Report of the Comptroller and Auditor General of India

for the year ended March 2012

Laid in Lok Sabha/ Rajya Sabha on _____

Union Government (Railways)

No.11of 2013

TABLE OF CONTENTS

PREFACE

The Report for the year ended 31 March 2012 has been prepared in four Volumes viz., Compliance Audit Report Volume I & II, Performance Audit Report and Report on "Railway Finances" for submission to the President under Article 151 (1) of the Constitution of India.

'Compliance Audit Report Volume I' contains audit findings of three thematic studies and one Performance audit carried out in the year 2011-12.

The audit of Ministry of Railways and its subordinate offices was conducted under Article 149 and 151 of the Constitution of India read with Section 13 of the C&AG 's (Duties, Powers and Condition of Service) Act, 1971 and in accordance with C&AG's Regulations on Audit and Accounts.

----------x----------

Overview

This Report has four chapters containing the audit findings of three thematic studies and one performance audit carried out in the year 2011-12. The subject matter covered pertains to the Commercial, Operating, Engineering, Signalling & Telecommunication, Mechanical and Medical Departments of Indian Railways.

Chapter 1 Commercial Publicity in Indian Railways (Commercial & Operating)

This chapter contains the audit findings on the thematic study on 'Commercial Publicity in Indian Railways', conducted across Zonal Railways to evaluate performance of the Zonal Railways in exploiting the potential of advertising media on stations, trains and level crossings to enhance the revenue earnings. Audit observed that the Ministry failed to ensure a proper assessment of the demand potential. The targets framed were driven by the Ministry. The lack of knowledge of market potential resulted in low response to advertising tenders floated by the Zonal Railways. Uneven earnings across various asset classes were also observed. Stations/ trains were more actively used for commercial publicity in comparison to assets like Railway tickets, reservations forms/ charts etc. Weak contract management led to unauthorized displays beyond expiry of the contract period with high risk of recoverability of outstanding license fee.

Chapter 2 Implementation of line capacity augmentation work on High Density Route (Engineering)

This chapter contains the audit findings on the thematic study on 'Implementation of line capacity augmentation works on High Density Network (HDN) routes'. Railway Board identified seven HDN routes connecting four metro cities, their diagonals and Delhi-Guwahati route and evolved a 'Blue Print' (2007-08) to execute line capacity augmentation works on top priority using a route wise integrated approach rather than a routine sectional approach. Audit examination of three HDN routes (No. 2, 5 and 7- including Delhi- Mathura section of HDN 3), important for bulk freight traffic revealed that the 'Blue Print' was incomplete as it did not comprehensively cover all the line capacity augmentation works for priority execution. An integrated approach in identification of works was not adopted and large gaps for the provision of Automatic Block Signalling and Railway Electrification existed. Though the installation of Automatic Block Signalling was considered important for increasing the throughput on parts of golden quadrilateral routes, most of the portion of HDN routes had not been identified for its installation. Further, there was no policy in place to prioritize/ fast track sanction of line capacity augmentation works. Due to non-adoption of integrated approach in planning, sanctioning and funding for the execution of identified works, the progress of works were uneven and gaps and missing links on HDN routes, continued to exist with regard to provision of double line, Railway Electrification and Automatic Block Signalling. Slow progress of works was accompanied by huge surrenders/ diversions of funds. Further, the congestion of traffic during entry in Delhi region could not be eased as line capacity

augmentation works for the provision of fourth, fifth and sixth lines in identified portions on busy Delhi- Palwal section remained incomplete, due to change in executing agencies, change in scope of works and other site problems.

Chapter 3 Performance efficiency of Signalling assets in Indian Railways' (Signalling & Telecommunications)

Modern signalling systems play a key role in enhancing safe and reliable train operations and optimum use of existing line capacity. A study was carried out to evaluate the performance efficiency of signalling assets. Audit observed that the key performance indicator to monitor signal incidences was within the tolerance limit in only six zones. The basic units for measuring workload of Signal and Telecommunication (S&T) equipment had not been revised for four decades resulting in different units and yardsticks adopted by Zonal Railways in respect of newly introduced S&T equipment. Further, the standard norms for monitoring down time and response time were not prescribed for assessing the performance of the signalling equipment. There was substantial shortfall in adhering to the maintenance schedules and in 32 'A' routes stations, 64 signalling equipments out of 93 were outdated and overdue for replacement.

Chapter 4 Cleanliness and Sanitation in Indian Railways - A follow up Report (Commercial, Operating, Engineering, Signalling & Telecommunication, Mechanical and Medical)

This chapter deals with the audit findings as a result of follow up audit on the action taken or various measures adopted by the Indian Railways in line with the recommendation of Public Accounts Committee (PAC) in improving the standard of cleanliness at stations and on trains. Audit observed that despite assurance rendered to the PAC, detailed action plan for maintaining cleanliness and sanitation at stations and on trains was not formulated at the zonal level. Mechanized cleaning could not be effectively implemented at all major stations due to inadequate provision of washable aprons or damaged and uneven platforms. The commitment of IR to PAC for assessment and implementation of remedial measures to overcome the shortcomings in collection and disposal of garbage remained unfulfilled. The Clean Train Station scheme was not effective in improving en route cleaning of trains due to deficient planning and inadequate monitoring at the zonal level. On Board Housekeeping Service for cleaning of coaches was far from satisfactory. The commitment of IR to PAC regarding implementation of green toilets in trains was not fulfilled despite extensive trials during the last two decades. Lack of efficient control on monitoring mechanism specified by the Ministry of Railways guidelines on management of linen were not effectively monitored resulting in frequent supply of unhygienic and poor quality of linen to its passengers. Provision for availability of drinking water was not made as per prescribed norms. Even the existing facilities were poorly maintained.

