GOVERNMENT OF INDIA

MINISTRY OF CIVIL AVIATION

COMMISSION OF RAILWAY SAFETY

ANNUAL REPORT FOR 2006-2007

BY

CHIEF COMMISSIONER OF RAILWAY SAFETY

LUCKNOW

CHAPTER - I

FUNCTIONS AND ORGANISATION OF THE COMMISSION OF RAILWAY SAFETY

1.1 INTRODUCTION

The Commission of Railway Safety, working under the administrative control of the Ministry of Civil Aviation of the Government of India, deals with matters pertaining to safety of rail travel and train operation and also performs such statutory functions as laid down in the Railways Act (1989), which are inspectorial, investigatory and advisory in nature. The Commission functions according to the rules framed under the Railways Act and various executive instructions issued from time to time. The most important duty of the Commission is to ensure that any new Railway line to be opened for passenger traffic conforms to the standards and specifications prescribed by the Ministry of Railways and also the new line is safe in all respects for carrying of passenger traffic. This is also applicable to other works such as gauge conversion, doubling of lines and electrification of existing lines. The Commission also conducts statutory inquiries into serious train accidents occurring on the Indian Railways and makes recommendations for improving safety on the Railways in India. Delhi Metro to which the jurisdiction of the Commission of Railway Safety extends, is governed by Delhi Metro Railway (O&M) Act, 2002. The annual Report for the period 2006-07 giving full Account of activities on Delhi Metro under Section 12 and 13 of the said act is placed at Appendix VII.

1.2 ORGANISATIONAL STRUCTURE

1.2.1 The Commission is headed by a Chief Commissioner of Railway Safety (CCRS), at Lucknow, who acts as the Principal Technical Advisor to the Central Government in all matters with which the Commission is concerned. Working under the administrative control of CCRS are nine Commissioners of Railway Safety (CRS), exercising jurisdiction over the Zonal Railways. In addition, some of them have additional jurisdiction over railway establishments other than Zonal Railways viz (i) Metro Railway, Kolkata, (ii) DMRC, Delhi, and (iii) Konkan Railway. There are five Deputy Commissioners of Railway Safety posted in the Headquarters at Lucknow for assisting the CCRS. In addition, there are two field Deputy Commissioners, one each in Mumbai and Kolkata, to assist the Commissioners of Railway Safety in matters concerning the Signaling and Telecommunication discipline.

1.2.2 In Appendix I, at the end of this Report, given is an Organizational Chart of the Commission of Railway Safety. A brief narrative on the history and functions of the organization, which dates back to the 19th century, is contained in Appendix II.

1.3 JURISDICTION

The route kilometrages of the Railway Administrations under the jurisdiction of each circle, as on 31st March, 2007 were as under:-

NAME OF CIRCLE	HEADQUARTERS	ROUTE KM.	PRINCIPAL RAILWAYS
Central Circle	Mumbai	7513.750	Central/W.C. Rly.
Eastern Circle	Kolkata	5878.324	Eastern & East-Central Rly.
Northern Circle	New Delhi	6909.940	Northern Rly.
North Eastern Circle	Lucknow	6490.495	North eastern/ North Central
Northeast Frontier Circle	Kolkata	3783.490	Northeast Frontier Metro Rly.Kolkata.
Southern Circle	Bangalore	8272.000	Southern/South Western Railway
South Central Circle	Secunderabad	5734.470	South Central
South Eastern Circle	Kolkata	5008.666	South Eastern/ S.E.C. Rly/ East Coast
Western Circle	Mumbai	12065.125	Western & North-Western

Note: In addition to the Principal Railways, the Commissioners exercise jurisdiction over Konkan Railway Corporation, various Metropolitan Rail Transport Projects, Delhi Metro and Port Trust Railways, if any, located within their circles.

1.4 POSITION OF VACANCIES IN THE COMMISSION

As on 31.3.2007 the actual strength of the Commissioners was 7 against the sanctioned posts of 9. The strength of Deputy Commissioners was 7 and there was one vacancy. The Details are at Appendix-I.

CHAPTER-II

ANALYSIS OF TRENDS OF ACCIDENTS

2.1 TRAIN ACCIDENTS:

The term 'train accidents' discussed in this Report has the following definitions:-

2.1.1 **Consequential train accidents** - are all accidents occurring to trains in the course of working of a Railway and include Collisions, Derailments, Fires in Trains and Running into obstructions or road traffic at Level Crossings.

2.1.2 **Section 113 Accidents** - are those railway accidents, referred to in Section 113 of the Railways Act 1989, which occur in the course of working a Railway and are attended with loss of human life or with grievous hurt (as defined in the Indian Penal Code) or with serious injury to property. They also include any collision between trains of which one is a train carrying passengers, derailment of a train carrying passengers, any accident of a description usually attended with loss of human life, grievous hurt or serious damage to property and accident of any other type which the Central Government may notify in the official Gazette.

2.1.3 **Reportable Accidents** - are the same as those referred to in Section 113 of the Railways Act 1989.

2.1.4 **Serious Train Accidents** - are those accidents requiring a Statutory Inquiry to be conducted by the Commission of Railway Safety in terms of Section 114 of the Railways Act 1989 and include every 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 value exceeding Rs. 25 lakhs. Any other accident which, in the opinion of the Chief Commissioner of Railway Safety or the Commissioner of Railway Safety, requires the holding of an inquiry, shall be deemed to be an accident of this category.

2.2 TRENDS IN CONSEQUENTIAL TRAIN ACCIDENTS

2.2.1 The incidence of consequential train accidents (both Goods and passenger trains) and passenger fatalities in passenger train accidents in the past 10 years from 1997-98 to 2006-2007 are shown in Figure 1 and Figure 2 respectively*. The details relating to the total number of consequential train accidents, with the break-up

of goods train accidents and passenger train accidents are shown in Figure 1. There is decrease in no. of passenger train accidents during 2006-07. The total number of consequential train accidents per million train-kilometers and the number of passenger fatalities in passenger train accidents are shown in Table 1 in Para 2.2.2 below.
** All Figures are placed at the end of Chapter-II*

2.2.2 TABLE 1

COMPARATIVE FIGURES OF CONSEQUENTIAL TRAIN ACCIDENTS IN THE PAST TEN YEARS

(Refer Figure 1)

	Item	97-98	98-99	99-2000	00-01	01-02	02-03	03-04	04-05	05-06	06-07
1.	Total No. of Consequential Train Accidents	396	397	463	473	414	351	325	234	234	195
2.	No. of Passenger Train Accidents (out of 1 above)	175	199	210	261	218	216	214	154	167	144
3.	No. of Goods Train Accidents (out of 1 above)	221	198	253	212	196	135	111	80	67	51
4.	Total no. of consequential train accidents per million train-kilometers	0.60	0.58	0.65	0.67	0.55	0.44	0.41	0.30	0.28	0.23
5.	No. of Passenger Fatalities including Railway crew in serious Train Accidents	182	295	374	63	99	186	139	55	177	302

Note. - Best figures have been underlined.

2.2.3 It would be seen from Table 1 that the no. of consequential train accidents has decreased from 234 in 2005-2006 to 195 in 2006-2007. The number of goods train accidents has decreased from 67 in 2005-06 to 51 in 2006-2007. This decrease is 23.88 %. The

Passenger train accidents have decreased by 13.77%. (C.F. 2005-2006).

2.2.4 Most of the consequential train accidents result in minor consequences, such as minor damage or derailment to Rolling Stock. However, there are some consequential train accidents which come under the category of Sec. 113 accidents. These Section 113 Accidents include the serious train accidents requiring Statutory Inquiry by the Commission of Railway Safety. The trends of serious consequential train accidents are analyzed in Para 2.3 below.

2.3 TRENDS IN SECTION 113 ACCIDENTS & SERIOUS TRAIN ACCIDENTS

2.3.1 The figures of total number of consequential train accidents, Sec. 113 accidents, serious train accidents including train accidents resulting in fatalities to passengers (including Railway Staff) traveling in trains (as distinct from other fatalities, such as, those occurring among trespassers, Level Crossing Road users etc.) for the last 5 years are compared in Table 2 below :

TABLE 2

Sr. No.	Year	Total No.of consequential Train accidents	Sec.113 Accidents	Serious Train Accidents requiring Statutory inquiry	Serious Train accident resulting in passenger fatalities	Total No.of passenger fatalities
1.	2002-2003	351	265	36	13	186
2.	2003-2004	325	253	34	16	139
3.	2004-2005	234	176	<u>19</u>	<u>04</u>	<u>55</u>
4.	2005-2006	234	185	23	07	177
5.	2006-2007	<u>195</u>	<u>173</u>	25	07	302
Average for 5 years		267.8	210.04	27.4	9.4	165

Note: (Best figures underlined)

2.3.2 Section 113 accidents have decreased by 6.48% in 2006-2007. The number of serious train accidents requiring statutory enquiry has also increased to 25 in 2006-07 as compared to 23 in 2005-06. The number of serious train accidents resulting in passenger

fatalities has the same as 07 in 2005-2006 and 2006-2007. In 2006-07 no. of fatalities has increased to 302 from 177 in 2005-06.

2.4 RAILWAY-WISE TRENDS OF CONSEQUENTIAL AND SECTION 113 ACCIDENTS

2.4.1 The number of consequential and Sec 113 accidents which occurred in each zonal railway in the years 2005-06 and 2006-2007 is shown in Table 3 below:

TABLE 3

Railway	Total No. of Consequential train accidents		Total No. of Section 113 train accidents	
	2005-2006	2006-2007	2005-2006	2006-2007
1. Central	9	11	5	10
2. Eastern	6	12	6	9
3. East Central	18	7	14	6
4. East Coast	13	11	9	9
5. Northern	43	36	38	32
6. North Central	5	12	4	12
7. North Eastern	18	10	17	10
8. Northeast Frontier	14	8	10	6
9. North Western	16	17	15	14
10. Southern	9	16	8	15
11. South Central	17	10	13	10
12. South East Central	13	8	8	7
13. South Eastern	11	5	9	3
14. South Western	18	12	18	12
15. Western	17	14	11	13
16. West Central	6	5	-	4
17. Kolkata Metro	--	-	-	-

18. Konkan Rly. Corp.	1	1	-	1
19. Delhi Metro	-	-	-	-
Total	234	195	185	173

2.5 ANALYSIS OF TYPES OF CONSEQUENTIAL TRAIN ACCIDENTS

Figure 3 depicts a chart showing the break-up of total number of consequential train accidents in the years 2005-2006 & 2006-2007 into various types of accidents. It would be seen that derailments account for a lion's share of the total number of consequential train accidents, being 49.23 % in 2006-2007 against 55.99% in 2005-06. Level crossing accidents are next accounting for 40.51% in 2006-2007 against 32.05% in 2005-2006. Collisions account for 4.10 % in 2006-2007 against 3.85% in 2005-2006. Fires account for 2.05% accidents in 2006-2007 against 6.41% in 2005-06. Number of other accidents (Miscellaneous Accidents) also account for 4.10 % of the total accidents in 2006-2007 against 1.71% in 2005-06.

2.6 CAUSE-WISE ANALYSIS OF VARIOUS TYPES OF TRAIN ACCIDENTS

2.6.1 CAUSE-WISE ANALYSIS OF DERAILMENTS

At figure 4 is shown a cause-wise analysis of the total number of derailments in the years 2006-2007 & 2005-2006. Rolling Stock defects and Failure of Workshop, Carriage & Wagon and Loco Maintenance Staff account for 13.54 % derailments in 2006-2007 as compared to 4.59% in the year 2005-2006. Track defects & Failure of Permanent Way Staff caused derailments accounting for 32.29% in 2006-2007 as against 29% in 2005-2006. Other causes also account for 35.42% in 2006-2007 against 54.97% in 2005-06. Errors by Drivers including Motormen caused 3.12% of derailments in 2006-2007 against 6.10% in 2005-2006. Sabotage accounted for 8.33% in 2006-2007 against 3.82% in 2005-2006. Signaling Equipment defects and failure of Signaling Maintenance Staff are responsible for nil in 2006-2007 which was 1.52% in 2005-2006. 1.04 % is under investigation and 6.25 % are of cause incidental for the year 2006-07.

The term 'other causes' includes failure of station staff, commercial staff in charge of loading wagons, natural causes like floods and falling boulders, crossing of track by animals, combination of failure of staff of more than one Department, other than Railway staff and those under investigation.

The comparative number of derailments is as follows:-

2005-2006	**131**
2006-2007	**96**

There is a 26.72% decrease in the number of derailments in 2006-2007 compared to 2005-2006

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2.6.2 CAUSE-WISE ANALYSIS OF COLLISIONS

Figure 5 shows the cause-wise analysis of the collisions during 2005-2006 & 2006-2007. Failures of Drivers, including Motormen, accounted for 87.50% of the collisions in 2006-2007 against 44.45% in 2005-2006. Failures of station staff accounted for 12.50% in 2006-2007 against 11.11% in 2005-2006.

The comparative number of collisions is as follows:-

2005-2006	**9**
2006-2007	**8**

There is a 11.11% decrease in the number of collisions in 2006-2007 as compared to the year 2005-2006.

2.6.3 ANALYSIS OF ACCIDENTS AT LEVEL CROSSINGS

Shown in Figure 6 is the cause-wise analysis of train accidents at level crossings in the years 2005-2006 & 2006-2007. There were 79 no. of accidents on level crossings during the year 2006-2007 against 75 in 2005-2006. Failure of railway staff accounted for 6.33% of the accidents in 2006-2007 against 8% in 2005-2006, while failure of road users was responsible for 93.67% of the accidents in 2006-2007 as against 92% in 2005-2006.

The principal cause of accidents at level crossings, however, continues to be the negligence of road users at level crossings.

2.6.4 CAUSE-WISE ANALYSIS OF FIRES IN TRAINS

Figure 7 shows the cause-wise analysis of fire accidents in trains during 2005-2006 & 2006-2007. During 2006-2007, there were 04 fire accidents in trains, 02 being attributed to negligence of Railway Staff. and 02 cases were due to Passenger & outsider negligence. In the year 2005-2006 there were 15

cases of fire accidents in the trains, thus there was decrease in 11 cases in 2006.07.

2.7 INCIDENCE OF HUMAN FAILURE IN TRAIN ACCIDENTS

2.7.1 The incidence of human failure (both Railway and other than Railway Staff) in the consequential train accidents is reflected in Table 4 :-

TABLE - 4

S. No.	Item	2005-2006	2006-2007
1.	Total No. of consequential Train Accidents	234	195
2.	No. of Consequential train accidents due to failure of Railway Staff.	120	85
3.	No. of consequential train accidents due to failure of other than Railway Staff.	86	84
4.	No. of consequential train accidents due to human failure (2+3)	206	169
5.	% of consequential train accidents due to failure of Railway Staff (2 divided by 1)	51.23	43.60
6.	% of consequential train accidents due to Human failure (both Railway and other than Railway Staff) (4 divided by 1)	88.03	86.66

2.7.2 It would be seen from Table 4 that the no. of consequential train accidents are has decreased from 234 in 2005-2006 to 195 in 2006-2007. The percentage of consequential train accidents, attributable to failure of Railway Staff, has decreased to 43.58% in 2006-2007 from 51.28% in 2005-2006. The failure of human element comprising both Railway Staff as well as other than Railway Staff such as road users, passengers, miscreants etc., was responsible for 86.66% of consequential train accidents in 2006-2007 against 88.03% in 2005-2006. The failure of human element thus continues to be the largest single cause of accidents.

2.7.3 The term 'Failure of Railway Staff' refers to failure of various categories of staff in charge of both train operation and maintenance. The break-up of such staff responsible for the consequential train accidents in 2006-2007 is shown in Table 5 below:-

TABLE 5

S.No.	Type of Staff	Consequential train accidents Attributable to Railway staff	
		Nos.	Percentage of total no. of Consequential train accidents.
1.	Permanent Way Maintenance Staff	31	15.90
2.	Driving Crew (including Motormen)	11	5.64
3.	Workshop, Carriage and Wagon and Loco Maintenance Staff.	11	5.64
4.	Station Staff	6	3.08
5.	Signaling Maintenance Staff	-	-
6.	Other Staff (Commercial Staff in charge of loading, Guards and others)	2	1.03
7.	Combination of failures of Staff	24	12.31
	Total	85	43.60

2.7.4 The figures in Table 5 above reveal that the Permanent Way Maintenance staff was responsible for the largest number of consequential train accidents due to failure of Railway Staff, at 31 (15.90% of total consequential train accidents). Combination of Staff accounted for 24 accidents i.e. 12.31% of consequential accidents. Driving Crew caused 11(5.64%) accidents. Workshop, Carriage and Wagon and Loco Maintenance Staff were responsible for 11 (5.64%) accidents, station staff were responsible for 6 (3.08%) accidents while Signaling Staff caused Nil accidents. Other Staff accounted for 2 (1.03 %) accidents.

2.8 LOSS OF RAILWAY ASSETS IN ACCIDENTS:

The total estimated cost of damage to railway assets resulting from all consequential train accidents was Rs. 42.69 crores in the year 2006-2007 as compared to Rs.41.57 crores in the year 2005-2006.

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CHAPTER – III

INVESTIGATION INTO ACCIDENTS

3.1 PREAMBLE

Among the statutory duties carried out by the Commissioners of Railway Safety, one of the main duty is the statutory investigation into railway accidents. The rules for the guidance of officers of the Commission of Railway Safety in holding Inquiries into railway accidents are contained in 'Statutory Investigation into Railway Accidents Rules 1998' notified by the Ministry of Civil Aviation. Extracts of the rules and procedures for holding statutory investigations are contained in Appendix III.

3.2 STATUTORY INQUIRIES HELD IN 2006-2007

3.2.1 During the year, 25 serious accidents required inquiry by the Commission in terms of Section 114 of the Railways Act 1989 which are detailed in Appendix IV. Out of these 25 accidents, 5 were collisions between trains, 6 were derailments, 6 involved collision of trains with road vehicles at Level Crossings and 4 were unusual occurrences , 2 were due to fire in the train, 1 was due to explosion in train and 1 was due to bomb blast in train.

