Brief Particulars</u></b>	<b><u>Killed</u></b>	<b><u>Injured</u></b>
1.	Dashing of JCB Machine with 5273 Up Raxaul – Delhi Satyagraha Express at worksite of Jaharnikhera Halt railway station of Rosa-Sitapur Cantt. section of Moradabad Division of Northern Railway on 10.04.2006.	2	6
2.	Dashing of Push Trolley with 1043 Express between Kolpattichatram-Ayallur stations of Tiruchchirappalli-Dindigul section of Madurai Division of Southern Railway on 02.09.2006.	3	1
3.	Incidence of falling of debris of a Road Over Bridge known as ‘Ulta Pul’ during dismantling on a coach of Train No 3071 Howrah – Jamalpur Express at km 305/07-08 towards Sahibganj end of Bhagalpur station yard resulting into derailment of train on Sahibganj-Bhagalpur section of Malda Town Division of Eastern Railway on 02.12.2006.	36	16

**PARTICULARS OF ACCIDENTS DURING 2006-07  
INQUIRED INTO BY COMMISSIONERS OF RAILWAY SAFETY**

<b>S. No.</b>	<b>Date</b>	<b>Brief particulars</b>
1.	10-Apr-06	Dashing of JCB Machine with 5273 Up Raxaul – Delhi Satyagraha Express at worksite of Jaharnikhera Halt railway station of Rosa - Sitapur Cantt. section of Moradabad Division of Northern Railway.
2.	23-Apr-06	Dashing of truck with 2553 Up Barauni-New Delhi Vaishali Express at unmanned level crossing No. 83-C between Duraundha and Pachrukhi stations of Chhapra – Gorakhpur section of Varanasi Division of North Eastern Railway.
3.	28-Apr-06	Dashing of Truck with 2321 Up Howrah – Mumbai Mail at construction site at km. 1324/5-6 between Madaraha and Lohgara stations of Allahabad – Manikpur section of Jhansi Division of North Central Railway.
4.	03-May-06	Derailment of K-93 EMU slow local train between Diva and Dombivli stations of Mumbai – Kalyan section of Mumbai Division of Central Railway.
5.	16-May-06	Incidence of hitting of Signal ladder by 2MNR Passenger between Gari Harsaru and Patli stations of Rewari – Delhi section of Delhi Division of Northern Railway.
6.	16-May-06	Derailment of 3 Up Nagpur – Chhindwara – Nainpur Fast Passenger between Bhoma and Palari stations of Chhindwara – Nainpur NG section of Nagpur Division of South East Central Railway.
7.	19-May-06	Incidence of a tree hitting with 4553 Up Delhi – Una Himachal Express between Holambi Kalan and Narela stations of Ambala – Delhi section of Delhi Division of Northern Railway.
8.	09-Jun-06	Unusual incident of 582 Dn. Purna – Ajmer Fast Passenger leading to injuries to passengers of the train at Unmanned level crossing No. 104-C at km 219/10 between Jawad Road and Nimbahera stations of Nimach-Chittaurgarh MG section of Ratlam Division of Western Railway.
9.	15-Jun-06	Dashing of 4005 Dn Samastipur – New Delhi Lichhavi Express with Truck which was standing near Unmanned Level Crossing No. 66-C between Ramnathpur and Jhusi

stations of Madho Singh – Allahabad section of Varanasi Division of North Eastern Railway.

10. 11-Jul-06 Unusual occurrence of serial bomb blasts in Seven EMU local trains at Matunga Road, Mahim Jn., between Khar and Santacruz, at Jogeshwari, Borivali and between Mira Road and Bhayander stations of Churchgate–Virar Mumbai suburban section of Mumbai Central Division of Western Railway.
11. 13-Aug-06 Dashing of 6093 Dn. Chennai–Lucknow Express with Truck at Unmanned Level Crossing No. 216-C between Lalpur and Paman stations of Jhansi–Kanpur section of Jhansi Division of North Central Railway.
12. 20-Aug-06 Incidence of Fire in 3 coaches of 2753 Up Chennai – Hyderabad Express between Secunderabad and Hussain Sagar stations of Secunderabad– Hyderabad section of Secunderabad Division of South Central Railway.
13. 22-Sep-06 Derailment of 2115 Dn Mumbai CST – Solapur Siddeshwar Express between Monkey Hill Cabin and Khandala stations of Kalyan–Lonawala section of Mumbai Division of Central Railway.
14. 30-Sep-06 Rear end collision of Up NZB (BCXL) goods load hauled by locomotives No. WDM2 No. 17144 and 16477 with banker engine WAG-7 No. 23728 during process of attachment to Up KSN Goods train at Aler station of Kazipet-Maulaali section of Secunderabad division of South Central Railway.
15. 05-Oct-06 Side collision of 4308 Dn. Bareilly–Mughalsarai Express with 5004 Up Chauri Chaura Express in Allahabad yard of Allahabad Division of North Central Railway.
16. 10-Nov-06 Derailment of 113 Dn. Surat – Bhusaval Passenger train between Navapur and Kolde stations of Surat–Nandubar section of Mumbai Division of Western Railway.
17. 20-Nov-06 Unusual occurrence of Explosion in one coach of 618 Dn. Haldibari – New Jalpaiguri Passenger train at Belakoba station on New Jalpaiguri-New Cooch Behar section of Katihar Division of Northeast Frontier Railway.
18. 02-Dec-06 Incidence of collapse of a portion of Road Over Bridge towards Sahibganj end of Bhagalpur station yard resulting into derailment of train No 3071 Howrah – Jamalpur Express on Sahibganj-Bhagalpur section of Malda Town Division of

Eastern Railway.

19. 04-Dec-06 Collision of Banker Loco with rear SLR of 6359 Up Ernakulam-Patna Express at Teegaon station of Nagpur – Amla section of Nagpur Division of Central Railway.
20. 13-Dec-06 Collision of TL-63 EMU with T-149 Empty Rake near Thane station of Mumbai – Kalyan section of Mumbai CST Division of Central Railway.
21. 12-Jan-07 Derailment of Panipat Goods Up Special between Kumandih and Hehegara at Bridge No.297 of Barkakana–Garhwa Road section of Dhanbad Division of East Central Railway.
22. 21-Jan-07 Dashing of Train No.2719 Tenali -Secunderabad Nagarjuna Express with a Maruti Van at Unmanned Level crossing Gate No. 60 between Miryalaguda and Thipparthi stations of Miryalaguda – Pagidipalli section of Guntur Division of South Central Railway.
23. 24-Jan-07 Dashing of Up NBQ Food Grain goods with two loaded trucks at Special Class Manned Level Crossing Gate No.SK 318 between Hatwar and Kishanganj Stations of New Jalpaiguri – Barsoi section of Katihar Division of Northeast Frontier Railway.
24. 28-Jan-07 Derailment of 2674 Up Coimbatore-Chennai Central Cheran Express at Vinnamangalam station of Jolarpettai – Katpadi section of Chennai Division of Southern Railway.
25. 18-Feb-07 Unusual occurrence of fire in coaches of 4001 Up Attari Special while it was on the run through Diwana railway station on Delhi - Ambala section of Delhi Division of Northern Railway.

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