Chapter 1: Traffic - Commercial and Operations

Traffic Department comprises two main streams – Commercial and Operations. The commercial department is responsible for marketing provided by a railway, for developing traffic, improving quality of service provided to customers and regulating tariffs of passenger, freight and other coaching traffic and monitoring their collection, accountal and remittance.

The Operating department is responsible for planning of transportation services – both long-term and short-term, managing day to day running of trains including their time tabling, ensuring availability and proper maintenance of rolling stock to meet the expected demand and conditions for safe running of trains.

At the Railway Board level, the traffic department is headed by Member (Traffic), who is assisted by Additional Members/ Advisors. At the zonal level, the operating and commercial departments are headed by Chief Operations Manager (COM) and Chief Commercial Manager (CCM). At the divisional level, the operating and commercial departments are headed by Senior Divisional Operations Manager (Sr. DOM) and Senior Divisional Commercial Manager (Sr. DCM).

As the planning and realization of the anticipated revenue potential from commercial publicity primarily devolves on the Traffic Department, a thematic study on 'Commercial Publicity in Indian Railways' was conducted by audit during May to August 2012 covering the period 2009-10 to 2011-12 to evaluate performance of this Department in realizing the anticipated revenue potential from commercial publicity. The policy directives, guidelines and instructions on Commercial Publicity issued by the Railway Board and Zonal Railways from time to time, relevant records of earnings from Commercial Publicity maintained at Zonal and Divisional levels for three years i.e., 2009-10 to 2011-12 of Commercial, Mechanical and Engineering Departments at Zonal/Divisional Headquarters and at field units were examined. The examination also covered Joint Inspection by audit teams and railway officials of selected Stations, Trains, Coaching/Wagon Depots, Level Crossings to check status of implementation of policy/ directives, and actual utilization of available assets for Commercial Publicity. For this purpose, two Divisions and three Stations thereon, One Rajdhani/ Shatabdi Train, two Mail/Express Trains, two EMU/ DEMU/ MEMU rakes, two Level Crossings (LC) in the selected Divisions, two stations dealing with manual money receipt, one Coaching Depot and one Wagon Depot /Workshop in each Zonal Railway were selected for Joint Inspection for verifying implementation of action for commercial publicity.

This chapter contains the audit findings of the above thematic study.

Commercial Publicity in Indian Railways

Executive Summary

In order to augment the total revenue earnings potential of the Indian Railways, the Ministry of Railways set up a Task Force (1999) to submit recommendations on generation of resources from non-traditional sources which inter alias included earnings from commercial publicity. On the basis of recommendations of the Task Force (April 2000), Railway Board identified various media/assets like stations, trains, level crossing gates etc. for Commercial Publicity and issued broad guidelines to Zonal Railways for framing action plan. Subsequently, Railway Board issued a series of detailed instructions from May 2006 to January 2012 for exploitation of identified railway assets/ media for commercial publicity/ advertising.

A thematic study was conducted by audit during May to August 2012 covering period of 2009-10 to 2011-12 to evaluate performance of the Zonal Railways in realizing the anticipated revenue potential from commercial publicity.

The study revealed that the revenue projections set by the Railway Board on account of commercial publicity were not backed by assessment of market potential and earnings targets were set without associating the Zonal Railways. The Zonal Railways failed to make specific budget estimates in respect of commercial publicity earnings in absence of a specific head. This resulted in lack of commitment and under-performance on the part of the Zonal Railways leading to unsatisfactory growth in earnings through commercial publicity.

The lack of knowledge of the market potential resulted in limited response to tenders floated by Zonal Railways for advertising rights for divisions/ stations/ trains etc. The Zonal analysis of revenue generation through commercial publicity revealed uneven earnings across various asset classes. Assets like stations/trains were more used in comparison to Railway tickets, reservation forms/ charts etc. The study also revealed weak contract management in terms of deficient record maintenance resulting in non-execution of agreements in respect of contracts awarded with high risk of recoverability of outstanding licence fee and unauthorized displays beyond expiry of the contract period.

1.1 Introduction

In order to generate additional resources to overcome budgetary constraints of the Indian Railways, the Hon'ble Minister of Railways had set up a Task Force under the Chairmanship of Member Traffic in April 2000 which inter alia, considered various avenues under 'Commercial Publicity' and identified freight wagons, Railway stations, passenger trains, railway crossings, sites along railway track, etc as potential commercial advertising media. The Task Force had thus estimated a revenue potential of ₹100 crore under this head. The Railway Board, in pursuance of the recommendations of the Task Force, designated the Chief Commercial Manager (PS) as the nodal officer for co-ordination of all field efforts for realization of the target set at ₹100 crore and issued broad policy guidelines for basing action plan by the Zonal Railways (May 2000).

In view of the static growth of revenues under 'Commercial publicity', the Standing Committee on Railways in their 10th Report presented to the 14th Lok Sabha had urged (May 2005) the Railway Board to frame a comprehensive policy on marketing strategies for exploiting commercial potential by affording incentives to prospective advertisers. The Board subsequently issued a series of instructions during May 2006 to January 2012 identifying various media vehicles which included guidelines for selection of advertising sites. During 2007-08 to 2011-12, the revenue mobilization through commercial publicity had crossed ₹100 crore but failed to sustain a clear momentum and hovered within the overall range of ₹ 150 crore to ₹ 200 crore (figure below). Revenue earnings remained substantially below the targets set.