3.2.2 Of the 25 accidents, the following accidents attracted considerable attention of the media :-

a) Para 11 of Appendix IV. --Unusual incidents of bomb blasts in seven EMU local trains at Matunga Road, Mahim Jn., Bandra between Khar & Santa Cruz at Jogeshwari Borivali and between Mira Road and Bhayander stations of Mumbai Central Division .of Western Railway .on 11.7.2006. As a result of the accident 187 passengers was killed 540 passengers were grievously injured and 327 sustained simple injuries**.**

b) Para 19 of Appendix IV. Unusual incident of collapse of a portion of ROB, 3 x 30 feet arch, resulting into derailment of train no. 3071 Howrah – Jamalpur express towards Sahibganj end of Bhagalpur station yard of Malda division of Eastern Railway on 02.12.2006. As results of the accident 36 passengers were killed, 12 passengers were grievously injured and 4 sustained simple injuries.

c) Para 25 of Appendix IV. Unusual occurrence of fire in the coaches of 4001 up Attari special while it was on the run through Diwana railway station on Delhi-Ambala Cannt section of Delhi Division of Northern Railway on 18.02.2007. As results of the accident 68 passengers were

killed, 7 passengers were grievously injured and 5 sustained simple injuries.

3.2.3 **POINTS OF DIVERGENCE BETWEEN THE VIEWS OF COMMISSION AND RAILWAY (PERIOD YEAR 2005-2006)**

3.2.3.1 During the performance of the statutory investigations into railway accidents various recommendations for avoiding the recurrence or minimizing the detrimental effect on systematic functioning of the railways are made by the Commission. These recommendations after being duly commented upon by the Zonal Railways and then by Chief Commissioner of Railway Safety are forwarded to the Ministry of Railways (Railway Board) for acceptance and follow up action. The recommendations are generally accepted by the Railways and follow up reported to the Commission thereon. However, there are small number of instances where views of the Railway Ministry and Commission do not coincide. In such cases, the Railway Ministry is requested to explain the divergent views taken by it. In few instances, the Railway Ministry does not even explain the stand taken by it. The case in point may be readily cited is the accident of 6602 Mangalore – Chennai Central Mail on Bridge No.924 between Kadalundi and Parpanangadi stations in Calicut – Shoranur single line non – electrified Broad Gauge section in Palghat Division of Southern Railway on 22-06-2001 wherein Railway Ministry did accept the cause of the accident as established by the Commission but did not accept the responsibilities fixed by the Commission. The primary responsibilities of Chief Bridge Engineer, Southern Railway was not accepted nor were blameworthy responsibilities of Construction organisation of Southern Railway as well as that of the Bridge & Structure Directorate of Railway Board. In the above instance, Railway Board did not reply to the Commission's correspondence for explaining the reasons for non-acceptance of recommendations or discuss the issue with the Commission. However, a meeting about the same was held on 25-06-2007 between Member Engineering (ME) & Chief Commissioner of Railway Safety (CCRS) where the position of the Commission was explained. But Railway Board stood on its stand (Letter no.2001/CE-1/BR-III/9 dt 24-07-2007), vide which it only explained the reasons of the same which are not acceptable to the Commission except Para 8.2.2(i) about the responsibility of the construction organization.

The details of the recommendations not accepted by the Ministry of Railway for the period 2005-2006 are listed below:

3.2.3.2 Fire in train No.3008 Dn Udyan Abha Toofan Express between Darauli and Dildarnagar stations of Danapur Division of East Central Railway on 04-04-2005.

Para 9.12 of the report:- Rear view mirrors/cameras may be provided in the locomotives.

Railway Board's comments: Not Accepted. Board has considered the recommendation but has not found it feasible for acceptance. It is to be appreciated that the loco crew is to keep a good look-out while the train is in motion and shall look back frequently during the journey to see whether train is following in a safe and proper manner as provided in Para 4.40 and 4.41 of GR respectively. Rear view mirrors/cameras in electric locomotive may not serve this purpose effectively specially during night time.

This is not acceptable to the Commission.

3.2.3.3 Head-on Collision between 2802 Dn New Delhi-Puri Purushottam Express and Up Electric Loco WAM-4 20631 at Km.262/4 - 5 between stations Gamharia and Birarajpur on Chandil – Tatanagar broad gauge double line electrified section of Chakradharpur Division of South-Eastern Railway on 20-06-2005.

Para 9.1 of the report: Necessary instructions are to be incorporated in SWR to keep a constant watch on the panel indications regarding yard position by the on duty operator of RRI/Panel interlocked stations.

Railway Board's comments: Not Accepted. The matter has examined by the Board but the same has not been found feasible for acceptance due to the reason that ASMs have to perform many more functions like exchange of alright signals, sale of tickets at certain small way-side stations, etc. Further, in case of acceptance of this recommendation the stress level of ASMs will increase considerably which may be counter productive.

The above position is not acceptable to Commission as Railway is already told to post extra staff in busy stations for such purpose.

3.2.3.4 Derailment of 7481 Up Bilaspur-Tirupati Express at Km. 7/2 – 5 between Raipur Block Hut and Mandirhasaud stations of

Raipur-Titlagarh broad gauge non-electrified single line section of Sambalpur Division of East Coast Railway on 05-07-2005.

Para 9.1 of the report: Based on condition and road worthiness of Locos, Loco Sheds should advise suitable restriction on speed as deemed necessary so as not to jeopardize safety.

Railway Board's comments: Not Accepted. The matter has examined by the Board but the same has not been found feasible for acceptance. In this connection, it is pointed out that the locomotive, its components and assemblies are maintained as per the schedules specified for them. As long as maintenance is carried out as per the prescribed schedule, the component/assembly can be put into service. The cannibalization of the component is an acceptable practice and being extensively used in loco maintenance by way of Unit Exchange Spares. Only road worthy locomotives are turned out by sheds for train operation. In case any restriction is warranted due to exigency, it is imposed for which instructions already exist. Therefore, it is not considered necessary to issue fresh instructions in this regard.

The above is not acceptable to Commission as no reference is given by Railway Board .

3.2.3.5 Side Collision of 619 Up (GMO-CPU) passenger with LHM Spl. Up Goods train in Barwadih station yard at Km. 258.899 on Barkakana-Garhawa Road BG Double line electrified section of Dhanbad Division of East Central Railway on 09-11-2005.

Para 9.4 of the report: Railway Administration should consider provision of locking arrangement to make it difficult/inaccessible for miscreants to operate the handle of the angle cock for miscreant-prone areas.

Railway Board's comments: Not Accepted. RDSO has examined the modification to replace the handle of the angle cock with a nut so that operation of the modified angle cock would be possible only with the help of a spanner of particular size and would thus avoid its unauthorized operation by miscreants. However, the workability of this modification was subject to the confirmed availability of spanners of a particular size with all the related staff such as driver, guard, station staff, train examining staff, etc. In view of this serious limitation the modification was not considered feasible for acceptance.

Another modification to relocate the angle cock from its present position to just below the wagon body, which did not require distribution of spanners to the staff, was also examined by RDSO. Similar modification had been trailed out in 1989 in MGS and was witnessed by RDSO officials and it was found that head of the examining staff hit the head stock of the wagon while viewing/examining/operating the relocated angle cock if proper precaution was not taken. This modification was also discussed in 55th and 58th CWSE meetings and the committee gave recommendations against relocation of angle cock, which was then duly accepted by Railway Board. As per the Board's recent instructions, post loading and post tripling examination of all types of wagons has to be done by the driver and guard. If the angle cock is so relocated, driver and guard may not be able to check its location in all the wagons, which will be a potential safety hazard. In view of the above, relocating the angle cock from its present position to just below the wagon body is again not considered desirable by the Board.

Part (1) above of Railways views are not acceptable by the Commission while part (2) is acceptable.

3.2.4 Brief details of the 25 accidents inquired into by the Commission during 2006-2007 along with important recommendations made, are at Appendix - IV.

3.2.5 **During** the financial year under report inquiries into 2 accidents were entrusted by the Commissioners of Railway Safety to the respective Railway Administrations under Sub-Section (2) of Section 114 of the Railways Act. One accident was on Unmanned level crossing and one accident was unusual occurrence. Brief details of these are at Appendix VI.

CHAPTER - IV

INSPECTION AND OTHER FIELD DUTIES

4.1 INSPECTION OF NEW LINES :

During the year 2006-2007, the Commissioners of Railway Safety carried out inspections of new lines and other works, prior to authorizing them for public carriage of passengers, as detailed below :

a)	New Lines	311.535 km
b)	Diversions	5.745 km.
c)	Doublings	323.541 km.
d)	Conversion of Gauge	958.087 km.
e)	Initiation of electric traction	149.051 km.

A list of these works appears at Appendix V.

4.2 NEW MINOR WORKS :

4.2.1 Structural works affecting the safety of trains on running lines, such as, provision of additional bridges, rebuilding or re-girdering of existing bridges, re-modeling of station yards, re-signaling works etc. can only be carried out after duly obtaining the sanction of the Commissioner of Railway Safety. Such works, after being sanctioned by the Commission, are executed by the Railway Administration and opened to traffic under safety certificates signed by the concerned railway officers, unless the Commissioner of Railway Safety decides to inspect them before being commissioned.

4.2.2 During the year, 3827 such works were sanctioned by the Commission of Railway Safety.

4.3 WORKS INVOLVING INFRINGEMENTS OF STANDARD DIMENSIONS:

Certain minimum and maximum dimensions for location of structures near railway lines and maximum and minimum dimensions in respect of rolling stock have been prescribed and are laid down in a publication called “Schedule of Dimensions”. The Railways can not deviate from these

dimensions without obtaining the sanction of the Railway Board or Commissioners of Railway Safety. During the year under review, 13 cases for condonation of infringements to the Schedule of Dimensions were recommended by the Commission for sanction of the Railway Board. 17 cases which were within the powers of the Commissioners of Railway Safety were sanctioned by the Commissioners themselves.

4.4 MOVEMENT OF OVER-DIMENSIONED CONSIGNMENTS :

The railways have sometimes to transport various types of heavy machinery the dimensions of which are in excess of the prescribed maximum moving dimensions. Movements of some of these consignments require the sanction of the Commissioner of Railway Safety. During the year, transport of 16 over-dimensioned consignments was authorized for movement by the Commissioners of Railway Safety after due scrutiny, subject to observance of such conditions and speed restrictions as were considered necessary.

4.5 NEW TYPES OF LOCOMOTIVES AND ROLLING STOCK :

According to Section 27 of Railways Act, 1989, new rolling stock, such as, locomotives, coaches and wagons can only be used after prior sanction by the Railway Board. During the year, 28 new types of locomotives and other rolling stock were recommended by the Commission, in various sections, for sanction by the Railway Board. According to extant rules, the Commissioners of Railway Safety can authorize movement of new rolling stock on sections of the railway provided the previous sanction of the Railway Board has been obtained for their movement anywhere in the Railway system. During the year, 177 such cases were sanctioned by the Commissioners under their powers.

4.6 PERIODIC INSPECTIONS :

During the year, the Commissioners carried out periodical inspections of 12,208.594 kms. of Govt. railways either on their own or in the company of the Zonal Railway General Managers. Significant defects and deficiencies noticed during inspections were discussed with the Railway Officers during such periodic inspections and inspection reports were issued.

2006-07

CHAPTER V

REMARKS ON SOME IMPORTANT ISSUES

5.0 PREAMBLE.

(i) A large number of issues relating to safety concerning maintenance of the Railway system and train operation have been raised by the Commission of Railway Safety in its past annual reports. Many of these issues raised earlier have been addressed to by the Railway Board; others are yet to receive the desired level of attention in the opinion of the Commission. In the Annual report of year 2005-06, 2004-05, 2003-04, 2002-03 & 1999-2000, four important issues were raised. These were :

(a) Running of Shatabdi Express train on New – Delhi-Palwal-Agra Cant. Section at a maximum speed of 150 kmph. ((Item initially raised in the Annual Report of the year 2005-06)

(b) Foundation details and completion drawings of bridges (item initially raised in the Annual Report of the year 2002-03 and 2004-05)

(c) Provision of twin pipe brake system for high speed (100 KMPH) freight stock. (Item initially raised in the Annual Report of 2003-04)

(d) Determination of final maximum permissible speed by RDSO for new designs of rolling stock. (item initially raised in the Annual report 1999-2000 as well as on 2001-02)

The comments of Ministry of Railways (Railway Board) were received on the above items. The Commission was not fully satisfied with these comments and its views were reflected in the Annual Reports accordingly. However in view of their importance on safety these are therefore, being reiterated in this Annual Report.

(ii) Three new items have been included in this year's Annual Report as given from Para 5.5 to 5.7.

5.1 Running of Shatabdi Express train on New Delhi-Palwal-Agra Cantt. section at a maximum speed of 150 kmph.(2005-06)

The Commission in its various communications to the Ministry of Railways had not favored running of trains at speeds higher than already permitted on Indian Railways prior to the raising of speed of above Shatabdi train to 150 Kmph by the Railway Board, on the following fundamental considerations :-

(i) Inadequate measures presently available on the Railways to prevent trespassing on track, cattle run-over menace and non-provision of Hangers (frills) at level crossings.

(ii) Non-availability of Train Protection and Warning System to prevent signal overshooting by drivers

Further, the present working system of observing trains to detect hanging parts etc and exchange of signals was also required to be suitably addressed.

However, Railway Board, despite the reservations of the Commission, have gone ahead and sanctioned the running of the above train in the New Delhi-Agra Cantt. Section vide their letter no. 2005/CEDO/SR/7, dated 12/13.01.2006, (Annexure 2.1) imposing several stipulations some of the important ones of which are given below:-

(i) Fencing of the track at vulnerable locations which are prone to cattle crossing/trespassing.

(ii) Observance of all conditions stipulated in RDSO Speed Certificate no. SD.POL.12.10 dt. 17/18.06.2004 except condition no. 2.1.7 (pertaining to provision of fencing along the track).

(iii) USFD machines with data logger being received with 5 SPURT cars to be used on New Delhi-Agra Cantt. Section and printout of the machines to be utilized for interpretation of USFD results to avoid errors of manual reading.

(iv) Recording with OMS shall be carried out with 150 kmph high speed train only at a laid down frequency. Revision

of frequency of OMS recording is not considered necessary at this stage.

(v) Oscillograph car run may be done at maximum permissible speed to study the oscillation behavior of coaches under particular track conditions as is being done at present.

(vi) Railway may provide suitable instrumentation to observe various parameters for one or two selected bridges. Zonal railways (NR & NCR) may undertake the study in consultation with RDSO.

(vii) A-Class working of station only for this train as suggested by R.D.S.O., in the speed certificate, was not agreed to.

(viii) Traffic Deptt. Shall ensure the complete arrival of the train at the station till such time Continuous Track Circuiting work is completed in the section.

(ix) Suitable speed restriction shall be imposed on facing points not provided with Thick Web Switches and Clamp Lock Point Machines.

(x) 25 W VHF sets shall be provided in the locomotive and guard's van for communication between driver, guard and the adjacent Station Masters till such time Mobile Train Radio Communication work is commissioned in the section.

It would be seen that these conditions are very general in nature and not binding on the Railways or the officials who are supposed to take action. The Train Protection Warning System (TPWS) for prevention of overshooting of signals at danger by the train driver is also yet to be commissioned.

The Commission feels that without addressing the basic issues raised by it, the increase in speed of trains with so many general restrictions (listed above) is not the right policy for safe train operation at higher speeds.

Comments of the Ministry of Railways:

Suggestions made by CCRS/CRS were given due consideration and only after examining all technical and safety requirements, running of the solitary Shatabdi Express at maximum speed of 150 kmph has been permitted on New Delhi-Palwal-Agra Cantt. Section, subject to

observance of stipulations laid down in the referred letter of the Railway Board.

Railways did an extensive study to identify the locations where the incidents of trespassing of track/cattle run over is likely, and running of this train has been permitted only after providing fencing on all such vulnerable locations. Having plugged the vulnerable locations, there is no need for through fencing. Moreover, trains are already running on the system at 130 kmph and raising the speed of only one train to 150 kmph would not materially affect the safety on this account.

Availability of train protection and warning system, again for running only one train at 150 kmph is not considered essential in the wake of existing other safety measures. However, provision of train protection and warning system in this section would be operational by June 2007 as a regular measure.

Further, the said train has been successfully running for almost an year without any adverse report, which should remove apprehension, if any, regarding the safety of this train. The stipulations made by the Railway to run this train have become part of regular drill by all the concerned departments and are strictly followed to ensure safety.

Further Comments of the Commission:-

The issue of running of high speed trains needs to be looked in a holistic manner and requires a thorough review of infrastructural and operational features involved. This should not be treated as mere increase of speed of only one train from 130 kmph to 150 kmph.

The Railway Board had taken a decision about 10 years ago not to go beyond a speed of 140 kmph for passenger carrying trains, keeping in view the various constraints such as likelihood of fencing not remaining in place, need for replacing the level crossings with ROBs/RUBs, the speed differential between Mail/Express trains and freight trains and impact of cattle run over on safety etc. The Board's view at that time was that dedicated high speed corridors for a speed of 250/300 kmph would have to be developed. There has not been much progress in eliminating the factors considered at that time except that the speed of some of the freight trains have been raised which has also been offset by reducing the speed of those freight trains which are carrying CC+6t or CC+10t load.

The general view of the Railway Board that availability of Train Protection and Warning system is not considered essential in the wake of existing other safety measures, does not seen to be very

appropriate. In the opinion of the Commission it is essential to provide technical aid to the driver of the train against passing signal at danger inadvertently particularly in a high speed environment. After all Driver is a human being and is likely to commit an error of judgment, which may seriously jeopardize the safety of the passengers of the train. Again providing fencing at sporadic locations and that too at the boundary of railway land, far away from the track, can not be considered a effective means of preventing trespassing. In any case, the cattle can always enter from the end of fencing through the gap beside the track.