1.2 Organizational Structure

Commercial Directorate of Railway Board is responsible for policy directions related to Commercial Publicity. At Zonal level, the Chief Commercial Manager (CCM) and at divisional level, DRM along with Sr. DCM/ DCM were responsible for implementation of the policy.

1.3 Audit Objectives

An earlier C&AG's Audit Report (Para 6.4.1 of Report No. CA19 of 2008-09) tabled in Parliament (24 July 2009) had highlighted deficient implementation of Railway Board's guidelines on commercial publicity. In their Action Taken Note, the Ministry had admitted to failure of certain initiatives owing to poor market response with reference to level crossing gates, freight wagons etc. Audit also noticed that the White Paper in Indian Railways (tabled in Parliament December 2009) by the then Minister of Railways had expressed a concern on the slow growth in earnings from commercial publicity due to poor success of new initiatives namely bulk right contracts, etc. while the income source constituted a substantial share of world rail systems. Audit therefore decided to evaluate the progress on actions taken during 2012-13 with the following issues in focus:

- Assessment of earnings potential and fixation of targets.
- Assessment of compliance of norms laid down by the Board from time to time by the Zonal Railways in regard to the management of contracts for various advertising rights.

1.4 Audit criteria, methodology and scope

The policy directives, guidelines and instructions on Commercial Publicity issued by the Railway Board and Zonal Railways from time to time, relevant records of earnings from Commercial Publicity maintained at Zonal and Divisional levels for three years i.e., 2009-10 to 2011-12 of Commercial, Mechanical and Engineering Departments at Zonal/Divisional Headquarters and at field units were examined. The examination also covered Joint Inspection by audit teams and railway officials of selected Stations, Trains, Coaching/Wagon Depots, Level Crossings to check status of implementation of policy/ directives, and actual utilization of available assets for Commercial Publicity.

1.5 Sample selection

Two Divisions and three Stations thereon, One Rajdhani/ Shatabdi Train, two Mail/Express Trains, two EMU/ DEMU/ MEMU rakes, two Level Crossings (LC) in the selected Divisions, two stations dealing with manual money receipt, one Coaching Depot and one Wagon Depot /Workshop in each Zonal Railway were selected for Joint Inspection for verifying implementation of action for commercial publicity on the above assets.

1.6 Audit findings

1.6.1 Failure in conducting assessment on revenue potential

Review of the records of the Zonal Railways and the Board revealed that the revenue projections and the targets set for Zonal Railways (Para 7.2) were not grounded on any assessment/studies of the market potential as regards commercial publicity through railway assets. Despite a decision in General Managers' Conference in December 2007 that deliberated the recommendations of the Task Force (2000), no external agency /consultants were hired to assess the revenue potential through advertising /publicity media.

Audit also found that the lack of specific budgetary head for this category of earnings resulted in diluted accountability. As per codal provision (Paragraph 313 of Indian Railway Financial Code), budget estimates of gross earnings and expenditure are required to be prepared based on previous year or other factors as considered relevant and foreseeable for projections. Earnings from commercial publicity are clubbed under 'Sundry earnings' which subsume various receipts from miscellaneous sources. The Zonal Railways, in the absence of a specific head, did not provide for expected earnings in the budget estimates submitted to the Railway Board for the review period.

Thus, in the absence of proper demand assessment by the Zonal Railways, the targets/projections set by the Board bore no relevance to the actual revenue potential and were ineffective in guiding actual performance.

1.6.2 Underachievement of targets

The Zone-wise targets of earnings fixed by the Railway Board vis-à-vis actual earnings for the period 2009-10 to 2011-12 reflected, in general, sharp under-achievement by a wide margin (Table Below):

₹ in crore

Railways	2009-10			2010-11			2011-12		
	Target	Actual earning	shortfall (%)	Target	Actual earning	shortfall (%)	Target	Actual earning	shortfall (%)
CR	69.26	30.27	56.30	193.00	34.22	82.27	64.40	33.97	47.25
ER	14.83	5.80	60.89	36.00	9.41	73.86	15.50	7.76	49.94
ECR	4.84	0.89	81.61	15.00	0.95	93.67	6.20	3.16	49.03
ECoR	3.83	4.03	0.00	15.00	3.97	73.53	6.00	2.54	57.67
NR	63.25	40.84	35.43	210.00	32.92	84.32	85.50	25.51	70.16
NCR	4.41	2.67	39.46	14.00	3.22	77.00	5.90	3.44	41.69
NER	3.26	1.64	49.69	9.00	2.14	76.22	4.00	2.45	38.75
NFR	1.71	0.77	54.97	5.00	0.27	94.60	1.80	1.10	38.89
NWR	9.13	4.36	52.25	25.00	3.83	84.68	6.90	3.89	43.62
SR	42.75	18.86	55.88	120.00	25.29	78.92	52.90	26.11	50.64
SCR	13.66	5.20	61.93	39.00	8.93	77.10	17.60	9.55	45.74
SER	3.55	2.61	26.48	15.00	3.16	78.93	6.50	2.64	59.38
SECR	2.88	0.55	80.90	7.00	1.30	81.43	3.30	1.29	60.91
SWR	11.04	4.52	59.06	30.00	3.72	87.60	17.00	7.25	57.35
WR	106.94	36.24	66.11	253.00	39.97	84.20	79.30	49.77	37.24
WCR	4.66	1.80	61.37	14.00	2.38	83.00	4.90	3.22	34.29
Metro[1]	16.60	9.15	44.87	22.30	12.02	46.09	22.30	11.49	48.48
IR	**376.60**	**170.20**	**52.72**	**1022.30**	**187.70**	**81.23**	**400.00**	**195.14**	**51.22**

- The average growth rate of earnings during the period 2009-12 averaged 7.44 per cent. In 2011-12, the growth rate was only 3.96 per cent indicating a lack of focus on generating revenue through commercial publicity.

[1] *Metro Railway was given the status of Zonal Railway in October 2010 accordingly targets were fixed by the Railway Board for Metro Railway in 2011-12 Earlier targets were fixed by the Chief Commercial Manager (CCM)/Metro Rail*

- Overall shortfall against targets for Indian Railways during 2009-10 to 2011-12 remained more than 51 per cent;
- The major shares of the earnings were accounted for by WR, NR and SR during the three year period. Furthermore, the share of WR had marginally increased from 21 per cent to 25 per cent, while the share of NR had declined steeply from 24 per cent to 13 per cent owing to a declining trend in absolute terms.
- There was a significant shortfall in earnings (>50 per cent vis-a-vis target) on ECoR, NR, SR, SER, SECR and SWR during 2011-12, NFR registering 95 per cent(approx.) during 2010-11

Not only the actual performance reflected inadequate monitoring at Zonal/Railway Board level, but also the targets fixed showed a huge year on year variation and reflected an ad-hoc approach.

In this context, it is pertinent to mention that the General Manager (WR) had brought to the notice of the Member (Traffic) on May 2010 that the targets set especially for 2010-11 were unrealistic. As the targets were entirely set by the Railway Board without Zonal involvement, there was lack of commitment and under- performance on the part of Zonal Railways as brought out in the succeeding paragraphs.

The Railway Board had replied to an audit observation (July 2012) that the target of ₹1000 crore during (2010-11) had been deliberately set much above the realistic levels for enhancing actual performance. However, analysis of actual performance with regard to various assets identified for commercial publicity by the Board clearly revealed weak monitoring and indifferent/ineffective compliance on the part of Zonal Railways as discussed in succeeding paragraphs.

1.6.3 Exploitation of various media for commercial publicity

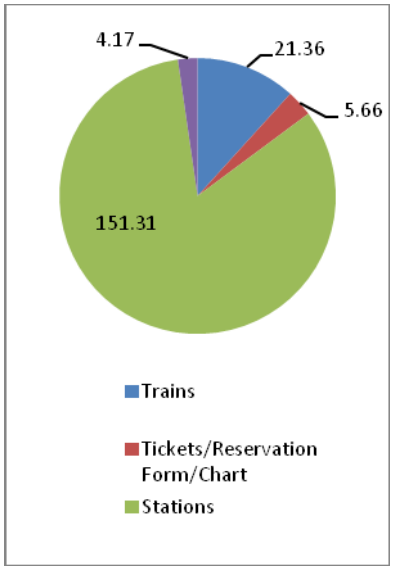
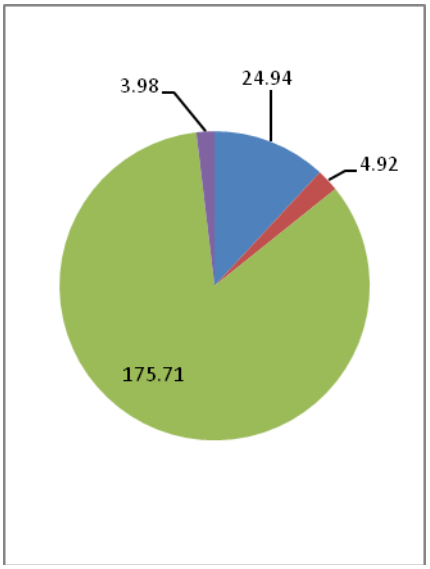
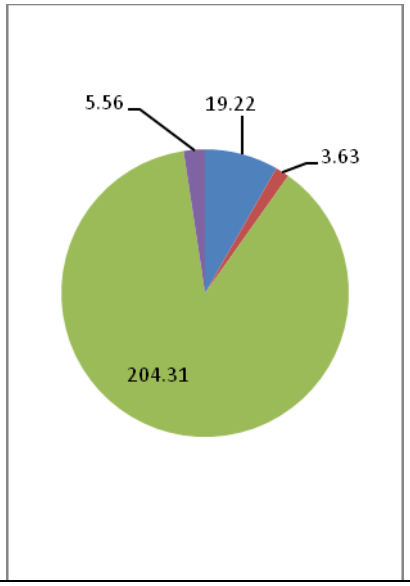
For framing of action plan by the Zonal Railways for commercial publicity, Railway Board issued (May 2000) broad guidelines for use of various areas such as stations, trains, level crossings, approaches to major stations that subsequently covered freight wagons, ticket / reservation charts, time tables/ fare repeater, etc.

Analysis of the total aggregate earnings from commercial publicity during 2009-10 to 2011-12 revealed that certain assets namely tickets/ charts/other miscellaneous including level crossings, etc, accounted for only four per cent of total earnings while stations predictably accounted for the bulk share i.e.85 per cent and trains 11 per cent (Pie -Chart). Further, the Zonal analysis year on year reflected an uneven trend in growth of earnings across various asset classes. It can be reasonably concluded that there was much potential that remained to be exploited in terms of a more even distribution of earnings share.