The Railway Board's contention on successfully running of solitary Shatabdi Express at maximum speed of 150 kmph is, therefore, not acceptable to the Commission of Railway Safety. In future the Indian Railways will be tempted to run more such trains without taking adequate safety measures required for running of high speed trains.

It is therefore imperative that Ministry of Railways give the required attention to this very important safety matter and should frame necessary guidelines for running the passenger carrying trains at a speed higher than 140 kmph.

Railways are requested to develop safety standards and criteria for running trains in different higher speed bounds/range of

a) 100-120 kmph
b) 120-150 kmph
c) 150 and above kmph

to enable issue of future substantial policy guidelines on the subject.

LATEST COMMENTS OF MINISTRY OF RAILWAYS –

The said train has been successfully running for almost two years without any adverse report, which should remove apprehension, if any, regarding the safety of this train. Suggestions made by CCRS/CRS were given due consideration and only after examining all technical and safety requirement, running of the solitary Shatabdi Express at maximum speed of 150 kmph has been permitted on New Delhi-Palwal-Agra Cantt, Section, subject to observance of stipulations laid down in the referred letter of the Railway Board. While sanctioning the running of Shatabadi train at 150 kmph, stipulation for fencing of track at vulnerable locations which are prone to cattle crossing/trespassing was provided. Having plugged the vulnerable locations, there is no need for through fencing.

It is observed time and again that the fringes are damaged by road users or their vehicle in their effort to sneak through. Lowered boom (boom in closed position) is an indication to the road traffic that gate is closed for passage of train. Lowered boom even with fringes cannot act as insurmountable wall for human beings using the road. As per social condition prevalent in India, provision of fringes on the booms of lifting barriers serves no additional purpose to prevent road users from crossing the gate, when the gate is close to road traffic. Road users trying to pass beneath the boom damage or interfere with fringes, if these are provided. At times, the fringes get entangled with the vehicles (Cycle, Cycle rickshaw, Two-wheelers, Car, Herd, etc,) leading to mishaps. Therefore, it is felt that the provision of fringes is not a solution to prevent trespassing at level crossings.

Train Protection Warning System (TPWS) is being implemented for the first time on IR. Adaptability to IR conditions is taking, some more time than anticipated and the system is targeted to be operational in the year 2008. Presently the system has been provided in one loco. The trials are still under progress.

Board has sanctioned the running of the above train vide their letter No. 2005/CEDO/SR/7 dated 12/13/01.2006 with stipulations to be followed and comments on the adherence of some of the important stipulations are as under :-

Regarding the USFD testing as stipulated in Para 5.1(iii) above 5 nos. data loggers have already been procured and handed over to the zonal railway to be fitted in their existing USFD machines for assessing its effectiveness in USFD testing. The beneficiary zonal railways are Central, Northern, Southern, South Eastern and Western Railways.

The tender for SPURT car was finalized in December, 2003 and the commissioning, period was up to 13 1/2 months. In spite of several extensions given to the agency M/s.SCANMASTER could not commission the system as per tender specifications. Now two firms have shown interest in free trial on IR for benchmarking their technology. When these cars successfully complete their trial, IR will go for outsourcing for the activity of USFD testing of rail by rail borne vehicle.

Regarding the suitable instrumentations for monitoring various parameters of bridges as stipulated in Para 5.1(vi) above, NCR is doing instrumentation of Arch Bridge No. 1387/1(UP) on Palwal-Agra Cantt. Section and 1st round has been completed, report being expected soon. In NR, Vibration Signature Analysis, of super structure of three bridge – Br.No.13 (4x14.7m) & Br. No.17 (14x17.3m) between NDLS & TKD and Br.No.1515/2(1x12.3m) between TKD & Palwal has been successfully done by KRCL in September,2006. KRCL has stated in its

report that there is consistency in stiffness of girders which indicate healthy trend of girders.

Further, for operations at 150 kmph, only LHB-FIAT coaches are used. These coaches have a speed potential of 160 kmph. Adequate maintenance infrastructure and time is provided for maintenance of these coaches.

Apart from above, the issues being pertaining to various directorates i.e. Signaling, Mechanical/Electrical and engineering, it is therefore, proposed that a multi-disciplinary committee at Executive Director's level preferably at RDSO will be nominated to develop the safety standards and criteria for running trains in different higher speeds.

LATEST VIEWS OF THE COMMISSION :-

The provision of fringes for the LCs in CR, WR, SR, NWR and SWR is continuing without trouble to long time. Thus Railway Boards contention regarding this, is not acceptable. No comments have also been given regarding the provision of fencing at isolated location which is totally ineffective against cattle trespass. One isolated instance of successful train can not be substitute for policy guidelines. The Railway Board must expedite the formation of Committee as per last Para of Board's remarks.

5.2 FOUNDATION DETAILS AND COMPLETION DRAWINGS OF DRIDGES:

(Item initially raised in the annual Report for the year 2002-03 and 2004-05)

Views of the Commission

Various aspects of railway bridges were highlighted in the Annual Report of the Commission for the for the year 2000-01, which covered rehabilitation, underwater inspection, rebuilding of MG bridges strengthened for retention after conversion and rechecking of waterway of bridges in case of doubling and gauge conversion projects. Railway Board in its comments had stated that there are about 1.2 lakh bridges on Indian Railway system out of which 44 % are more than 100 years old and 74% are more than 60 years old. Railway Board highlighted that the life of a bridge is determined on age-cum-physical condition and that action is taken to rehabilitate/rebuild the bridge when it shows signs of distress. It was

also brought out in the Railway Board's comments that RS.1,530 crores out of SRSF have been earmarked for the rehabilitation/rebuilding of distressed bridges, cast iron pile bridges and early steel bridges in the first instance over the next 5 to 6 years. The provisions of IRS Bridges Substructure and Foundation Code were also mentioned in regard to allowable stresses, etc., required for checking the substructure for introduction of new types of locomotives, rolling stocks, train composition and gauge conversion, etc. In regard to the need for rebuilding of MG bridges retained during gauge conversion, the Railway Board advised that a committee comprising of four Executive Directors of Railway Board was constituted to review all the gauge converted sections or sanctioned gauge conversion projects with respect to their fitness of running of BOXN traffic, heavier WDG-3&4 locomotives and in some cases even for heavier break down cranes.

The Commission's views were that old bridges which were overstressed or distressed or whose substructure could not be visually inspected or for which the completion drawing were missing should be rebuilt. as in such cases it is not possible to certify adequacy of these structures under Clauses- 5.16.2.2 and 5.16.2.3 of IRS Substructure and Foundation Code. It was also suggested that effective means of underwater examination to find out the soundness of the substructure of bridges is brought in force without any more delay.

It is a fact that foundation details and completion drawings of a vast majority of railway bridges are not available with Zonal Railways. The foundation and substructure of large number of bridges remain underwater round the year and their integrity is suspect as no satisfactory means are available for their inspection. Heavier locomotives and wagons are being introduced in the system and 100 kmph freight trains are already running. The Zonal Railways are certifying the safety of bridges without any rationale or calculations, which approaching the Commissioners of Railway Safety for sanction of running of these rolling stock. They are not doing enough to retrieve the completion details of the bridges either through physical verification or by making sincere search for the completion drawings. After the unfortunate accident of 6602 Mangalore-Chennai Central Mail on Bridge No 924 in Southern Railway near Kadalundi on 22nd June 2001, where 52 passengers lost their lives and more than 300 were injured, the Railway Board realized the importance of underwater inspection of bridges and mapping of unknown foundation. Railway Board then sanctioned 4 pilot projects in assosication with foreign specialist firms as follows:-

1.	Southern Railway	Pilot project for underwater inspection in association with M/s Wilbur Smith & Associate, USA.

2. North Central Railway	Pilot project for underwater inspection in association with M/s Ramboll, Denmark.
3. Central Railway	Pilot project for underwater inspection in association with M/s Collins Engineers, USA.
4. Northern Railway	Mapping of unknown foundations and integrity testing in association with M/s Olson Engineers, USA.

The Railway Board advised that on successful completion of the pilot projects, the procedures will be adopted all over the Indian Railways and the techniques of NDT developed abroad on mapping of unknown foundations and integrity testing of foundations will be utilized. Railway Board also advised that

(i) The Zonal Railways have started getting underwater inspections of critical bridges done through local expertise available.
(ii) Zonal Railways have been directed to have complete database of availability of completion drawings and foundation drawings of bridges and to make all out effort to locate old completion drawings from records/archives.
(iii) Zonal Railways will collect details from existing structures, wherever possible.

On the apprehension of the Commission that how could a Bridge Certificate be given by the Zonal Railways for introduction of heavier axle loads and higher speeds in a section without the help of completion drawings of bridges, the Railway Board replied that the detailed procedure for sanction of running of new rolling stock has been issued by RDSO. However, it is not understood by the Commission as to how can a procedure prescribed by RDSO for running rolling stock over a bridge, be helpful when the foundation details are not available because without knowing the structural details and the dimensions of various components of the bridge, the stress calculations, etc., cannot be made. **The outcome of the Committee or four Executive Directors set up by Railway Board is also not known.**

Though alarmed by the tragedy that occurred due to the collapse of Kadalundi bridge on 22nd June 2001, Ministry of Railways sanctioned certain pilot projects more than 2 years ago, the progress made in this endeavor appears to be quite slow. Over the last few years, Ministry of Railways, has permitted overloading of wagons over and above the

carrying capacity for which the wagons were initially designed and cleared for running, without following the laid down procedure and without a speed certificate from RDSO, making the old bridges which were designed for much lighter loadings, all the more vulnerable. The Commission therefore reiterates its earlier suggestion that Ministry of Railways should take urgent action for rebuilding of those over-100 years old bridges, whose foundation details and condition of substructure below water level is not known and whose visual inspection is not feasible, nor it is being carried out.

Comments of the Ministry of Railway-

1. Railway Board is already seized of the matter. Detailed remarks on subject were furnished in response to CCRS views in Annual report 2003-04. It is fact that completion drawings are not available with Zonal railways for some of old bridges constructed more than 100 years back. Efforts are made be Zonal Railways to locate completion drawings of bridges and reconstruct missing drawings. Procedure for sanction of running of newer rolling stock on bridges has been finalized within RDSO. The certification of bridges for which drawings are not available are being made by zonal railways as per Para 5.16.2.4 of the Code of Practice for the design of sub-structure and foundation of bridges. The extracts of relevant Para is as under :-

> "wherever it is not possible to carry out theoretical checks, running of locomotives and rolling stock with heavier tractive force/braking force / may be permitted subject to physical condition being certified and bridges being kept under close observation, as considered necessary by the Chief Engineer. In such case, the increase of tractive and/or braking forces shall not be more than 20% over bridges above the level of tractive and braking forces running over the bridges for the past one year or so."

2. A Committee consisting of four Executive Directors of Railway Board was constituted to review all the gauge conversion carried out or sanctioned with regard to their standards of construction, the immediate traffic requirements, the likely perspective traffic requirements & give recommendations on the following :-

   (i) Up gradation required in completed gauge conversions and their priority. Where the up gradation would be required necessarily by a particular date, the same should also be mentioned.

(ii) Identify the sanctioned gauge conversions where requirement of traffic would need up gradation of the standards provided for in the sanctioned estimate.

The Committee, after detailed deliberations, interalia, recommended on 23.01.2002 that;

(i) It should be possible to run trains with WDG2 locomotives on all the gauge converted sections. In case of weak bridges, the drivers will be instructed to operate at maximum of 5th notch while passing on the vulnerable bridges. In case any train comes to stop with the loco on the bridge, the driver will try to start the train without exceeding the 5th notch position. If he can not do so, he will ask for a relief loco. This instruction will be issued to the driver through the shed notice book. In case of lower standard of rails on two sections of South Central Railway, the same should be replaced at the first opportunity under track renewal program.

3. Developing drawings for underground structures & assessing their integrity otherwise is a stupendous task. For the time being the procedure prescribed by RDSO is being followed based on performance of already running rolling stock and physical condition of bridges. Realizing the importance of Underwater Inspection of bridges and mapping of unknown foundations, following four pilot projects have already been completed over various Zonal Railways.

a) Pilot Project in the area of acoustic emission testing of Railway Bridges over Northern Railway by M/s TISEC INC Canada.
b) Pilot Project in the area of fatigue testing & residual life analysis of steel bridge structure over Western Railway by M/s TTCI.
c) Pilot Project in the area of under water inspection & non-destruction testing of Bridges over Central Railway by M/s Ramboll, Denmark.
d) Pilot Project in the area of fatigue testing & residual life analysis of steel bridge structures over North Western Railway by M/s Sharma & Associates Inc. USA.

Besides, following three sanctioned Pilot Projects are also scheduled to be completed by 31.03.2006.

a) Pilot Project in the area of acoustic emission testing of Railway Bridges over Western Railway by M/s Dungan, USA
b) Pilot Project in the area of strain gauging & cost rating over Western Railway by Bridge Diagnostics, USA.

c) Pilot Project in the area of mapping of unknown foundation & integrity testing over Northern Railway by M/s Olson Engineers, USA.

In these completed pilot project officers, supervisors and staff from other Zonal Railways also were associated for taking up such works in their Railway.

4. As far as underwater inspection is concerned some work has already been done with the help of local expertise. Underwater inspection of nearly 300 Bridges ahs already been done on various Zonal Railways. A pilot project in the field of underwater inspection has already been completed on Central Railway with foreign specialized agencies which included training of engineers and supervisors of Indian Railway. Meanwhile, the best available local expertise is being used for underwater inspection and guidelines for underwater inspection have already been issued by RSDO.

5. Regarding enhancement of the carrying capacity of wagons, it is to be stated that BOXN wagon was introduced on Indian Railways in 1982. Due procedure was followed at the time of introduction of BOXN wagons. Since then track and rolling stock technology and maintenance practices have improved considerably. A detailed analysis of rail stresses shows that there are many grey areas in calculations. Value of track modulus is very old and is of CST – 9 track. It is seen that although old bridges were designed to old standards, yet they continue to be in good physical condition and giving good service. This is because of various factors such as availability of reserve strength due to higher factors of safety used, good initial quality and of improved technology and maintenance practices etc. In past also Railway had been increasing the loading capacity of wagons from time to time. The permissible carrying capacity of BOXN was enhanced by 2 T in July 1997 and in addition 2T loading tolerance was provided for loose commodities in BOXN. A slight increase in carrying capacity was considered not tantamounting to operation of a new wagon, therefore, procedure as specified for running of a new rolling stock was not adopted and Railway Board took a conscious decision to enhance carrying capacity of BOXN wagons to CC+8+2. However, as a matter of abundant precaution this was taken up a pilot project on selected iron ore routes only.

During the pilot project, the bridges would be first thoroughly inspected before showing higher axle load wagons and thereafter, kept under observation and selected bridges instrumented for a thorough evaluation of stresses and deflections. Those bridges as requiring strengthening are taken up for strengthening/rebuilding.

To sort out the various issues raised by CCRS vide his letter No.M.14011/1/2005-RS dated 16.05.05, a meeting was held in Railway Board on 07.10.2005 between CCRS and Board Member (ME,MM &MT). In the meeting Board apprised CCRS about the status of CC+8+2 T train on Indian Railway. It was explained that more emphasis is being given on physical condition of the bridges. All the bridges on CC+8+2 T routes have been physically inspected and vulnerable bridges are kept under observations. Action is being taken to provide instrumentation on selected bridges which will give insight knowledge regarding stress dispersion in bridges. The project is being monitored by a multi-disciplinary core group comprising of PHODs of Zonal Railways under GM. During the meeting, it was agreed that RDSO would issue provisional speed certificate, based on which Railway will process for Railway Board's approval through CRS/CCRS. Provisional speed certificates has been issued by RDSO's letter No. MN/SPD/BG/BOXN/PROV dated 28.10.2005 and South Eastern Railway's proposal for post-facto approval for running of these wagons has been received in Railway Board's office through CCRS and is under process. Approval is being communicated separately. Meanwhile, RDSO has completed oscillation trial of BOXN wagons with CC+8+2 T and wagon performance is found to be satisfactory up to a speed of 70 kmph. Accordingly, vide RDSO's letter No.MVV/Overloading dated 19.01.06. RDSO has issued a final speed certificate for BOXN for speed up to 70 kmph.

Further VIEWS OF THE COMMISSION;-

The efforts being made by the Railways to find suitable diagnostic techniques, available world over for monitoring the health of various components of old bridges is appreciated. However, the need for hurriedness with which the higher loading, over & above the designed carrying capacity of wagons, has been introduced, without ensuring the implementation of the conditions prescribed by the Ministry of Railways for bridges in the field, is not understood. Also the bypassing the Commission in the first instance while taking such a decision is a serious matter, Ministry of Railways is advised to exercise caution and avoid such violation of time tested rules & procedures. As this over loading will shorten the residual life (in terms of years) of track, structure and wagons, the clear guide lines, for their earlier renewal should be finalized if this pilot project is continued definitely.

LATEST COMMENTS OF MINISTRY OF RAILWAYS –

Commission has appreciated the efforts made by Ministry of Railways. Instrumentation of the bridges is already to progress and effect of higher axle load on fatigue life on bridges is being studied besides other parameters.

LATEST VIEWS OF THE COMMISSION :-

In view of larger issues of train safety the Commission would like to be apprised of the results of the studies undertaken. These should also be done in a time bound manner. Studies (by engaging external agency, if required) to find out bridge wise carrying capacity (vertical and longitudinal) and incorporate the same in a database should be done. Life of track can be fixed on rate of flaw generation instead of current criteria for heavy haul routes.

5.3 PROVISION OF TWIN PIPE BRAKE SYSTEM FOR HIGH SPEED (100 KMPH) FREIGHT STOCK; (First raised in 2003-04 Report)

5.3.1 The twin pipe are brake system on freight wagons was discontinued on Indian Railways during the year 1992, mainly on account of difficulty experienced in their maintenance and since then the freight trains are running with single pipe air brake system. The maximum speeds of most of the freight trains so far were restricted to 75/80 kmph. However coaches of all passenger-carrying trains are equipped with twin pipe air brake system only.

5.3.2 Few years back, the Railway Board took a decision to go in for the design/procurement of high-speed freight stock to raise the maximum speed of goods trains to 1oo kmph. It was in the year1998 when the Container Corporation of India (CONCOR) procured high-speed BG low platform container flats, which were permitted to run at 100 kmph on trial basis between TKD and Mumbai (Jawaharlal Nehru Port) with the BVZC four wheeler brake vans. The trial runs were extended from time to time and in the mean time oscillation trials of brake van type BVZC were carried out. When the Western Railway approached the Railway Board, through the Commission, for regular running of freight trains with these container flats and BVZC brake van, it was felt by the Commission that such trains should have superior features and BVZC brake van should also be replaced with a better design of brake van having superior riding behavior at least comparable with the locomotive.

5.3.3 Agreeing with the Commission's view point, the Railway Board accorded their sanction for running of brake van type BVZC at 100 kmph for a period of two years vide letter No. 98/CEDO/SR/9 dated November, 2000 with the expectation that in the mean while, a different type of brake van, meeting the requirement of superior riding behavior, would have been developed. Similar sanction for running of BG low platform container flats was accorded by Railway Board vide their letter No. 88/CEDO.SR/4 dated January, 16th,2001. One of the main conditions of these sanctions was-

"Container flat wagons and captive BVZC brake vans to run at 100 kmph, to be procured in future, should be equipped with twin pipe air brake system to hasten release of brakes."

5.3.3 (1) RDSO further designed other varieties of high speed freight stock namely BOXNHA, BOXNHS, BCNAHS etc. with a view to run them at a maximum speed of 100 kmpt. Their running on Indian railways was also sanctioned with the condition of equipping them with twin pipe air brake system. While giving sanction for the running of bogie covered wagon type BCNA-HS over Northern Railway, as late as on 18.11.2003, Railway Board directed the Executive Director/(Wagon), RDSO for taking necessary action on the mass manufacture of these wagons with twin pipe air brake system to facilitate quick release of brakes, to avoid brake binding and consequent damage to track. Before this, RDSO vide letter No. MW/APB/TP/M dated 27.02.2003 addressed to Railway Board, had also listed the advantages of twin pipe air brake system over the single pipe one and advocated going in for twin pipe air brake system for freight stock.

5.3.4 However, of late Railway Board has reversed its earlier view and has decided to continue with the single pipe air brake system for the high speed freight stock also, as conveyed vide its letter No. 98/M (N)/204/4/Vol.I dated 10/13.11.2003 on the premise that twin pipe system is costly as compared to single pipe system and that speed potential of 100 kmph is not relevant to twin pipe system.

5.3.5 RDSO, which is the highest technical body on Indian Railways and functions as the Technical Advisor to the

Railway Board had conveyed to them vide their letter No.MW/APB/TP/M dated 27.02.2003, as under:

"Railway Board has also taken a decision to procure all freight wagons suitable for 100 kmph operation. It is proposed that all newly built wagons suitable for 100 kmph operation shall be fitted with twin pope brake system. The advantages of providing twin pipe brake system are as under:-

(i) Provision of twin pipe will result into improved application and release of brakes.

(ii) Due to improved release timings of twin pipe, it would be easier for driver to control the train.

(iii) Due to improved release and application timings, drag on the train will be reduced resulting into better fuel economy/reduced drag would also mean reduced shuttling action and in turn reduced longitudinal forces on coupler and draft gear system.

In view of above, Board is requested to issue suitable instruction".

5.3.6 Thus the most obvious advantage of twin pipe air brake system is that it hastens the release of brakes and thereby protects the rolling stock from developing flats in the wheels and prevents damage to the rails. Therefore, it was felt that the railways should go for better system at higher speeds so that overall reliability of the assets is improved. No doubt, twin pipe system is costly compared to the single pipe system and may require more efforts in maintenance also, yet for asset reliability and consequent repercussions on the safety of traveling public, the cost has to be incurred and better maintenance standards have to be adopted. This is precisely the reason why the railway is continuing with the twin pipe air brake system for the passenger coaches.

5.3.7 The Commission has, therefore, serious reservation on the major shift in the position now taken by the Railway Board to continue with the single pipe air brake system from their earlier decision of procuring/manufacturing of high-speed freight stock equipped with twin pipe air brake system. As more and more high-speed freight trains will be introduced on Indian Railway system in time to come, it is in the overall interest of safety and reliability of assets that the Indian Railways should have gone for freight trains fitted with twin pipe air brake system.

5.3.8 Railway Board is once again advised to reconsider the whole issue seriously in the interest of safe train operation.

Comments of the Ministry of Railways:

1. The Board on the basis of detailed study carried out by RDSO in the year 1992, examined the issue of twin pipe air system. After considering all related factors, RDSO and zonal Railways were advised to discontinue twin pipe air brake system.

2. On getting suggestion from the Commission to equip all future high-speed freight stock with twin pipe air brake system to hasten release of brakes, the matter has again been examined by the Board.

3. Advantage of twin pipe system over single pipe system in respect of release time, is relevant for heavy haul freight train operation.

4. Since the issue of the last instructions in the year 1992, there is no significant change in the pattern of freight train operation. The only change is introduction of high-speed freight train with maximum speed potential of 100 kmph, which is not relevant to twin pipe system. Introduction of twin pipe system will require major investments and has implication on train operation due to need for keeping existing single pipe stock and proposed twin pipe stock separately. And, since requirement of less release timing is not dependent on the maximum speed of the freight trains, it will not be justified to incur the expenditure (release time comes into play when the speed has come down considerably).

5. In view of the above, it has not been considered necessary to re-introduce the twin pipe system in place of single pipe system, for new or existing stock even for 100 kmph operation.

Further views of the Commission:

Commission does not subscribe to the views of Ministry of Railways, when the passengers as well as freight trains are running on the same system.

The issue is being reiterated in view of higher permissible wagon load and increase in speeds the brake power issues of freight train need a critical look and review.

LATEST COMMENTS OF MINISTRY OF RAILWAYS –

The comments offered by the Railway Boards earlier stands good and there is no need to reintroduce the twin pipe system in place of single pipe system, for new or existing stock even for 100 kmph operation.

LATEST VIEWS OF THE COMMISSION:-

In the absence of corroborative studies the contention of the board cited above is not acceptable to the Commission. It may be better for life and safety of assets like track, bridges etc to increase the speed of freight train in place of the axle load for heavy haul operation. The experience of heavy haul railway backed by adequate research should be carefully considered by Railway before coming to a meaningful decision in place of present high axle load running with single pipe seems to be ad-hoc in nature.

5.4 DETERMINATION OF FINAL MAXIMUM PERMISSIBLE SPEED BY RDSO FOR NEW DESIGNS OF ROLLING STOCK .

(Issue initially raised in Annual Report of 1999-2000)

Views of the Commission.

Oscillation trials are the most important tests carried out on new rolling stock before the same is introduced on the Indian Railways. The present criteria in assessing the riding stability of rolling stock have not been revised for a long time though there have been many new developments in the field of track and rolling stock. In the meeting of CCRS/CRS with Board held on 08.11.2001. CRB had decided that the present criteria should be reviewed by a committee of two Additional Members and DG/RDSO and the report of the committee will be sent to CCRS. Railway Board is advised to expedite the review.

Comments of the Ministry of Railways:

RDSO has advised that the subject of revising criteria for assessing the riding stability of stock is under review to be in line with UIC 518. In this connection, 3 level of track maintenance quality have been identified. Trials have been planned for an experimental run with WDM 2 Loco, BOXNHS wagons and oscillograph car on Lucknow- Sultanpur section at 100 km/h. Result of these trials is expected to be giving the desired details for finalizing the issue.

Further Views of the Commission:

The Commission is dismayed to note that it has been taking inordinately long time in deciding the revised criteria. The trials may be expedited and the criteria for determination of final maximum permissible speed for new design of Rolling Stock may be finalized at the earliest.

LATEST COMMENTS OF MINISTRY OF RAILWAYS –

RDSO has conducted several trials in this regard and some trials are yet to be conducted. The revised criteria require a lot of groundwork and costly inputs. It is a cumbersome exercise and work is being expedited. Till such time this exercise is completed, existing criteria which are quite satisfactory shall be continued.

LATEST VIEWS OF THE COMMISSION:-

In the interest of safety the necessary works as listed above may be expedited by according due priority. Cost may not be cited as an excuse in deciding such vital parameters. In any case, the cost is negligible compared to the scale of Railway operations

5.5 DISCREPANCIES IN TECHNICAL PARAMETERS IN VARIOUS BOOKS OF REFERENCE, MANUALS ETC. (NEW ITEM)

VIEWS OF THE COMMISSION:-

The Indian Railways have issued several books of reference department-wise for standardizing various items of maintenance as well as laying down the criteria for inspection etc. like the Indian Railway Permanent Way Manual, Indian Railway Schedule of Dimensions, Manual for Maintenance of B.G. Coaches, Indian Railway Signal Engineering Manual, Indian Railway Bridge Manual, A.C. Traction Manual etc. It is important that the parameters reflected in the various manuals are not

in conflict with each other so as to avoid confusion at the field level. In addition, there should not be any ambiguity in any of the standard operating procedures.

5.5.1.1 The Commission during the course of inspections and various accident investigations has come across a number of discrepancies in various books of references, i.e. departmental manuals. A few illustrations are brought to your notice.

5.5.1.2 Gauge Tolerance:

As per Para 19, Chapter I of BG Schedule of Dimensions, the gauge shall be up to 3 mm tight for straight track including curves of 400m radius. However, as per Para 403 of IRPWM, the same parameter has been laid down follows:

For straight including curves of radius up to 350 m	-5 mm to +3 mm
For curves of radius less than 350m	- Up to + 10mm

Again, as per Para 224(v) of the same Manual, the maintenance tolerance for gauge for BG has been specified as follows:

On straight	-6 mm to + 6 mm
On curves with radius of 350 m or more	-6 mm to +15 mm
On curves with radius less than 350 m	+20 mm

There may be similar anomaly for other gauges.

Any confusion arising out of conflict in the books of reference creates lot of problem down the field in adopting the correct parameter for laying, maintenance etc. Correct amount of extra gauge to be allowed can not be assessed properly by the field staff leading to lot of confusion.

It is felt that reconsideration should be given to all the gauge tolerances prescribed in the Indian Railway's Schedule of Dimensions as well as Indian Railway Permanent Way Manual and proper tolerances for new lines as well as for maintenance is prescribed in conformity to IRPWM in BG Schedule of Dimensions.

5.5.1.3 The criteria for realignment of curve has been specified in Para 421 of IRPWM. As per the same the limit for station to station variation of versine for speeds below 80 kmph is 40 mm or 25% of average versine on the circular curve, whichever is more. However, the above limit is also mentioned as service limit (service tolerance) in the above Para.

It is felt that the criteria mentioned particularly for below 80 kmph and up to 50 kmph is too slack. This tolerance can perhaps be adopted as a service tolerance (that is beyond which safety is endangered). However, for

proper maintenance of track, it is felt that lesser tolerances should be prescribed. In this connection, the old system of cumulative frequency diagram which has continued for such a long time is considered to still useful. (In practice, it is being continued even now in many field units). As the realignment of curve is a very important aspect of track maintenance, it is felt that the old system of cumulative frequency diagram may again be brought back for the sake of better maintenance and avoidance of any confusion and unsafe conditions at the field level.

5.5.1.4. The various observations in regard to ACTM and SOD are listed below:

a) Clause 23.2 specifies the minimum setting distance of the gantry upright which is normally aligned parallel to the track to be 4.30m. However, as per clause 20945 of ACTM, Vol.II, Pt.I, this distance is specified to be 3.5m. This anomaly may please be corrected.

b) Clause 13.1 states that the maximum wind pressure for design of the structure shall be as prescribed in IS:802 (Part1)-1977 for loads and permissible stresses. Since then the IS has been revised. Therefore, this may be corrected to the latest 'IS: 802 (Part 1)-1995'.

c) Clause 19.2 states that 'separate guarding shall be provided above the lower power line in all cases except when the voltage of the higher line is 33kV and above'. Subsequently, however, Clause 23.1 states that 'All overhead power line crossings up to and including 33 kV shall be provided with guarding under the power line'. These two clauses, thus, are mutually contradictory. In this connection, your kind attention is drawn to Rule 87(3) of the Indian Electricity Rules, 1956, vide which no guarding are required when an extra-high voltage line crosses another power line. Again, 'extra-high' voltage has been defined under Rule 2 as the voltage exceeding 33 kV under normal conditions. Therefore, when 33 kV power lines cross other power lines, guarding must necessarily be provided as per Clause 23.1 above. The Clause 19.2 therefore, needs to be corrected accordingly.

d) Railway Board have issued instructions on a number of issues like the provision of retro-reflective number plates @ 1 per km., the respective responsibilities of Electrical & S & T departments for making available the AT supply for Colour Light Signalling, the norms for provision of BTs, the norms for provision of masts nears signals, the documents to be forwarded to the CRS prior to opening of a newly electrified section, the speed restrictions to be imposed when temporary OHE masts are erected, the time- schedule for completion of SCADA works etc. All such instructions may be incorporated under the appropriate clauses in the ACTM.

5.5.1.5. It has been observed that recently some technical parameters in ACTM have been revised but have not yet been included in the Schedule of Dimensions (SOD).

These are:
a) Minimum clearance between 25 kV live parts and earthed structures earlier given as 320mm in ACTM has been reduced to 250 mm but in the SOD (Chap V Para 1(i)) this is still shown as 320 mm.

b) The distance between transmission line tower and the nearest track has been given as 'h+6'meter in both the ACTM as well the SOD. However, while the ACTM authorizes the CEE of the railway to allow lesser distance than the above, the revised SOD does not have any such provision.

c) As per the SOD (Chapter 1 Para 8(iii)) the minimum distance between any structure and the nearest track, between rail level and foundation level, is 2.575m. In the ACTM, the standard implantation between the OHE structure and the track is 2.50 m. With this implantation, however, the muffs of almost all the OHE structures (masts/portals) will be infringing the aforesaid Para of the SOD.

5.5.1.6. These items have been brought to the notice of Board earlier vide Commission's letter No.S.19015/1/2003-TW dated 14-08-2007 and need a thorough review and eliminations of the contradictions leading to removal of confusion at the field level. The above are examples only which are by no means comprehensive. A thorough examination of all codes & manuals may be carried out to detect & remove all such contradictions by revision or correction slips.

COMMENTS OF MINISTRY OF RAILWAYS –

The Commission's observations refer to the anomalies in various codes particularly in between IRPWM and ACTM. These anomalies are already being monitored and reviewed in respective directorates of Board. Further, finding anomalies in various codes and manuals will require time and resources. It will also require finalizing, which provisions are to be adopted and accordingly remaining provisions need to be deleted modified/deleted. To complete this work a multi disciplinary team at least at SG/JAG level needs to be specifically appointed in Board Comments on some of the issues brought out by the commission are as under:-

The criteria for Re- alignment of curves as mentioned in Para 5.5.1.3 above was discussed in TSC. TSC recommended the changed procedure and Board approved it accordingly. Now, RDSO has been advised to offer comments on it and further action will be taken accordingly.

Regarding the minimum setting distance of gantry upright as brought out by commission in Para 5.5.1.4 (a) above, it is clarified that the distance from the centre of nearest track to the face of the switching station gantry is not less than 3.5m whereas Para 23.2 of ACTM indicates that for minimum setting distance of the gantry upright which is normally aligned parallel to the track shall be 4.3m. The difference between these two parameters are due to the fact that some equipments installed are protruded towards track and maximum protrusion are allowed as per these two Para is 0.8m. Therefore, these clauses are not contradictory and need not be changed.

Regarding the maximum wind pressure as brought out by commission in Para 5.5.1.4 (b) above, it is to clarify that OHE design used by IR is based on SNCF calculations which were done based upon IS:802-1977 with 3 types of wind zones. These calculations have proven in the field and adopted on all over IR. Since IS: Code No.802-1995 has divided the country into 6 wind zones. These 6 zones are basically a sub-division of wind zones as given in IS: 802-1977. With the past experience, it has been observed that the performance of the structures design on the basis of the old IS: 802(Pt.I)-1977 is satisfactory and also because of the complexity and cost factor involved in the design, it is prudent to adhere with IS: 802-1977. Therefore no change is recommended.

Regarding the issue brought out by commission in Para 5.5.1.4 (c) above, the necessary correction slip will be issued.

Regarding the provision of Retro-reflective number plates as brought out by commission in Para 5.5.1.4 (d) above, the necessary modifications in ACTM in the form of correction slip have been processed.

Necessary guidelines regarding the respective responsibilities of Electrical & S&T departments for making available the AT supply for Colour Light Signalling, have been issued vide Board's letter No.82/RE/250/1 dated 13.09.02 & 2005/RE/250/1 dated 17.11.06. Provision has been given in Para 20.5.1 & 25.1 in Appendix I Principle for Layout Plans & Sectioning Diagrams for 25 KV AC traction of ACTM Vol.II – Part-II regarding the norms for provision of BTs and masts nears signals.

Advanced Correction Slip No.12 to ACTM Vol .II Pt.I has been issued vide Board's letter No.2004/RE/161/1/Pt.III (ACTM) dated 03.05.2005 regarding the documents to be forwarded to the CRS prior to opening of a newly electrified section and the speed restrictions to be imposed when temporary OHE masts are erected.

Regarding the Minimum clearance between 25 KV live parts and earthed structures as brought out by the commission in Para 5.5.1.5 (a) above, RDSO has been advised vide Board's letter No.2003/RE/161/1/Vol.II dated 21.08.07 to revise SOD (Revised 2004). The amendment is under process.

The amendment is under process regarding the distance between transmission line tower and the nearest track as brought out by the commission in Para 5.5.1.5 (b) above.

Regarding the minimum distance between any structure and the nearest track, between rail level and foundation level, Board vide letter No.2002/RE/161/11 dated 10.08.07 to RDSO have advised that the provisions of SOD 2004 shall be applicable to electrification works on new tracks/yard modifications as such clearances are not possible in old tracks. The amendment is under process by RDSO.