Annexure I

Head wise earnings on Indian Railways

(₹ in crore)

		
2009-10	**2010-11**	**2011-12**

Further scrutiny of records in respect of each assets use for commercial publicity revealed poor compliance of policy guidelines leading to substantial under utilization of publicity media.

1.6.3.1 Master Plans for stations

The Task Force constituted by the Board had identified 100 stations for focus on commercial publicity considering their passenger earnings turnover. However, the Railway Board directed the Zonal Railways (May 2000) to develop a Master Plan for all stations to facilitate award of bulk contracts/ sole advertisement rights at agreed locations. This master plan would depict the potential sites for exploitation of various assets for commercial publicity. Subsequently, Railway Board had advised (May 2006) Zonal Railways to give bulk advertisement rights on pilot basis to one division of each Railway and appraise the results for extending the same to other divisions. These directions, inter alia, provided broad guidance on award of bulk publicity contracts pertaining to the entire division.

Audit conducted a sample study of 32 divisions during 2012-13 which included 16 divisions identified for conducting pilot study. This revealed that in seven Railways, the master plan was available in 833 stations whereas in ten Railways including Metro Railway Kolkata no master plans were developed for stations in any of the selected divisions including the pilot divisions. Further scrutiny revealed that none of these plans were complete as per directives of the Board as these plans failed to depict in full sites available for Hoarding, Video Walls,

Electronic Displays, Fare Repeaters, Plasma TV's, PA Systems, Wall Paintings, Track Divider etc.

The following paragraphs bring out the state of exploitation of specified assets used for publicity at the stations.

1.6.3.2 Publicity at Stations

The broad guidelines (May 2000) identified specific areas for undertaking commercial publicity namely advertisements at stations, trains, level crossings, freight wagons, etc. and laid down instructions for framing of proposals for display of advertisements/ signages etc.

Audit observed that Railway Board had adopted a twin strategy i.e. to exploit the identified advertising sites individually or to market cluster of stations/ station as a whole/ Division as a whole for award of bulk advertising rights. The Board Policy (May 2006) also stipulated that in case of bulk advertising contracts, individual sites may not be awarded and existing contracts, if any, need not be extended. The observations/ findings arising from audit of records of individual contracts of hoardings/ electronic display etc. are discussed in the following sub-paragraphs. Audit findings on bulk advertising rights of stations/ divisions are incorporated separately in Para 7.4.1 featuring under Deficiencies in Contracts Management.

(i) Hoardings

Audit observed that total revenue collection (₹25.62 crore) from hoardings during 2009-10 to 2011-12 were contributed by nine Zonal Railways (ECoR, NR, NCR, NER, SR, SER, SWR, SECR and Metro) from mainly display in and around Goods sheds/ parcel offices, circulating areas of stations, railway tracks etc. Audit also observed that each of these Railways had awarded contracts in respect of only one of the above identified sites while Metro Railway, Kolkata exploited 23 station premises and utilized 36805 sq. ft. out of the total identified area of 96912 sq. ft.

(ii) Plasma TV/LCD, CCTV, Fare repeaters

Among various identifiable assets, electronic media/display such as Plasma TV/LCD installed for passenger convenience in the circulating areas and waiting rooms of the stations visited by the public held considerable scope for publicity. Audit found that there was much scope for better exploitation of the electronic display media as highlighted below:

- Out of 2500 reservation/booking offices on 24 selected Divisions, plasma TV had been provided only in 19 booking offices of five Zonal Railways (CR, NR, NWR, SR and WR) which earned ₹4.57 crore through advertisements.

- Modes like CCTV earned revenue of ₹9.06 crore through advertisements on 11 Zonal Railways[2] while these remained unutilized on six Zonal Railways (NCR, NR, NWR, NFR, WR and WCR).

- Fare Repeaters remained unutilized on 12 Zonal Railways[3]. However, four Zonal Railways (SR, SER, SCR and SWR) were able to generate revenue of ₹0.33 crore by utilizing this media.

(iii) Public Address System

Among other media, Railway Board had highlighted (May 2006) use of public address systems used for dissemination of information to the travelling public through use of short jingle of products in between announcements. Audit noticed that though 643 stations were identified over 10 Zonal Railways[4], this media was used only on 79 stations on five Railways, earning revenue of ₹1.42 crore. (Table below)

Railway	Total No of station identified	Total No. of station awarded for PAS	Earnings (₹ in crore)
CR	2	2	0.18
ER	388	22	0.28
NER	49	10	0.06
SR	18	17	0.69
WR	28	28	0.21
Total			**1.42**

In reply to audit, East Coast Railway Administration had contended that specific guidelines were not available and moreover, the use of the media would hamper railway information to passengers. It was not clear whether this feedback was shared with the Railway Board by the Zonal Railways; however, it was evident that the Board had not adequately monitored the implementation of its directives in view of negligible earnings resulting from low exploitation.

1.6.3.3 Publicity through trains

(i) Vinyl wrapping of coaches

Railway Board vide its guidelines (May 2006 and March 2007) advised Zonal Railways to use the technique of wrapping entire coach using vinyl stickers vis-à-vis display of advertisement boards inside the coaches on a pilot basis through open competitive bidding on selected mail/express, Rajdhani/Shatabdi and suburban trains.