Besides above, the Part II of Signal Engineering Manual has been formulated through discussion by CSTE's in various Signal Standard Committee meetings and it has been issued in September, 2001.

FURTHER VIEWS OF THE COMMISSION –

The work of reconciliation may be expedited.

5.6 'B' CLASS STATION ON 2 LINES. (NEW ITEM)

VIEWS OF THE COMMISSION:-

5.6.1 Eastern Railway have designated GALSI, KAMARKUNDU, PARAJ, MANKAR, TALIT and PALSIT Stations which have no loop line, or stations without loop lines, having a cross over with points on trailing direction only as 'B' class stations, just by providing a departure signal. Illustrative diagrams of two line stations along with their classification on double line as given under GR 8.16, reveals that their cannot a 'B' class station without loop line. At a conventional 'B' class station, if the berthing portion of the line is blocked, points are required to be set against the blocked line as per SR 5,19(VI) of Eastern Railway,(the same SR existing on all Railways, might be as different paras). This means that no station without loop line can be classified as 'B' class station as there is no mean to protect against a rear end collision. Such 'B' class, station may have to be treated as a special class or 'C' class only and not 'B' class. Such opinion was already communicated to the Railway Board by CCRS.

5.6.2 Besides this even in 'B' class station as an abundant precaution, while granting line clear it has been prescribed under SR 5.19(vi) of Eastern Railway that the points shall be set against, if all the lines are occupied, the stabled Goods train. If all the lines are occupied by passenger trains then point shall be sent to the line where loco is facing the direction of arriving train to minimize casualties in case of collision. This SR is appearing in all the Railway's GR & SR, might be as different Para. When such abundant precaution against rear collision has been taken in 'B' class stations, such precaution will not be possible to be taken in the above said stations where only Up & Dn. Lines are available with either only with starter or having a cross-over with trailing points on the direction of motion of arriving train.

5.6.3 Eastern Railway have approached the Commission for the sanction of the layout and classification in the above mentioned six stations, it is further advised by Eastern Railway Officers' that there are another 40 to 50 stations of similar nature. Such high no. of stations in one Railway increases the probability of unsafe situation increases many folds. This office after considering above aspects had recommended for additional overlap of 120 m extra making it to 300m. This additional overlap may not have such serious effect on the line capacity as claimed by the Railway Hence considering the above aspects of involving large No. of stations and the safety the following were recommended.

1. Before granting line clear for the subsequent train on the same line, at least 300 meter clearance should be ensured from first stop signals. (this was also recommended by CCRS).

2. The approach gradient falling towards the yard should not be steeper than 1 in 400.

3. The stations should be provided with double distant signals.

CCRS on considering the above did advise Secretary (Safety) Railway Board for reconsidering the advice to this office to abide by the Railway Board's letter No. 2003/Safety(A&R)/19/18 dated 27.12.2006.The latest position on this item remains unavailable.

COMMENTS OF MINISTRY OF RAILWAYS –

Modification to the fundamental rule of 180 meters block overlap, just because there are no loops, does not lead us anywhere. It would make sense if any threat is additionally
perceived over and above in case of station having loop. The argument that presence of point & crossings actually add to the block overlap has no bearing as movement is already permitted

over such points located just beyond the BSLB. There is also no scope for setting the point against a blocked line if all the loops and main line are already occupied, and therefore, drawing a parallel using this argument also does not stand to logic. Additional threat, if any, is only when approach gradient exists for which safety directorate of Board has suggested to add suitable distance vide Letter No.2003/Safety(A&R)/19/18 dated 27.12.2006 addressed to CCRS & copy to COMs/All Railways. We need not limit to 1:400 or 300 metres as suggested as depending upon local conditions we may have to be even more restrictive taking into consideration visibility etc.

FURTHER VIEWS OF THE COMMISSION –

The suitable distance may be defined for all the field and operating conditions.

5.7 **INSPECTION OF PSC GIRDER BRIDGES (NEW ITEM)**

VIEWS OF THE COMMISSION:-

5.7.1 Pre-stressed concrete (PSC) girders are being used extensively is modern day construction over Indian Railways. Para 1107 subpara 15 of Indian bridge manual deals with inspection of PSC girder bridges. On perusal of the various provisions it is seen that the items covered in inspection of PSC girder is more of visual nature as can be seen from the list of items included for inspection:

a) Condition of bed blocks and bearings.
b) Camber of the girder
c) Surface examination of PSC girder for cracks and preparation of the sketches of the cracks if present,
d) Particular attention to be made towards bearing area, end blocks, anchorage zone etc and other critical areas,
e) Condition of reinforcement by checking rust streaks, strain marks etc.,
f) Incidences of spalling if any,
g) Incidences of scaling if any,
h) Signs of disintegration of concrete,
i) Seepage, leakage and efflorescence,

5.7.2 The above items are subjective in nature and there is no quantitative assessment of important parameters. Moreover, the visual inspection of most of the PSC girders is difficult due to lack of access to the areas to be inspected.

5.7.3 No specific provision has been made to measure the important parameters in PSC girder which affect the strength of the PSC girder viz the loss of pre-stress, creep, condition of tendons etc. It is pointed out that these parameter can not be measured at AEN level and therefore efforts should be made for measurements of these parameter at regular intervals at appropriate level by engaging specialist agencies if necessary. There are a many methods available now a days to measure these parameters like radiographic measurement of the profile of tendon, loss of pre-stress, vibration signature method etc.

5.7.4 The Commission vide its letter No.S.14015/01/07-T.W. dated the 24.07.2007 addressed to Member Engineering has raised its concern about the above issue. The Railway Board's reply is still awaited.

5.7.5 Commission would like to know what action are being taken by the Railway Board in this regard and the status of the work being done in this field. Detailed instructions issued in this regard by Railway Board to Railway Administration after due deliberation (by involving RDSO as necessary) in the form of correction slip to IRBM may kindly made available to the Commission. The matter assumes severe importance in the light of increased axle load over various routes.

COMMENTS OF THE RAILWAY BOARD –

Commission has observed the following:-

(a) Items covered in the inspection of PSC girder is more of visual and subjective in nature. There is no quantitative assessment of important parameters and that visual inspection of PSC girders is difficult.

(b) No specific provision has been made to measure the important parameters in PSC girders which affect the strength of the PSC girder viz. the loss of pre-stress, creep, condition of tendons, etc. Commission has also observed that these parameters cannot be measured at ADEN's level and, therefore, efforts should be made for measurement of these parameters at regular intervals and at appropriate levels.

Commission desired that detailed instructions may be issued by the Railway Board to Railways after due deliberations (by involving RDSO as necessary), in the form of correction slip to IRBM.

(ii) Railway Board advised RDSO to examine the technical details suggested by the Commission.

In the meantime, the issue was also discussed during CBE's Seminar at IRICEN, Pune on 13-14 September, 2007 vide item 9 and the observations are as follows:

(a) Issue of inspection and maintenance of PSC girders was discussed BS-48 report deals with this issue. It was seen that there is no detailed proforma prescribed for inspection of concrete bridges. A presentation was made by Shri V.B. Sood, Professor, IRICEN and a detailed Performa was proposed which was implemented in WR some time back.

(b) All CBEs may discuss the proforma in their railway and issue modified proforma with a copy to IRICEN. CBEs may also send suggestions to improve the proforma. After receipt of CBE's remarks, a modified proforma can be made by IRICEN and sent to RDSO/Railway Board for incorporation in IRBM/BS-48. However, without waiting for standardization, CBE's should implement the proforma as modified by them in their railways immediately.

(iii) ED(B&S)/RDSO also discussed the issue with CCRS on 25.10.2007 and RDSO vide letter dated 29/30.10.2007 has given the following position:-

(a) RDSO has issued following guidelines to zonal railways for inspection, maintenance, rehabilitation and monitoring of pre-stressed concrete bridges in past as below:-

- Manual of inspection and maintenance of concrete bridges, November, 1990.
- Guidelines for inspection, maintenance and rehabilitation of long span pre-stressed concrete bridges – July 1993.
- Instrumentation techniques to monitor the loss of pre-stressed and corrosion of steel in pre-stressed concrete – June 2001 (BS-36).

The specific area of concern as mentioned in CCRS comments are covered in BS:36 June 2001 to some extent.

(b) RDSO has also made the following observations:-
Actual direct measurement of pre-stress loss is very difficult and no literature could be found in RDSO or on Internet. RDSO has also published report as BS-10 in July 1998 on "Development of Vibration Signature Technique for Integrity Assessment of Railway Bridges". In this report, model study of PSC girder for vibration performance was carried out and it was concluded that pre-stressing force in general increased the natural frequency of the beam.

However, variation in natural frequency with loss of pre-stress and with cracking is such that it is not possible to empirically co-relate them. This technique of vibration measurement can at best give a quantitative assessment of the deteriorating condition of the bridge.

The subject matter was discussed with Shri P.Y. Manjure, Director, The Fressinet Prestressed Concrete Co. Ltd. Worli Mumbai. He has informed that no comprehensive literature is available on this subject. Presently, this is a grey area and requires further research and development. He has also advised that so far instrumentation of pre-stressed girder for getting pre-stress loss has not been done in India except Airoli creek Road Bridge at Mumbai where embedded sensors were used; however, it has not worked.

(iv) Due to complex nature of the subject, and also due to non availability of comprehensive literature on this subject, we have not been able to firm up our views. However, matter is being examined further in detail and following actions are contemplated:-

- Provision of a separate proforma for inspection of PSC girders.
- Amplifying the inspection guidelines with the latest technology.
- It is also proposed to discuss the issue further in BSC to be held shortly. After this, views would be firmed up and necessary guidelines and new proforma may be prescribed.

FURTHER VIEWS OF THE COMMISSION

Contemplated action may be taken early. Commissions would like to be associated with the issue of Guidelines formulation.

APPENDIX-I

(Refer Para 1.2.2)

Circle Offices and their jurisdiction & Incumbency of Officers in the Commission

1. Jurisdictions of Circle Offices (as on 31.03.2007)

	Name of Circle	Headquarters	Route Kilometrage
(i)	Central Circle	. . . Mumbai	7513.750
(ii)	Eastern Circle	. . . Kolkata	5878.324
(iii)	Northern Circle	. . . New Delhi	6909.940
(iv)	North Eastern Circle	. . . Lucknow	6490.495
(v)	Northeast Frontier Circle	. . . Kolkata	3783.490
(vi)	Southern Circle	. . . Bangalore	8272.000
(vii)	South Central Circle	. . . Secunderabad	5734.470
(viii)	South Eastern Circle	. . . Kolkata	5008.666
(ix)	Western Circle	. . . Mumbai	12065.125

Note : Northeast Frontier Circle's jurisdiction includes 16.450 km.of Metro Railway/Kolkata. Central Circle's jurisdiction includes 740.28 Kms. of Konkan Railway and Northern Circle's Jurisdiction includes 64.83 Kms. of Delhi Metro.

2. Incumbency of Officers in the Commission (1.4.2006 to 31.3.2007)

2.1 Headquarters Office, Lucknow

(i) Chief Commissioner	1.04.2006 to 28.02.2007	Shri .G. P. Garg
	1.03.2007 to 31.03.2007	Shri Pranab Kumar Sen
(ii) Deputy Commissioner (General)	Full Period	Shri Veer Narayan

Deputy Commissioners in Technical Wing/Lucknow

(i)Operating	Full Period	Shri. Sanjay Tripathi
(ii)Electric Traction	Full Period	Shri Ashutosh Pant
(iii)Signal & Telecom	Full Period	Shri P.R.Izardar
(iv)Mechanical	1.04.2006 to 05.10.2006	Shri B.S. Dohare
	06.10.2006 to 31.03.2007	Vacant

2.3 Commissioners in charge of Circle Offices

(i) Central Circle, Mumbai	Full Period	Shri Sudhir Kumar
(ii) Eastern Circle, Kolkata	01.04.2006 to 13.12.2006	Vacant
	14.12.2006 to 31.03.2007	Shri K.J.S. Naidu
(iii) Northern Circle, New Delhi	Full Period	Shri. Bhupender Singh
(iv) North Eastern Circle, Lucknow	Full Period	Shri R.K. Kardam
(v) Northeast Frontier Circle, Kolkata	01.04.2006 to 31.03.2007	Vacant
(vi) Southern Circle, Bangalore	01.04.2006 to 28.02.2007	Shri Pranab Kumar Sen
	01.03.2007 to 31.03.2007	Vacant
(vii) South-Central Circle,Secunderabad	Full Period	Shri R.P. Agarwal
(viii) South Eastern Circle, Kolkata	Full Period	Shri Balbir Singh
(ix) Western Circle, Mumbai	Full Period	Shri Prashant Kumar

2.4 Dy. Commissioners (Signalling & Telecommunications) attached to Circle Offices

(i) Eastern Circle, Kolkata	Full Period	Shri P. K. Biswas
(ii) Western Circle, Mumbai	Full Period	Shri A.N. Toke

APPENDIX - II
(Refer Para 1.2.2)

COMMISSION OF RAILWAY SAFETY

HISTORY AND FUNCTIONS

1. Brief History

1.1 To exercise effective control over the construction and operation of the first railways in India, which were entrusted to private companies, Consulting Engineers were appointed under the Government of India. Later when the Government undertook the construction of railways, the Consulting Engineers were designated as Government Inspectors. In 1883, their position was statutorily recognized. Later, the Railway Inspectorate was placed under the Railway Board which was established in 1905.

1.2 Under the Indian Railway Board Act, 1905 and Notification No.801 dated 24th March, 1905 of the Department of Commerce and Industry, the Railway Board was vested with powers and functions of the Central Government under various sections of the Railway Act and was authorised to make General Rules for the operation of Railways. The Railway Board is thus the Safety Controlling Authority for the working and operation of Government and Company managed railways.

1.3 Section 181(3) of the Government of India Act of 1935 provided that functions for securing the safety, both of the traveling public and of persons operating the railways, including the holding of inquiries into the causes of accidents, should be performed by an authority independent of the Federal Railway Authority. Due to the outbreak of

the war, the constitution of the Federal Railway Authority did not materialize and the Inspectorate continued to function under the Railway Board.

1.4 To avoid direct subordination of the Railway Inspectorate to the Railway Board, the Pacific* Locomotive Committee, headed by Lt. Col. A.H.L. Mount, then Chief Inspecting Officer of the British Railways, suggested in para 210 of their report, submitted in 1939, as under:-

"We understand that, under the Govt. of India Act, 1935, it is contemplated that the Inspectorate will be separated from the control of the Railway Board. This is very desirable in so far as it will eradicate the present anomaly of the Board being the Inspecting as well as the executive Authority. We were informed that the Board fully appreciate the position, and would welcome the change, although it appears that, in practice, Government Inspectors have generally retained their freedom of judgement....."

* Engines with 4-6-2 configuration of wheels are called "Pacific Locos".

1.5 The principle of separation of the Railway Inspectorate from the Railway Board was endorsed in 1940 by the Central Legislature who recommended that "Senior Government Inspectors of Railways should be placed under the Administrative control of some authority of the Govt. of India other than the Railway Board." Accordingly, the Railway Inspectorate was placed under the administrative control of the Department of "Posts and Air" in May 1941 and continuously thereafter under whichever Ministry that held the portfolio of Civil Aviation.

1.6 The erstwhile Railway Inspectorate was re-designated as the Commission of Railway Safety on 1.11.1961.

1.7 The responsibility for safety in the working and operation of Railway rests solely with the Railway Board and the Zonal Railway authorities. The main task of the Commission of Railway Safety is to direct, advise and caution the Railway executives with a view to ensure that all

reasonable precautions are taken in regard to soundness of rail construction and safety of train operation. The Railway Board refers to the Commission matters relating to modification or enhancement of standards in respect of operation of trains, track, locomotive, rolling stock and revision of rules embodied in the General Rules, Rules for the opening of New Lines, Manuals, IRCA Regulations, Schedules of Dimensions and other publications. Suggestions made by the Commission of Railway Safety are duly considered by the Railway Board before necessary revisions are notified.

2. **Duties**:-

2.1 The duties of a Commissioner of Railway Safety as spelt out in Chapter III of the Railways Act 1989 are as under:-

- to inspect new railways with a view to determine whether they are fit to be opened for the public carriage of passengers, and to report thereon to the Central Government as required by or under this Act;
- to make such periodical or other inspections of any railway or of any rolling stock used thereon as the Central Government may direct;
- to make inquiry under this Act into the cause of any accident on a Railway;
- to perform such other duties as are imposed on him by this Act or any other enactment for the time being in force relating to Railways.

2.2 The term “such other duties” mentioned in Para 2.2 has been detailed in Sections 22 to 24 of the Act and covers the following:-

- sanctioning the opening of new railway lines after inspection on behalf of the Central Government;
- sanctioning the execution of all works, including new works, affecting the safety of running lines;

- when, after inspecting a line already in use or a rolling stock already authorised, the Commissioner is of the opinion that their continued use will be attended with danger to the travelling public, he may report his opinion to the Central government, who may then order the closure of the line or the discontinuance of the use of rolling stock; and

- to inspect such a closed line and sanction its re-opening for carriage of passengers and also report to the Central Govt. on the fitness for use of discontinued rolling stock.

2.3 Functional duties, including field inspections, of an Inspector of Railway, since designated Commissioner of Railway Safety, are amplified, among other technical publications, in the;

- General Rules for all open lines of railways in India administered by the Government;

- Rules for the opening of a Railway or Section of a Railway for the public carriage of passengers;

- Indian Railways Code of practice for the Engineering department;

- Indian Railways Way, Works and Signal Engineering Manuals;

- Schedules of Dimensions;

- Conference Rules of the Indian Railway Conference Association;

- Statutory Investigation into Railway Accidents Rules, 1998

- Railway (Notices of and Inquiries into accidents) Rules, 1998

2.4 After its separation from the Railway Board in May, 1941, a post of Chief Government Inspector of Railways, later designated as Chief

Commissioner of Railway Safety, was created to enable the Central Government to exercise “effective technical control”.

2.4.1 The Chief Commissioner of Railway Safety directs the activities of the Organization and is responsible for advising the Central Government in all matters relating to Railway Safety, recruitment of officers, postings and promotions, budget and expenditure etc. The Chief Commissioner deals principally with: -

- Matters appurtenant to Field Inspections and statutory inquiries into accidents;
- Inspection Reports of Commissioners of Railway Safety;
- Reports of statutory inquiries held into accidents by the Commissioners. After careful study he forwards his considered opinion to the Controlling Ministry and the Railway Board with such recommendations as he considers necessary;
- Railway Board’s suggestions pertaining to corrections or amendments to General Rules, Rules for Opening of a Railway, Schedule of Dimensions, the P. Way, Works and Signal Engineering Manuals, Procedures for inquiries into accidents, Codes of Practice for Engineering Works and other publications; and
- Preparation of the Annual Report on the working of the Commission of Railway Safety and its placement in each House of Parliament.
- All the Technical publications indicated in para 2.4 above including others issued by Railway Board from time to time.

2.4.2 Field duties of the Chief Commissioner of Railway Safety consist of inspections of sections of Railways, visits to the

Railway Headquarters and Divisional Offices, Railway installations and Circle Offices. If considered necessary by him, he may himself hold inquiries into important accidents.

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APPENDIX- III
(Refer Para 4.1)

STATUTORY INQUIRIES INTO RAILWAY ACCIDENTS- RULES, SCOPE AND PROCEDURE

1. RULES

1.1 Rules for Inquiry into Railway accidents :-

Rules for the guidance of the Officers of the Commission of Railway Safety for holding inquiries into Railway accidents are contained in the "Statutory Investigation into Railway Accidents Rules, 1998" notified by the Ministry of Civil Aviation in the Gazette vide G.S.R.No. 257 dated 26.12.98 and G.S.R. No. 63, dated-02.01.99.

1.2 When should a Statutory Inquiry be held ?

A statutory inquiry by the Commissioner is obligatory in every accident to a passenger-carrying train 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. The Commissioners may also inquire into any other accident which in the opinion of the Chief Commissioner or the Commissioner of Railway Safety requires the holding of an inquiry. Where the Chief Commissioner of Railway Safety considers the holding of an Inquiry into an accident necessary, he may either hold the inquiry himself or direct the Commissioner of Railway Safety to do so.

The Inquiry shall be obligatory only in those cases where the passengers killed or grievously hurt were travelling in the train. If a

person travelling on the foot-board or roof of a passenger train is killed or grievously hurt or if a person is run over at a level crossing or elsewhere on the railway track, an inquiry is not obligatory. Workmen's trains or ballast trains carrying workmen shall also be treated as passenger trains and in the event of a workman getting killed or grievously hurt as a result of an accident to the train, an inquiry shall be obligatory.

1.3 Procedure when Commissioner is unable to hold an inquiry:-

When a Commissioner is unable to hold an inquiry, he is to inform the Chief Commissioner of Railway Safety of the reasons as to why an inquiry can not be held by him. The Chief Commissioner may himself hold the Inquiry or may direct another Commissioner to inquire into the accident or else the inquiry can be entrusted to the Railway itself, who will then appoint a Committee of Railway Officers to inquire into the accident. The Committee's inquiry report is submitted to the Commissioner of Railway Safety who scrutinizes it and in case he agrees with the findings, forwards it to the Chief Commissioner of Railway Safety along with his views on the findings and recommendations made. If, on the other hand, the Commissioner of Railway Safety considers that an inquiry should be held by him, he proceeds to do so.

1.4 When shall the Commissioner stop or discontinue his inquiry?

Whenever the Central Government appoints a Commission of inquiry under the Commission of Inquiries Act, the Commissioner shall discontinue his inquiry.

2. SCOPE : -

The Commissioner holds inquiries into accidents with a view to ascertaining the causes and fix the responsibility thereof on the individuals concerned. Investigations are also carried out into the question whether prompt and adequate steps were taken by the railway administration for relief measures such as provision of first aid, medical treatment and refreshments to passengers, evacuation of injured passengers and other facilities like arrangements for transshipment, completion of their journey to destination, running of duplicate trains etc. As a result of his inquiry,

the Commissioner may also make recommendations which are designed to prevent the recurrence of similar accidents, and which may suggest laying down new rules or modifying existing rules of working, and improved standards of signalling, installation and maintenance of track, bridges, etc. He also comments on matters observed by him during the course of his inquiry which may not have any direct bearing on the cause of the accident under investigation but which may in some cases affect the safe working of the railway and lead to accidents.

3. Procedure for conducting a Statutory Inquiry

As soon as the Commissioner of Railway Safety receives intimation about the occurrence of a serious accident, he proceeds to the site, conduct inspection of the accident site and records all particulars relevant to the accident; He then fixes a date for the inquiry, which is given publicity in the media. Officers of the local Magistracy and police are separately advised of the dates of the inquiry. The public is invited to give evidence in the inquiry in person or to write to the Commissioner.

APPENDIX-IV

BRIEF DETAILS OF SERIOUS RAILWAY ACCIDENTS INQUIRED INTO BY THE COMMISSION OF RAILWAY SAFETY.2006-2007.

1--COLLISION OF 5273 RAXAUL-DELHI SATYAGRAH EXPRESS WITH A JCB MACHINE AT A WORK SITE AT JAHANI KHERA HALT STATION OF MORADABAD DIVISION OF NORTHERN RAILWAY ON 10/04/2006.

a) CAUSE- WHILE 5273 SATYAGRAH EXPRESS WAS RUNNING THROUGH JAHANI KHERA RAILWAY HALT STATION LOADER OF THE JCB MACHINE HIT THE SIDES OF THE LOCOMOTIVE OF THE TRAIN. THE JCB MACHINE WAS STANDING CLOSE TO RAILWAY TRCK AFTER FINISHING THE EXCAVATION WORK IN THE NIGHT.

b) CASUALTIES:-KILLED- 2, (1 PASSENGER , 1 OUTSIDER) GRIEVOUS INJURY - 6, (5 PASSENGERS, 1 OUTSIDER) SIMPLE INJURY - NIL

c) COST—Rs. 5,60,000/-.

d) CATEGORY-FAILURE OF PERSONS OTHER THAN RAILWAY STAFF

RECOMMENDATIONS

1--All sites adjoining railway tracks, where work is required to be undertaken by the use of road vehicles or machines, should invariably be barricaded irrespective of distance of the worksite from the track. The barricading should be undertaken from level crossing gate to level crossing gate in order to prevent any vehicle to come close to the railway track during their operation or when they are parked near the railway track.

2--All Guards of the trains should be given a list containing the locations of all the emergency sockets provided in various sections of their Division.

3--TTEs and railway officials traveling in the train must report to the Guard of the train and also inform the Section Control and adjoining Station Masters of their presence at the site of accident..

4--Digital cameras must be provided to all the branch officers of the safety organizations of the Divisions and safety officers of the Headquarters and they should invariably carry these to the accident sites for taking photographs to preserve the clues.

5—Mail/Express trains should not be allowed to run with single SLR only and in case it is unavoidable then Railway Board should lay down the necessary conditions to do so.

2--DASHING OF 2553 UP BARAUNI-NEW DELHI VAISHALI EXPRESS WITH A TRUCK AT UNMANNED LEVEL CROSSING NO 83-C BETWEEN STATIONS DURAUNDHA AND PACHRUKHI ON VARANASI DIVISION OF NORTH EASTERN RAILWAY ON 23/04/2006

a) CAUSE-DUE TO NEGLIGENT DRIVING BY ROAD TRUCK DRIVER.

b) CASUALTIES:- KILLED- NIL, GRIEVOUS INJURY - 4, (3 PASSENGERS & 1 OUT SIDER) SIMPLE INJURY - 5 (PASSENGERS)

c) COST--Rs 20,000/-.

d)CATEGORY-FAILURE OF PERSONS OTHER THAN RAILWAY STAFF

RECOMMENDATIONS

1--In view of increasing trend of accidents at unmanned level crossings, frequent safety drives should be launched by the Railway Administration for the inspection and counseling of road users on unmanned level crossings. Drivers of tractor trolleys and trucks should also be checked for their knowledge regarding provisions of Section 131 of Motor Vehicles Act 1988 and counseled.

2--Railway must ensure proper upkeep of records of inspection of unmanned level crossings.

3--DASHING OF A TRUCK WITH 2321 UP HOWRAH-MUMBAI MAIL AT CONSTRUCTION SITE BETWEEN MADARAHA AND LOHGARA RAILWAY STATIONS OF JHANSI DIVISION OF NORTH CENTRAL RAILWAY ON 28.04.2006.

a) CAUSE-DUE TO INFRINGEMENT BY THE TRUCK CAUSED BY NEGLIGENT DRIVING BY THE DRIVER OF TRUCK NO UP 70 X 9421.

b) CASUALTIES:-KILLED- NIL, GRIEVOUS INJURY - 6 (PASSENGERS), SIMPLE INJURY - 1 (PASSENGER)

c) COST--Rs NIL

d) CATEGORY-FAILURE OF PERSONS OTHER THAN RAILWAY STAFF

RECOMMENDATIONS

1--Regular drives should be launched by North Central Railway Administration to inculcate safety sense among the Railway officials, contractors and their workmen and for ensuring safety of track, trains/engines, passengers, labour, staff etc. at construction/work site by observing various precautions while working in the vicinity/adjacent to track.

2--At all construction/work sites where road vehicles or machinery can come close to the Railway track should be protected by providing suitable, properly designed semi-permanent fencing alongside the track for which the approved plans and instructions should be issued by North Central Railway Administration.

3--North Central Railway Administration should ensure that the sanction of the Commissioner of Railway Safety (CRS) is taken before the minor works are commenced. No work should be started unless CRS sanction is obtained for the works.

4--While the works of doubling are done by construction organization, the open line supervisors and officers should also have a close watch on the activities done by the construction organization and their contractors to ensure the safety of running trains.

4--DERAILMENT of K-93 DN-EMU SLOW LOCAL TRAIN BETWEEN STATIONS DIVA-DOMBIVILI ON MUMBAI DIVISION OF CENTRAL RAILWAY ON 03/05/2006

a) CAUSE-MULTIPLE FRACTURES OF RAIL (60 KG 110 UTS HEAD HARDENED) ON THE LEFT SIDE OF THE ALIGNMENT, UNDER THE TRAIN.

b) CASUALTIES:-KILLED- NIL, GRIEVOUS INJURY - NIL, SIMPLE INJURY -1 (PASSENGER)

c) COST—Rs. 1, 15,000/-.

d) CATEGORY-FAILURE OF EQUIPMENT -TRACK

RECOMMENDATION

1--The speed restriction imposed on slow local lines on HH rails should not be relaxed till either deep screening and ballasting are done or rails are replaced.

5--DERAILMENT OF 3 UP NAGPUR – CHHINDWARA - NAINPUR NG FAST PASSENGER BETWEEN STATIONS BHOMA AND PALARI OF NARROW GAUGE SECTION OF NAGPUR DIVISION OF SOUTH EAST CENTRAL RAILWAY ON 16/05/2006.

a) CAUSE-DUE TO THE OBSTRUCTION ON/ACROSS TRACK CREATED BY UPROOTING ONE OF THE FOUR GATE POSTS OF LC GATE NC 31 AND PUTTING THE SAME ON / ACROSS THE TRACK BY SOME UNKNOWN PERSON(S).

b) CASUALTIES:-KILLED- NIL, GRIEVOUS INJURY - 1 (PASSENGER) SIMPLE INJURY- 4 (PASSENGER)

c) COST--Rs 14,00,000/-.

d)CATEGORY-SABOTAGE

RECOMMENDATIONS

1--In the instant case while Railway failed to register the sabotage case and get necessary clearance to commence the restoration work, rapport with Civil authorities is important. There is a need to improve co-ordination efforts on the part of the Railway.

2--Accident / Disaster Management on Railway

(i) Role of Head of Medical Unit at Nainpur has been far from satisfactory. Issue of instructions whatsoever for improvement and action as deemed fit in the matter may be taken.

(ii) Role played by South East Central Railway at HQ level in the instant case of derailment of a passenger train in which 5 (five) persons (including Loco Pilot) suffered injuries, one being categorized as grievous has been far from satisfactory. Issue of instructions whatsoever for improvement and action as deemed fit in the matter may be taken.

3--'Drawing is the language of Engineers'. It is important that due care is taken in their preparation and details addressing safety aspects.

4--It is desirable that details / reports as prescribed are collected by concerned Departments and furnished promptly in connection with the inquiries.

5--Railway may consider sympathetically pleas for assistance by Shri Indra Kumar Sharma, grievously injured passenger.

6--UNUSUAL OCCURRENCE OF HITTING OF LADDER OF DOWN GATE SIGNAL OF MANNED LEVEL CROSSING GATE NO. 34-B WITH 2MNR PASSENGER TRAIN BETWEEN GARHI HARSARU JN. AND PATLI STATIONS OF DELHI DIVISION OF NORTHEN RAILWAY ON 16.05.2006.

a) CAUSE-EMPTY NDZ/BCX GOODS TRAIN WITH OPEN FLAPS/DOORS RAN PAST THE MANNED (ENGG.) LEVEL CROSSING GATE NO. 34B-CLASS A HOOK OF ITS OPEN DOORS/FLAPS GOT ENTANGLED WITH THE LADDER OF THE DOWN GATE SIGNAL IT UPROOTED IT, PULLED IT TOWARDS THE RAILWAY TRACK AND THE LADDER INFRINGED THE RAILWAY TRACK.

b) CASUALTIES:-KILLED- NIL GRIEVOUS INJURY - 2 (PASSENGERS), SIMPLE INJURY - NIL

c) COST--Rs 5,000/-.

d) CATEGORY-FAILURE OF PERSONS OTHER THAN RAILWAY STAFF

RECOMMENDATIONS

1--The goods Supervisor must issue certificate certifying the closure and securing of the door/flaps of the goods wagons after their release and at the time of handing over these to the Supervisor of the trains Branch. This certificate should be incorporated in the Operating as well as in the Commercial Manual of Northern Railway.

2--On Delhi-Rewari BG section Signal ladders located less than 2360 mm from the center of the BG track must be blanked off and the infringements should be got condoned from the Railway Board.

3--Carriage of milk cans on trains by hanging these from the horizontal bars of the window coaches on the outside of the coaches must be stopped.

4--RVNL and their Project Management Consultants must ensure execution of the Railway works to conform to the Railway Standards. Supervision needs improvement.

5--The Guard of the train, if not injured in an accident, must visit the site of the accident irrespective of the delay that can be caused to the train operations and ensure that no obstruction to track is there before he moves his train out of the block section.

6--The Northern Railway Administrations should ensure that guards of the trains perform their duties as specified in Para 122 of the Accident Manual of Northern Railway.

7--UNUSUAL OCCURRENCE OF A TREE HITTING 4553 UP DELHI-UNA HIMACHAL EXPRESS BETWEEN HOLAMBI KALAN AND NARELA RAILWAY STATIONS OF DELHI DIVISION OF NORTHERN RAILWAY ON 19.05.2006.

a) CAUSE-THE TRAIN, 4553 UP DELHI-UNA HIMACHAL EXPRESS RAN THROUGH HOLAMI KALAN RAILWAY STATION WHILE THE TRAIN WAS ON RUN IN THE HOLAMBI KALAN-NARELA BLOCK SECTION THE LOCO PILOT AND HIS ASSISTANT SAW A TREE LYING ACROSS THE DN LINE TRACK AND ITS LEAVES AND BRANCHES COMING ON THE UP LINE TRACK. The LOCO PILOT APPLIED THE EMERGENCY BRAKES BUT COULD NOT STOP HIS TRAIN SHORT OF THIS FALLEN TREE THE TRAIN RAN PAST THE FALLEN TREE AND THE BRANCHES OF THE TREE INJURED THE TRAIN PASSENGERS, SOME GRIEVOUSLY.

b) CASUALTIES:-KILLED- NIL, GRIEVOUS INJURY - 3 (PASSENGERS), SIMPLE INJURY - NIL

c) COST—Rs. 47,435/-.

d) CATEGORY-FAILURE OF PERSONS OTHER THAN RAILWAY STAFF

RECOMMENDATIONS

1--On Northern Railway provision of SR 17.09/5 should be strictly followed and the OHE adjoining the faulty OHE section isolated on the double line must be switched off and the fault determined, safety measures taken before switching ON the OHE on the temporally isolated section. Caution orders to the Loco Pilot of the train should be served by stopping the train by the ASM and the ASM should not use the VHF/walkie talkie sets to caution the Loco Pilot of the train.

2--Whenever any unusual occurrence takes place Guard of the train must visit the section in the rear of his train to know the reasons for such occurrences, take all precautions to protect track in case of any danger to it and inform the ASM/Section Control of the incident from the accident site giving all details and just not start the train if no derailment has taken place. Guard of the train must act as per Para 122 of the accident manual.

3--Dangerous trees and dangerously located tree should not be permitted to exist alongside the railway tracks. Necessary provisions are required to be made in the ACTM.

4--Mobile phones should not be used to take power blocks. Emergency phones should be used instead.

5--The ownership of trees should be clearly known to the Railways as well as to the Forest Department for all the trees falling in the railway land and theft of the trees in the railway land must be prevented.

6--Permanent Way Supervisors must keep a vigil in their sections regarding illegal felling of trees and where required lodge FIR with the police against such activities.

8--UNUSUAL INCIDENT LEADING TO INJURIES TO PASSENGERS OF 582 DN PURNA-AJMER FAST PASSENGER AT UNMANNED LEVEL CROSSING BETWEEN JAWAD ROAD AND NIMBAHERA STATIONS ON RATLAM DIVISION OF WESTERN RAILWAY ON 09/06/2006

a) CAUSE - DUE TO NEGLIGENT DRIVING BY ROAD TRACTOR DRIVER.

b) CASUALTIES:-KILLED- NIL , GRIEVOUS INJURY - 11(PASSENGERS), SIMPLE INJURY- 15 (PASSENGERS)

c) COST--Rs NIL

d)CATEGORY-FAILURE OF PERSONS OTHER THAN RAILWAY STAFF

RECOMMENDATIONS

1--Loco inspectors should counsel Loco Pilots for controlling/reducing speed in case of doubt of infringement to the movement of their trains.