However, Audit noticed that the compliance of above directives for implementation of this pilot project was not satisfactory over Zonal Railways as analyzed in following paragraphs.

[2] CR, ER, ECR, ECoR, NER, SR, SCR, SER, SWR, SECR and Metro Railways
[3] CR, ER, ECR, ECoR, NR, NWR, NER, NCR, NFR, WR, SECR & WCR
[4] CR, ER, ECR, NCR, NER, SR, SCR, SER, SWR & WR

Premier Trains (Rajdhani/ Shatabdi/Mail/Express trains)

Twelve Railways identified 294 trains for vinyl wrapping, but contracts were awarded only in respect of 76 trains. Out of the remaining, though Expression of Interest (EOI) was called for in respect of 88 trains, tenders could not be finalized mainly due to non-receipt of offer. In other three Railways (ECR, NWR and SECR), 19 trains were identified but EOI was called for only by two Railways (NWR, SECR) in respect of two trains. These could not be finalized on account of no response and ineligibility of the applicant.

Passenger Trains

Out of 168 trains identified by eight Railways, contracts were awarded only by six Railways (ER, ECoR, NCR, SR, SCR and WCR) in 37 trains. EOI were called for in 19 trains by three Railways (ECoR, SCR and SWR) but could not be finalized due to poor response. Audit also noticed that in six Railways (CR, ECR, NR, NWR, NER, NFR and SECR) and in Metro Railway, not a single train was identified for publicity.

Suburban Trains

The position in respect of suburban trains was little better as eight Railways (CR, ER, ECR, SR, SCR, SER, WR and SECR) had successfully awarded contracts in 112 trains whereas six other Railways (NR, NCR, NWR, NER, NFR, WCR) and Metro Railway Kolkata did not initiate any EOI and two Zonal Railways (ECoR and SWR) did not receive any offer in response to EOI.

The summarized position of identification of trains for the publicity vis-à-vis contracts awarded over Zonal Railways is tabulated below

(₹ in crore)

Year	Premier Train			Passenger Trains			Suburban Train (EMU/ DEMU/MEMU)		
	No. of trains identified	No. of trains awarded	Contract Value	No. of trains identified	No. of trains awarded	Contract Value	No. of trains identified	No. of trains awarded	Contract Value
2009-10	170	22	18.32	109	10	0.22	201	8	3.16
2010-11	48	26	2.23	47	14	0.32	240	38	3.23
2011-12	76	28	3.94	12	13	0.50	242	66	5.23
Total	**294**	**76**	**24.49**	**168**	**37**	**1.04**	**683**	**112**	**11.62**

Analysis of earnings above indicates that publicity through vinyl wrapping was more successful in Premier and Suburban trains as compared to Passenger trains, as these categories deal with distinct market segments.

(ii) Publicity through freight wagons

In view of high visibility potential of the freight wagons as they move across the whole country including remote areas, Railway Board advised (April 2000) Zonal Railway to utilize freight wagons by inviting 'Expression of Interest' for

advertisements on entire wagons as well as in area nominated for the purpose, during intervals between POH of wagons.

Audit noticed out of 1,35,342 freight wagons POHed in Railway workshops during 2009-10 to 2011-12, only SCR and WCR had identified 4754 freight wagons and only WCR could award contracts (₹0.54 crore) for 600 wagons for one year.

- In SER, Tata Steel Limited had, responded (January 2012) to the expression of interest called (November 2011) for advertisement through freight wagons in Chakradharpur division. The same was not acted upon by Railway Administration till March 2012.
- On Ahmedabad division of WR, a proposal for pasting of advertisement stickers on freight wagons was not accepted on the ground that Railway Board guidelines allow publicity only on wagons during POH in workshop. Ahmedabad division being one of the major goods loading points, there is huge potential for the said media.
- Railway authorities at Dahod Workshop of WR contended that there were no directions from the Zonal Railway in the matter.

The above indicates the lack of interest by the Railway Administrations in promoting commercial publicity. Further, the Railway Board also needs to interact with the Railway Administration for modifying guidelines if necessary.

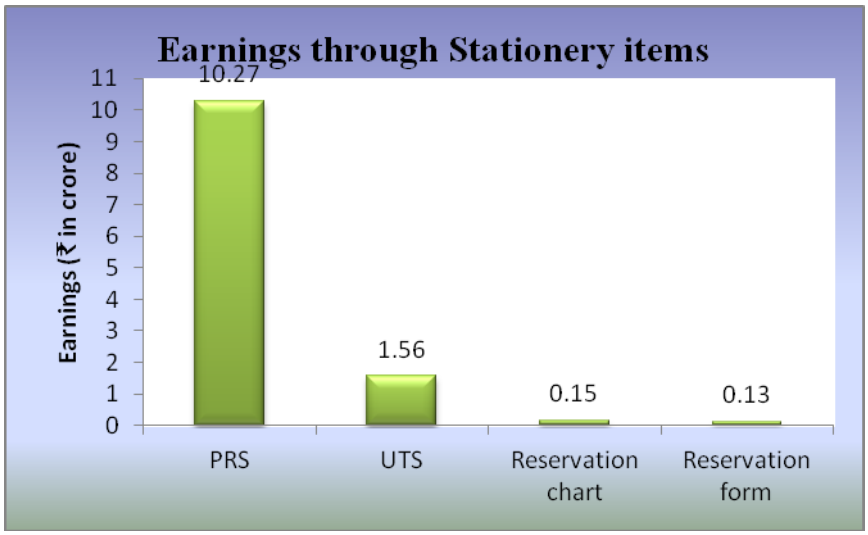
(iii) Branding of Special Train

Railway Board desired (May 2007) that Special Trains i.e. Summer/Puja/Winter/ Holiday Special may be exploited fully by branding them. Further, Railway Board clarified (February 2008) that branding of trains should be tried with the annual licence fee of not less than ₹0.50 crore for intra Railway regular trains and ₹1.00 crore for inter Railway premier trains. Audit noticed that in a solitary case in the case of ECoR, an offer for branding a special train (Puri -Sambalpur Intercity Express) for one year at an annual licence fee of ₹0.13 crore could not be finalized as the amount was less than the prescribed minimum limit of ₹0.50 crore. ECoR administration had requested Railway Board (October 2008) to consider the matter for ratification but the Railway Board failed to respond.

1.6.3.4 Publicity through stationery items

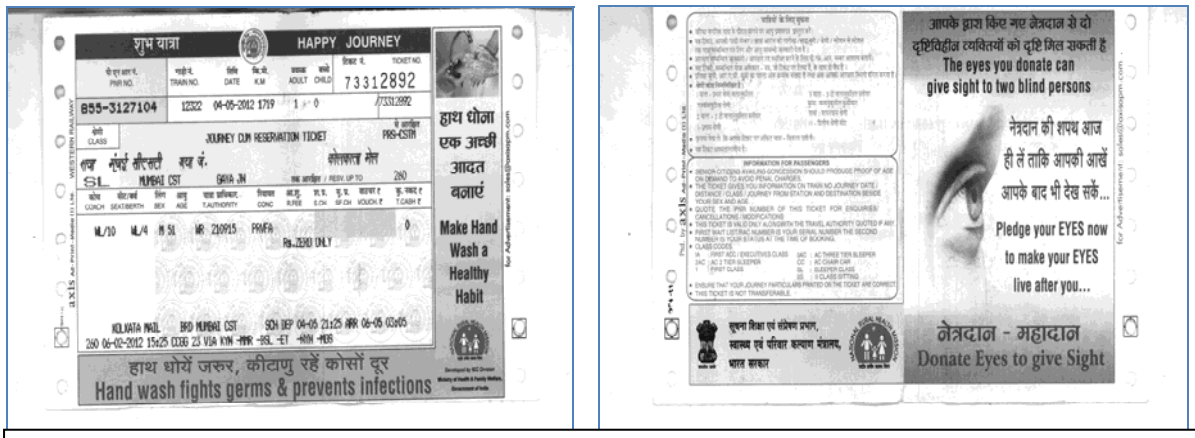
For exploitation of PRS/UTS tickets, reservations charts/ forms for commercial publicity, Railway Board issued a series of guidelines during November 2006 to November 2007. After reviewing the progress of commercial publicity, Railway Board further directed (November 2007) that the reserve price for open tenders should be so fixed that the cost of pre-printed Blank Stationery and cost of printing of the advertisement payable by the Railways was covered and net earnings accrued to the Railways.

The graph below highlighted that about 85 per cent of total revenues earned from advertising through stationery items (₹12.11 crore) during the three year period was accounted for by PRS tickets.



Further, during analysis of 16 Zonal Railways, Audit noticed:

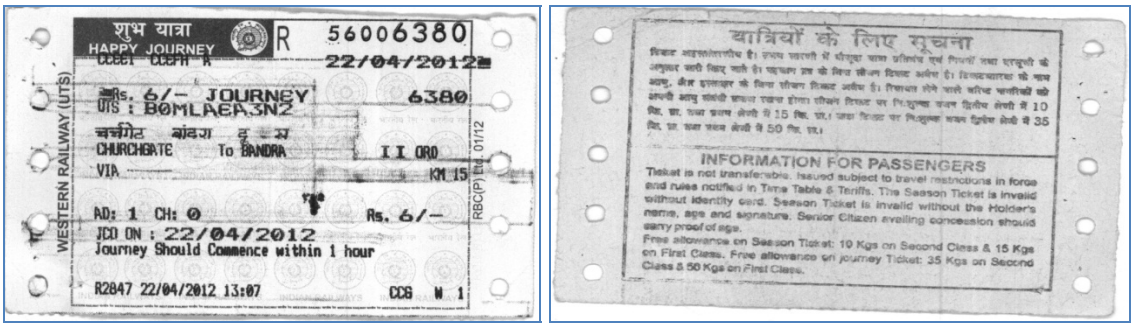
- Thirteen (13) Zonal Railways[5] had reported earnings of ₹10.27 crore from PRS tickets whereas in other three Railways (ECR, ECoR & NER) no earnings were reported.



Front & back of PRS ticket depicting paid advertisements on both sides

- Only seven Zonal Railways (CR, NR, NWR, SR, SCR, SWR & WR) reported earnings of a meager amount of ₹ 1.56 crore from UTS tickets despite the fact that Railways had spent an amount of ₹35.09 crore on printing/procurement of UTS tickets.

[5] (CR, ER, NR, NCR, NFR, NWR, SR, SCR, SER, SWR, WR, WCR & SECR)



Front & back of a UTS ticket of WR, leaving no space for advertisement, despite Railway Board's order (August 2007) for increasing the size to create space for advertisements

- In respect of reservations forms/charts, seven Zonal Railways (CR, ECR, NWR, SR, SCR, SWR and WR) reported earnings of ₹ 0.28 crore only whereas remaining Railways did not exploit this source.