2--W/L boards should be relocated to 600 m in rear of LCs in the Sections having more than one railway line.

3--Western Railway should direct Divisions that sanctioned works of manning of level crossings should be expeditiously done and review, if considered necessary, should be done only after obtaining approval of sanctioning authority.

9--DASHING OF 4005 UP LICHHAVI EXPRESS WITH TRUCK AT UNMANNED LEVELCROSSING BETWEEN STATIONS RAMNATHPUR AND JHUSI ON VARANASI DIVISION OF NORTH EASTERN RAILWAY ON 15/06/2006.

a) CAUSE - DUE TO INFRINGEMENT BY THE TRUCK CAUSED BY NEGLIGENT DRIVING BY THE DRIVER OF TRUCK.

b) CASUALTIES:-KILLED- NIL, GRIEVOUS INJURY - 16 (PASSENGERS), SIMPLE INJURY - 14(PASSENGERS)

c) COST—Rs. NIL

d) CATEGORY-FAILURE OF PERSONS OTHER THAN RAILWAY STAFF

RECOMMENDATIONS

1--Regular safety drives should be launched by the Railway Administration for the inspection and counseling of road users on unmanned level crossings. Drivers of tractor trolleys and trucks should also be checked for their knowledge regarding provisions of section 131 of Motor Vehicles Act 1988 and counseled.

2--During the course of checking at the level crossing gates, overloading in the trucks and tractor trolleys should also be checked.

3--North Eastern Railway Administration should ensure commissioning of the new voice recorder system in the control office at Varanasi by the end of this financial year.

10--UNUSUAL INCIDENTS OF BOMB BLASTS IN SEVEN EMU LOCAL TRAINS AT MATUNGA ROAD, MAHIM JN., BANDRA, BETWEEN KHAR & SANTACRUZ AT JOGESHWARI, BORIVALI AND BETWEEN MIRA ROAD AND BHAYANDER STATIONS OF MUMBAI CENTRAL DIV.OF W.RLY.ON 11.7.2006.

a) CAUSE -DUE TO EXPLOSIVE MATERIAL, CONTAINING RDX, HAVING BEEN WILLFULLY KEPT IN THE COACHES OF THE TRAINS BY SOME UNKNOWN PERSONS AND THE SAME WERE TRIGGERED/DETONATED THROUGH SOME UNKNOWN DEVICE.

b) CASUALTIES:- KILLED – 187 (PASSENGERS) GRIEVOUS INJURY - 540 (PASSENGERS) , SIMPLE INJURY - 327 (PASSENGERS)

c) COST--Rs 88,66,239/-.

d)CATEGORY-SABOTAGE(S)

RECOMMENDATIONS

1--Motormen and Guards should be counseled to convey the information of an emergency to Control on TMS phone without delay.

2--In Disaster management plan, resources available at a station should include manpower resource of all departments available at that station.

3--Drills should be carried out at all stations of suburban section to train the staff in organizing themselves quickly and starting rescue and relief in case of a disaster.

4--Disaster Management Plan should be modified to include availability of resources at nearby stations. Station Superintendent/Station Masters should be made aware of resources available at their station as well as of resources available at adjacent/nearby stations/depots.

5--In case of a disaster at a station, adjacent/nearby station/depots should be directed to dispatch manpower and material resources to concerned station. This action should be initiated by control office.

6--Important communications received and sent on mobile phones by officers to control office should be got recorded in unusual/accident register.

7--Railway should issue instructions for control office to order stoppage and evacuation of trains and stations within 5 minutes of intimation of multiple incidents of bomb explosions in trains or at stations.

8--The procedure for flashing/broadcasting help line numbers should be finalized by Railway in consultation with State Governments and it should be ensured that help line numbers are exclusive numbers and other than those required for operational purposes.

9--Railway should ensure holding of all OHE structures in such condition that these are not uprooted by any damage happening to contact wire, centenary and OHE beam/canti lever.

10--Railway should review load and capacity of voice communication channels of Train Management System(TMS) and augment the capacity, if required.

11—COLLISION OF 6093 DN MADRAS-LUCKNOW EXPRESS WITH A TRUCK AT UNMANNED LEVEL CROSSING BETWEEN STATIONS LALPUR AND PAMAN ON JHANSI DIVISION OF NORTH CENTRAL RAILWAY ON 13/08/2006.

a) CAUSE - DUE TO NEGLIGENT DRIVING BY THE DRIVER OF TRUCK

b) CASUALTIES:-KILLED- NIL , GRIEVOUS INJURY - 2, (PASSENGERS) SIMPLE INJURY - 6 (3 PASSENGERS & 3 OUTSIDERS)

c) COST--Rs 44,000/-.

d) CATEGORY-FAILURE OF PERSONS OTHER THAN RAILWAY STAFF.

RECOMMENDATIONS

1--Regular safety drives should be launched by North Central Railway Administration for the inspection and counseling of road users on unmanned level crossings. Drivers of tractor trolleys and trucks should also be checked for their knowledge regarding provisions of Section 131 of Motor Vehicles Act 1988 and counseled.

2--The already sanctioned work of manning of this unmanned level crossing gate no. 216 A be completed at the earliest.

12--INCIDENT OF FIRE IN 5 COACHES OF TRAIN NO.2753 UP-CHENNAI-HYDERABAD EXPRESS BETWEEN STATIONS SECUNDERABAD AND HUSSAIN SAGAR JUNCTION ON SECUNDERABAD DIVISION OF SOUTH CENTRAL RAILWAY ON 20/08/2006

a) CAUSE - PROBABLY DUE OT SOME UNIDENTIFIED HIGHLY INFLAMMABLE SUBSTANCE PRESENT NEAR OR INSIDE THE HYDERABAD END BATHROOM PORTION OF COACH NO.S-9 WHICH WAS KEPT THERE BY SOME UNIDENTIFIED PERSON OR PERSONS WHILE THE TRAIN WAS ON RUN AT A SPEED OF 10-15 KMPH STARTING FROM SECUNDERBAD.

b) CASUALTIES:- KILLED - NIL, GRIEVOUS INJURY - NIL, SIMPLE INJURY - NIL

c) COST--Rs 1, 88, 25,190/-.

d) CATEGORY - FAILURE OF PERSONS OTHER THAN RAILWAY STAFF.

RECOMMENDATIONS

1--Though Aluminum is a preferred structural material because of its light weight however since it burns at relatively lower temperatures in an extremely exothermic reaction, Railway may consider avoid its use specially in areas near door-ways and toilets where exit/access are of highest importance in case of fire. In addition, water tanks of toilets may be made of stainless steel with fusible drain plug instead of Aluminum tanks and similarly checker plates may be of alternate materials in the corridors and toilets. In addition in bath room portion, Copper cables may be provided instead of Aluminum cables.

2--Video cameras may be provided at the stations nominated by South Central Railway at an early date.

13--DERAILMENT OF 2115 DN SIDDHESWAR EXPRESS BETWEEN STATIONS MONKEYHILL CABIN AND KHANDALA ON MUMBAI DIVISION OF CENTRAL RAILWAY ON 22/09/2006

a)CAUSE - DUE TO THE FALLEN OUT PANDROL CLIPS, EXCESSIVE CROSS LEVELVARIATION AND POOR MAINTENANCE QUALITY OF TRACK ON 5 DEGREE SHARP CURVE.

b) CASUALTIES:-KILLED- NIL , GRIEVOUS INJURY- NIL , SIMPLE INJURY- NIL

c) COST--Rs 35,000/-.

d)CATEGORY-SABOTAGE

RECOMMENDATION
1. In Ghat section there is acute shortage of labour resulting in poor track maintenance. HQ may consider P. Way zonal contracts as is being done in SE & Konkan Railway.

14--REAR END COLLISION OF UP NZB-GOODS TRAIN AND BANKER ENGINE WAG- 7 AT ALER STAION OF SECUNDERABAD DIVISION OF SOUTH CENTRAL RAILWAY ON 30/09/2006

a) CAUSE - DUE TO THE FAILURE OF CREW MEMBERS OF THE UP NZB GOODS TRAIN TO STOP THE TRAIN AT THE UP HOME SIGNAL WHICH WAS SHOWING RED ASPECT, DISREGARDING THE SIGNALS THE TRAIN COLLIDED WITH BANKER LOCOMOTIVE IN THE PROCESS OF ATTACHMENT WITH STATIONARY UP KSN GOODS TRAIN STANDING ON UP MAIN LINE AND BOTH OF THEM COLLIDED WITH THE GOODS TRAIN.

b) CASUALTIES: - KILLED- 2 (RLY CREW) GRIEVOUS INJURY - NIL, SIMPLE INJURY- 3 (RLY CREW)

c) COST--Rs 2, 91, 74,862/-.

d)CATEGORY-FAILURE OF RAILWAY STAFF

RECOMMENDATIONS

1--Modifications to the pattern of train working at a station should be monitored at appropriate levels and guidance provided to the station staff to ensure implementation of relevant rules as laid down in SWR of the station, G&SR for safe running of trains.

2--Instructions contained in Joint Procedure Order No. M.320/C&W/2/Vol.IX dated 15.05.06 issued jointly by CRSE and CFTM for running of goods trains should be strictly followed.

3--Instructions contained as per SR 4.19.1.2 relating to the guards working freight trains to carry essential equipments should be reiterated.

4-The Railway Administration should specify the length of the longest train to be permitted to run on various sections considering the minimum clear length of the loop line available in this section keeping in view the provisions as available in Indian Railways Schedule of Dimensions(BG) Revised,2004.

15—SIDE COLLISION OF 4308 DN BAREILLY-MUGHALSARAI EXPRESS WITH 5004 UP CHAURI-CHAURA EXPRESS IN ALLAHABAD YARD OF ALLAHABAD DIVISION OF NORTH CENTRAL RAILWAY ON 05.10.2006.

a) CAUSE – DUE TO PASSING OF SIGNAL NO. 3 AT DANGER BY THE DRIVER OF 5004 UP CHAURI-CHAURA EXPRESS.

b) CASUALTIES – KILLED – NIL, GRIEVOUS INJURY – NIL, SIMPLE INJURY – NIL

c) COST – 19, 35,000/-.

d) CATEGORY – FAILURE OF RAILWAY STAFF.

RECOMMENDATIONS

1—Intensive checks and monitoring of all the drivers, assistant drivers and guard of the trains in North Central Railway should be undertaken for their alertness. For this regular safety drives should be launched by N.C. Railway Administration.

2—Railway Administration should ensure commissioning of the voice recorders in the control offices at the earliest and also ensure their proper functioning.

3-- Railway Administration should ensure that all the signals are inspected by the Signal Sighting Committee.

4—Railway Administration should provide a system on the panel so that incase of any driver passes the signal at danger an immediate buzzer starts to draw the attention of the panel operator so that he can take necessary action as deemed fit.

16--DERAILMENT OF 113 DN SURAT-BHUSAVAL PASSENGER BETWEEN STATIONS NAVAPUR AND KOLDE ON MUMBAI CENTRAL DIVISION OF WESTERN RAILWAY ON 10/11/2006

a) CAUSE - DUE TO RAIL FRACTURE.

b) CASUALTIES:-KILLED- NIL, GRIEVOUS INJURY - 9 (PASSENGERS), SIMPLE INJURY - 98 (PASSENGERS)

c) COST--Rs 30,75,876/-.

d) CATEGORY-FAILURE OF EQUIPMENT

RECOMMENDATIONS

1--Rails, in which rail head has been reconditioned by electrode welding, should be tested by USFD with calibration and criteria prescribed in Western Railway's letter No. W 632/27/O/A dated 17.11.2006 once a month. Frequency of testing may be considered to be decreased, to once in three months after seeing results of three testings.

2--RDSO should review technical suitability of repair of scab/wheel burn of rail table by metal deposition.

17 -EXPLOSION IN GS COACH OF 618 DN HALDIBARI-NEW JALPAIGURI PASSENGER AT BELAKOBA STATION OF KATIHAR DIVISION OF NORTHEAST FRONTIER RAILWAY ON 20.11.2006.

a) CAUSE - SABOTAGE – BOMB EXPLOSION.

b) CASUALTIES:-KILLED-7(PASSENGERS), GRIEVOUS INJURY - 20(PASENGERS), SIMPLE INJURY - 25 (PASSENGERS)

c) COST--Rs 12,11,680/-.

d) CATEGORY-SABOTAGE

RECOMMENDATIONS

1--Appreciation and appraisal reports of Head of the Departments should bring out shortfalls jeopardizing safety/security and suggest improvements whatsoever so as to enhance safety and security of passengers.

2--Security Department of Railway need to be proactive in its approach so as to be more effective in their task of ensuring security of passengers.

3--Security Department of Railway should be strengthened to shoulder additional responsibilities entrusted vide Railway Protection Force (Amendment) Act, 2003 within a fixed time frame.

4--Security Department of Railway should be equipped with proper state of the art equipments for detection of explosives and trained adequately so as to ensure security of passengers.

5--Railway should adhere to the norms for manning coaches strictly so that Train Ticket Examiners can discharge their roles to enhance security of passengers.

6--Railway should not withdraw existing amenities for deficiencies and constraints related to infrastructure or whatsoever and instead address them and make them good. Savings in expenditure and bringing down the staff requirement for maintenance shall not at the cost of passenger amenities.

7--Depletion of organizational strength of Security Deptt to the tune of 50 % as well as that of other service departments should be a serious matter of concern of the Railway from consideration of safety and security of passengers. Corrective measures should be taken within a fixed time frame.

8--Provisions in the Accident Manual of the Railway related to enquiries for preparation of necessary documents/record including preservation of clues should be strictly followed by the Railways.

18--COLLISION OF BANKER LOCO WITH REAR SLR OF 6359 DN ERNAKULAM PATNA EXPRESS AT TEEGAON STATION ON NAGPUR DIVISION OF CENTRAL RAILWAY ON 04/12/2006

a)CAUSE - DUE TO FAILURE OF BANKER ENGINE CREW AND PROVISION OF INADEQUATE HALT OF PASSENGER TRAINS AT TEO STATION IN UP DIRECTION.

b) CASUALTIES:-KILLED- NIL, GRIEVOUS INJURY - 1(PASSENGER), SIMPLE INJURY- 1(PASSENGER)

c) COST--Rs 10,000/-.

d) CATEGORY-FAILURE OF RAILWAY STAFF

RECOMMENDATIONS

1. The train halts at Teegaon stations for attaching bankers in the UP trains may be raised from 4 to 8 min with immediate effect till completion of work.

2--Since, it is a second accident, in a short duration of one month, the Administration should critically examine this issue of opening and closing of brake cocks, while changing the driving cabs, during shunting and provide some interlocking or

automation, such that the loco should not start, unless, the brake cocks are properly opened or closed.

3--Procurement of spare floppies and analysis of floppy records for improving the drivermanship during shunting, banking, or otherwise to control the stalling in Ghat sections should be expedited.

19. UNUSUAL INCIDENT OF COLLAPSE OF A PORTION OF ROB, 3 x 30 FEET ARCH, RESULTING INTO DERAILMENT OF TRAIN NO. 3071 HOWRAH – JAMALPUR EXPRESS TOWARDS SAHIBGANJ END OF BHAGALPUR STATION YARD OF MALDA DIVISION OF EASTERN RAILWAY ON 02.12.2006.

a) CAUSE – DUE TO EXECUTION OF DISMANTLING OF ULTAPUL ARCH BRIDGE NO. 153 WITHOUT APPROVED PLAN AND SANCTION, ERROR OF JUDGMENT AND INADEQUATE TECHNICAL KNOWLEDGE RELATING TO BEHAVIOR OF MULTIPLE SPAN ARCHES (DISTRIBUTION OF VARIOUS FORCES) OF VARIOUS ENGINEERING OFFICIALS SUPERVISING/EXECUTING THE WORK OF DISMANTLING.

a) CASUALTIES – KILLED – 36 (PASSENGERS), GRIEVOUS INJURY – 12 (PASSENGERS) , SIMPLE INJURY – 4 (PASSENGERS)

b) COST – Rs.22,65,242/-.

c) CATEGORY – FAILURE OF RAILWAY STAFF.

RECOMMENDATIONS

1—The instructions contained in Indian Railway Works Manual Para 223 A vide Correction Slip No. 3 dated 30.08.2001 should be reiterated to the field units for its implementation, Railway Administration should add one paragraph in the Indian Railway Bridge Manual for dismantling of single span and multiple span arch bridges.. IRICEN/Pune should organize short-term courses covering various aspects of dismantling of railway structure including multiple span arch bridges.

2—CRS sanction must invariably be taken for works relating to safety of running of passenger trains involving dismantling of railway bridges.

3—The ordering and movement of various special trains to the site of accident should be based on the schedule as laid down in accident manual..

20--COLLISION OF EMU TL-63 AND EMPTY RAKE T-149 NEAR THANE STATION ON MUMBAI DIVISION OF CENTRAL RAILWAY ON 13/12/2006.

a) CAUSE - DUE TO MOTORMAN BEING UNDER THE INFLUENCE OF DRUG/ALCOHOL AND PASSING SIGNAL AT DANGER. IN ADDITION, THERE WERE CERTAIN LAPSES ON THE PART OF THE ADMINISTRATION.

b) CASUALTIES:-KILLED- NIL, GRIEVOUS INJURY - 5 (PASSENGERS), SIMPLE INJURY- 19 (4 RLY CREW & 15 PASSENGERS)

c) COST--Rs 90,000/-.

d) CATEGORY-FAILURE OF RAILWAY STAFF

RECOMMENDATIONS

1—There is immediate need of optimizing the Detail Book by a suitable committee, which may result in reducing the shortage of vacancies and undue booking of under-rest Motormen for duty. It may be done early.

2--Administration may consider replacing Guard's with Co-Motormen in EMU trains in suburban section.

3--As per Rule No.235 of General Conditions of Service, all Motormen should stay within the jurisdiction of Mumbai Division with immediate effect.

4--In future on receipt of serious accidents Dy.COR should order ARTs immediately. Later on, if not required, these can be cancelled. Necessary instructions may be issued in this regard.

5--Non-arrival of Civil or Railway doctors at Thane for one hour may be examined and necessary steps taken to ensure that local doctors attend the injured passengers immediately.

6--As per Board's instructions and Accident Manual minimum punishment is stipulated in cases of motormen passing the signal at danger or overshooting the platform during last four- five years. The punishment imposed is very lenient and the charge sheet finalization takes a long time, putting undue pressure on the motormen. All these issues may please be finalized early.

7--The RB letter No. E(LL)/71/HER/9 dated 14.04.1072 stipulates that a M/man should be given 12 hours rest at HQ after signing off. The same may be reiterated to the Crew Booking Clerk.

21—DERAILMENT OF UP PANIPAT GOODS SPECIAL BETWEEN KUMANDI AND HEHEGRA AT THE BRIDGE 297 SITUATED ON BARKAKANA – GHARWA ROAD SECTION OF DHANBAD DIVISION OF EAST CENTRAL RAILWAY ON 12.01.2007.

a) CAUSE—AWAITED.

b) CASUALTIES—KILLED – 8 (OUTSIDERS), GRIEVOUS INJURY – 7 (3 RLY CREW & 4 OUTSIDERS), SIMPLE INJURY– NIL

c) COST – Rs.1, 08, 07,000/-.

d) CATEGORY –

RECOMMENDATIONS

1. During deposition of accident inquiry many of witness of the Railway have deposed that due to miscreant activities in the section it has become very difficult for them to work the train. Even as per DRM, Dhanbad and Divisional Officers of Dhanbad division including DSC have mentioned that there are several cases of miscreants activities including kidnapping of officers and Supervisors. It was further made to understand that the situation is that they are not able to get help from the police and State Govt. to the required level. This matter need attention at the highest level of Railway Ministry and Zonal Railway Administration to take various effective measures to run passenger trains safety as important trains like Rajdhani Express and other important Express trains are moving in the section.

2. Action to be taken by Railways to quickly replace all the wooden sleepers on the Girder Bridges particularly on important and Major Bridges, on war footing basis, in the shortest possible time, by channel sleepers.

3. Action to be taken by the Railways effectively to counter the probable miscreant activities by resorting to burring of fish bolts, providing anti sabotage track fittings etc. including taking assistance of intelligence to protect the safety of passenger trains.

4. The officers and staff of Railway need extensive training in dealing with Accidents, with particular reference to preservation of clues, collection of information, analysis of derailment as most of the officers and staff of Railway were not very much conversant with these items. This is revealed in the data collected after the accident by Senior Supervisors, even after arrival of very senior officers of Hqr, of E.C. Railway and division of Dhanbad. It was felt that most of the officers and staff had resigned to the situation mentioning due to extensive damage cause cannot be established, and no attempt has been made to find out the cause by officers and staff..

5. Besides the above it is suggested that Railway may conduct several safety seminars at various levels to inculcate the awareness of safety.

6. The operation of CC+6+2 rakes along with precaution to be observed during running of CC+6+2 had not trickled down to the grass root level. Railway has to ensure this

as the Loco Pilot of Panipat Special was not issued with the information of maximum permissible speed of 60 kmph for this rake of CC+6+2 variety.

22.—DASHING OF TRAIN NO. 2719 TENALI – SECUNDERABAD NAGARJUNA EXPRESS TRAIN WITH MARUTI VAN CLASS UNMANNED LEVEL CROSSING GATE BETWEEN MIRYALAGUDA AND THIPPARTHI STATIONS OF GUNTUR DIVISION OF SOUTH CENTRAL RAILWAY ON 21.01.2007.

a) CAUSE- NEGLIGENCE OF MARUTI VAN OWNER-CUM-DRIVER.

b) CASUALTIES- KILLED – 1 (PASSENGER), GRIEVOUS INJURY– 4 (PASSENGERS) SIMPLE INJURY – NIL.

c) COST - NIL

d) CATEGORY – FAILURE OF OTHER THAN RAILWAY STAFF.

RECOMMENDATIONS

1—Being a tarred road connection Madugulapalli and Cheruvupalli villages Railway may consider manning of the above level crossing and similar other level crossings provided with tarred road where four wheeler vehicles are passing through the level crossing.

23—COLLISION OF UP NBQ FOOD GRAIN TRAIN WITH TWO TRUCKS AT MANNED INTERLOCKED LEVEL CROSSING GATE BETWEEN HATWAR AND KISHANGANJ STATIONS OF KATIHAR DIVISION OF NORTHEAST FRONTIER RAILWAY ON 24.01.2007

a) CAUSE.- DUE TO OPENING OF THE BUSY GATE NO. KN 80 (OLD SK-318) AT RAIL ROAD CROSSING IN THE FACE OF APPROACHING TRAIN AND FAILURE LOCO PILOT & ASSISTANT PILOT TOOBSERVE SIGNAL ASPECT OF UP DISTANT SIGNAL OF LC GATE.

b) CASUALTIES :- KILLED – 1 (OUTSIDER) , GRIEVOUS INJURY – 1 (OUTSIDER),
SIMPLE INJURY – 3 (2 RLY CREW & 1 OUTSIDER)

c) COST – Rs. 30,000/-

d) CATEGORY – FAILURE OF RAILWAY STAFF.

RECOMMENDATIONS

1. It is imperative that stipulations made by the Commission while according sanction to work are complied without any dilution whatsoever in the interest of safety and Safety Certificates issued promptly on commissioning of works. Suitable strict directions in this regard should be issued for compliance of stipulations and discourage their dilution in whatsoever manner.

2. Collision at LC Gate SK- 318 has raised questions on integrity of Gateman on duty. It is desirable that persons with impeccable integrity are only selected and posted at LC Gates to ensure safety of operation and rail/ road users. Inspecting Officials should also observe and keep a close watch on integrity during their inspections. Suitable directions in this regard should be issued.

3. Collision at Special Class Interlocked Engineering LC Gate SK- 318 having TVU above 4.5 Lacs has exposed/ brought to focus the weakness and inadequacy of the extant working instructions which have jeopardized the safety of operation and rail/road users. It is imperative that the same are reviewed and amended suitably to ensure safety of operation and rail/road users.

4 .Working of Engineering LC gates which are non- interlocked and normally closed to road traffic is entirely different from that of interlocked and normally open to road traffic LC gates. Collision at Special Class Interlocked and very busy LC Gate SK-318 with TVU above 4.5 Lacs, while a Trackman holding a General Competency Certificate who worked mostly at non-interlocked normally closed to road traffic LC gates, was working highlights the need for the issue of Specific Competency Certificates and that Gatemen holding appropriate Competency Certificate only are deputed for duty at the LC Gate. Suitable directions in this regard should be issued.

5. Curve Register has been supplied for use as Gate logbook at LC Gate SK-318. Proper stationery & registers printed with the format of logbook should be made available for use at the LC Gate.

6—It is desirable that critical and meaningful review of works having a definite bearing on safety are made, impediments/ constraints identified and resolved by relentless follow up at various levels. Works/ projects involving Authorities/ Departments of States and other Ministries should attract attention at the highest level for their timely completion. Suitable directions in this regard should be issued.

24.—DERAILMENT OF 2674 UP COIMBATORE – CHENNAI CENTRAL CHERAN EXPRESS AT VINNAMANGALAM STATION OF CHENNAI DIVISION OF SOUTHERN RAILWAY ON 28.01.2007.

a) CAUSE :- DUE TO PRESENCE OF HOT AXLE IN COACH NO. SR 01240 WHICH BROKE DURING RUN.

b) CASUALTIES :- KILLED – NIL, GRIEVOUS 1(PASSENGER) , SIMPLE – 9 (PASSENGERS)

c) COST – Rs. 47, 88,000/-.

d) CATEGORY – FAILURE OF EQUIPMENT.

RECOMMENDATIONS

1. The staff attending to the rolling-in and rolling-out examinations should be very alert and attentive to detect any abnormality during the passage of the trains. The temperature measurement of axle boxes should invariably be done. For this purpose, the stoppage or the staff should be increased.

2. The train passing staff at stations and gate keepers should be vigilant to detect the condition of formation of the trains passing before them. Their alertness should be frequently tested by regular & surprise inspections and a system of rewards & punishments.
3. Some upper limit of kilometer traveled by the coach before next POH should be considered for incorporation in the Maintenance manual for BG coaches.

25. UNUSUAL OCCURRENCE OF FIRE IN THE COACHES OF 4001 UP ATTARI SPECIAL WHILE IT WAS ON THE RUN THROUGH DIWANA RAILWAY STATION ON DELHI-AMBALA CANTT. SECTION OF DELHI DIVISION OF NORTHERN RAILWAY ON 18.02.2007.

a**)** CAUSE :- WHILE 4001 UP ATTARI SPECIAL WAS RUNNING THROUGH THE STATION SECTION OF DIWANA RAILWAY STATION SITUATED ON DELHI-AMBALA DOUBLE LINE ELECTRIFIED SECTION OF DELHI DIVISION OF NORTHERN RAILWAY TWO BOMB EXPLOSIONS TOOK PLACE IN TWO COACHES, COACH NO. GS 03431 NR AND GS 14857 NR, ONE AFTER THE OTHER AND THESE BOMBS ON EXPLODING CAUSED SEVERE FIRE WHICH BURNT THE COACHES VIGOROUSLY. THE HIGH WINDS DUE TO HIGH SPEED OF THE TRAIN AGGRAVATED THE SPREAD OF FIRE.

b) CASUALTIES: - KILLED – 68 (4 RLY CREW & 64 PASSENGERS), GRIEVOUS – 7 (PASSENGERS), SIMPLE - 5 (PASSENGERS)

c) COST – Rs. 15, 65,000/-.

d) CATEGORY - SABOTAGE

RECOMMENDATIONS

1. Design of coaches needs a review and should provide for quick emergency exists in case of fire. Existing emergency windows are inadequate and give no additional outlet for the train passengers to escape from the fire in coaches.

2. There should be strict baggage check of the train passengers traveling by 4001 Up at Delhi Jn. Railway station as is done at Attari railway station since the train after starting from Delhi Jn. Station stops only at Attari railway station and is received on platform which is a protected area and from where the train passengers are required to undergo immigration and customs checks and are then required to board Samjhauta Express. 4001 up is also a special train and carries international passengers traveling to Pakistan and after departing from Delhi Jn. It stops only at Attari Railway Station.

3. Vestibuling of all coaches in trains should be there as this would be of great help to train passengers to move safely away from the coaches on fire.

4. Specifications of the materials used in the coaches should be such that they do not emit toxic smoke on burning.

5. Communications with the site of accident should invariably be established immediately through setting up of emergency phones at site and maintained till the traffic is restored.

6. Guards of the train on Northern Railway must perform their duties as per para 122 of the Accident Manual of Northern Railway.

7. Railway should immediately review the working of the level crossing gates and where the TVU have gone high and qualify to be upgraded to A class on such level crossing gates three gatemen should be posted immediately. Railway should also under take up gradation of the level crossing gates without further loss of time.

APPENDIX - V

LIST OF NEW RAILWAY LINES ETC. AUTHORISED FOR PASSENGER TRAFFIC 2006-07

A. NEW LINES

S.No.	Date of Authorisation	Section Opened	Railway	Km
1.	26.07.2006	Dum Dum Cantonment Airport Stations	Eastern	3.800
2.	01.11.2006	Simhachalam North – Gopalpatnam	East Coast	2.674
3.	09.11.2006	Barakhamba Road Metro station – Indraprastha Metro station	DMRC	2.691
4.	30.11.2006	Sasaram – Bikramganj	East Central	41.600
5.	18.12.2006	Kolayat – Phalodi	North Western	112.090
6.	25.01.2007	Adilabad - Pimpalkutty	South Central	20.400
7.	31.01.2007	Majri– Wani – Pimpalkhutty	Central	80.200
8.	30.03.2007	Karimnagar - Jagityal	South Central	48.080
			TOTAL	311.535

S.No.	Date of Authorisation	Section Opened	Railway	Km
1.	19.04.2006	Katihar Jn - Semapur	East Central	11.260
2.	22.07.2006	Chhapra - Hajipur	North Eastern	0.800
3.	26.07.2006	Chhapra Kacheri -	East Central	28.651

		Dighwara		
4.	02.09.2006	Bhogpur Sirwal - Suchipind	Northern	27.036
5.	08.09.2006	Eklakhi - Kumarganj	Northeast Frontier	6.414
6.	16.09.2006	Diara - Singur	Eastern	5.740
7.	17.10.2006	Allahabad - Manikpur	North Central	32.900
8.	19.10.2006	Bandhua Kalan - Sultanpur	Northern	8.844
9.	09.11.2006	Barakhamba Road Metro Station – Indraprastha Metro station	DMRC	2.691
10.	29.11.2006	Champahati - Ghutiarishariff	Eastern	7.060
11.	29.11.2006	Habra - Machlandapur	Eastern	9.220
12.	30.11.2006	Bandel - Banshboria	Eastern	4.490
13.	07.12.2006	Chhapra - Tekniwas	North Eastern	6.221
14.	14.12.2006	Iradatganj station – Manikpur Chooki	North Central	9.220
15.	31.12.2006	Tanda Urmar – Bhogpur Sirwal	Northern	12.559
16.	05.01.2007	Chakand - Gaya	East Central	9.268
17.	21/24.02.2007	Bangalore city - Kengeri	South Western	12.394
18.	23.02.2007	Mirthal – Chhaki Bank Block Hut	Northern	18.104
19.	08.03.2007	Mankapur - Gonda	North Eastern	26.510
20.	12/13.03.2007	Pallipuram - Shoranur	Southern	19.024
21.	22.03.2007	Tekniwas - Daudpur	North Eastern	15.087
22.	23.03.2007	Zafrabad – Sarai Harkhu	Northern	25.528
23.	30.03.2007	Iradatganj station - Jasra	North Central	5.980
24.	31.03.2007	Ghaso - Barsola	Northern	18.540
			TOTAL	**323.541**

B- DOUBLING

S.No.	Date of Authorisation	Section Opened	Railway	Km
1.	14.04.2006	Kanpur Central -	North Central	2.610

		Anwarganj		
2.	13.04.2006	Kanpur Anwarganj – Farukhabad	North Eastern	139.220
3.	18/19.04.2006	Mayiladuturai - Kumbakonam	Southern	30.674
4.	22/23.06.2006	Basavana Bagewadi Road Bijapur	South Western	44.180
5.	26.07.2006	Chapra Kacheri - Dighwara	East Central	28.651
6.	29.07.2006	Khagaria - Hasanpur	East Central	40.420
7.	17/18/21.08.2006	Bagalkot – Basavana Bagewadi Road	South Western	52.697
8.	23/24/28.08.2006	Thanjavur - Thiruvarur	Southern	30.369
9.	23/24.08/25.10.2006	Nidamangalam - Thiruvarur	Southern	24.636
10.	29.09.2006	Kasara - Titwala	Central	49.000
11.	26.10.2006	Palanpur - Samakhiali	Western	248.520
12.	30.10.2006	Rewari – Dellhi Cantt.	Northern	68.000
13.	24.11.2006	Mudhked - Kinwat	South Central	116.770
14.	27/28.11.2006	Bayaluvoddigeri - Toranagallu	South Western	13.980
15.	26 to 28.12.2006	Tiruchchirappalli - Pudukkottai	Southern	52.100
16.	14.03.2007	Hasanpur Road – Rusera Ghat	East Central	16.260
			TOTAL	**958.087**

C – GAUGE CONVERSION

S.No.	Date of Authorisation	Section Opened	Railway	Km
1.	08.09.2006	Teznarayanpur Halt	Northeast Frontier	4.200
2.	14.02.2007	Katakhal – Sal - Chapra	Northeast Frontier	1.545
			TOTAL	**5.745**

D - DIVERSION

S.No.	Date of Authorisation	Section Opened	Railway	Km
1.	26.07.2006	Dum Dum Cantonment – Airport Stations	Eastern	3.800
2.	16.09.2006	Diara - Singur	Eastern	5.740
3.	09.11.2006	Barakhamba Road Metro Station – Indraprastha Metro Station	DMRC	5.382
4.	29.11.2006	Champahati – Ghutiari shariff	Eastern	7.060
5.	29.11.2006	Habra – Machlandapur	Eastern	9.220
6.	30.11.2006	Bandel –Banshberia	Eastern	4.490
7.	01.12.2006	Delhi LOC No.1121 A – Patel Nagar	Northern	5.500
8.	27.12.2006	Jalandhar City - Suchipind	Northern	7.077
9.	05.01.2007	Chakand - Gaya	East Central	9.268
10.	28.03.2007	Laksar - Nazibabad	Northern	91.514
			TOTAL	**149.051**

E - ELECTRIFICATION

APPENDIX VI

RAIL ACCIDENT INQUIRIES WHICH WERE ENTRUSTED TO THE RESPECTIVE RAILWAY ADMINISTRATIONS.

1. **(a) Brief Description:** Dashing of 8029 Dn Kurla-Howrah Express with Dumper Truck No. CG 07C 3218 at unmanned level crossing gate No. 410 near Mandhar East Cabin of Raipur Division of South East Central Railway on 25.04.2006.

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(b) Casualties : Killed : 1 (Railway Crew)
Grievously injured: 1 (Railway Crew)
Simple injuries : 2 (Outsider)

(c) Cost of Damage to Railway Property : Rs. 3, 85,000/-.

(d) Cause Infringement of down line by a Dumper Truck**.**

2. **(a) Brief Description:** Hitting of passengers traveling on foot board of 5012 Rapti-Sager Express and 402 Holiday passenger special passing Erich Road – Moth block section by signal sighting board on Kanpur- Jhansi Section of North Central Railway on 26.05.2006.

(b) Casualties : Killed : Nil
Grievously injured: 4 (Passengers)
Simple injuries : 4 (Passengers)

(c) Cost of Damage to Railway Property : Rs. 10,000/-.

(d) Cause Unusual incidents occurred due to heavy storm of high velocity.