Audit also noticed that with the exception of three Zonal Railways (SR, SER and SECR) regular reports on mode of tender finalization were not being submitted to the Railway Board. Besides, five Zonal Railways (NCR, NER, NFR, SCR, WCR) had not furnished the requisite report to Railway Board on progress of compliance of the guidelines in any of the year during review period as per the advise of the Board; however, the latter did not appear to have followed up to ascertain the reasons for poor performance/compliance.

Annexure II

1.6.3.5 Publicity at Level Crossing gate

Railway Board issued policy guidelines (May 2000) for inviting private participation in manning of unmanned LC gates in lieu of advertising rights on one or more gates and expected to save approximate ₹10 laks per LC as a one-time cost. The policy had contemplated that the maintenance cost of the LCs will be borne by the Railways. Audit found that Zonal Railways had carried out manning of LC gates at a total cost of ₹ 74.31 crore during 2009-10 to 2011-12. No efforts were made to invite private participation.

In response to an earlier audit observation (C&AG Report – Union Govt. – Railways No.CA19 of 2008-09) tabled in the Parliament on 24 July 2009, the Board had issued fresh instructions (June 2010) calling for action taken reports on the utilization of the LC gates. However, none of the Zonal Railways had complied with the directions in view of the fact that no expressions of interest were invited/ tenders floated during the period of review. No follow-up by the Board of its own instructions was in evidence.

1.6.4 Deficiencies in contract management

Audit examined the relevant records concerning the implementation of various guideline issued by the Railway Board in respect of awarding contracts for advertising rights for use of various railway assets and found that the general/ poor compliance, discussed in the preceding paragraphs, was principally due to the inadequate planning of sites before awarding of tenders, fixation of reserve

price, inadequate market surveys, etc. The following paragraphs highlight some of the instances of weak management of contracts.

1.6.4.1 Contract of Bulk rights for division and cluster of stations

Out of 69 divisions over IR (excluding Metro Rly, Kolkata), a sample of 32 divisions was taken for study in respect of bulk rights contract for the entire division/ cluster of stations.

Zonal Railways were advised (May 2006) to call open tenders for awarding bulk rights of publicity for an entire division. The publicity rights would include all types of media including hoardings, glow/neon signs, video walls, different forms of electronic display, unipole, trivision, showcases, balloons, advertising near LC gates, approaches to stations etc. Zonal Railways were also directed to implement this scheme on pilot basis in one Division and reserve price for this contract was to be fixed at three times the actual publicity earning of entire Division during the immediate preceeding financial year with escalation of 10 per cent, 15 per cent, 20 per cent and 25 per cent respectively over that of previous year. Railway Board further extended (June 2007) this scheme on other divisions in addition to the division identified on the pilot project basis.

Audit noticed that out of 32 divisions, only in Delhi division of NR, sole contract rights for the entire division was awarded (October 2007) for five years at a contract value of ₹22.86 crore. In addition, in Ajmer division of NWR (Ajmer division was not included in sample selection), bulk contract was successfully awarded (July 2009) at ₹0.70 crore for five years.

Moreover, in respect of remaining divisions (31), in 15 divisions[6] of 12 Railways, no efforts were made to even call tender for bulk rights of the entire division. In respect of other 16 divisions of 12 Rlys[7], though efforts were initiated to award contracts these were not finalized due to no/poor response, high reserve price, non-fulfillment of eligibility criteria etc., as tabulated below

Divisions – Rlys	Particulars of contract	Reasons for non-finalization
Mumbai – CR	Open tender for bulk advertisement rights for Mumbai Division was called (Aug 2008 - RP of ₹ 68 crore for seven years). On retendering of the above contract (March 2009- RP of ₹ 34 crore) only offer was received	No offer was received. Contract was discharged on technical grounds (clause of service tax and non-availability of clear site)
Pune – CR	Tender was opened (2010-11) for entire division.	No offer was received.
Sealdah – ER	Tender for bulk rights for entire division was floated each year (2009-10 to 2011-12).	No offer was received. In minutes of meetings it was recorded that high reserve price was one of the reasons for poor response.
Danapur – ECR	Tenders were floated during 2009-10, 2010-11 and 2011-12 (two times each year).	No offer was received in any of two years.
Khurda Road – ECoR	Tender for bulk rights for entire division was opened (July 2007) with reserve price of ₹1.53 crore (three times of actual earning of previous year).	Tender was discharged as the negotiated rate of ₹0.84 crore quoted by the highest bidder was less than the reserve price

[6] Howrah, Samastipur, Waltair, Lucknow (NR), Jodhpur, Lucknow (NER), Katihar, Lumbding, Kharagpur, Chakradharpur, Mysore, Ahmedabad, Bhopal, Jabalpur, Bilaspur
[7] CR, ER, ECR, ECoR, NCR, NWR, NER, SR, SER, SCR, SWR, SECR

Jhansi – NCR	Tender was floated for entire division in Nov. 2007).	No offer was received.
Allahabad – NCR	Tender was floated for entire division (Feb 2010) with reserve price of ₹17 crore.	No offer was received.
Jaipur – NWR	Tenders for bulk rights for entire Division was though invited (October 2006) but offer of ₹3.98 crore was not accepted	Tender was discharged on the ground such as Railway Board policy not defining the earnest money/Security deposit to be taken from the tenderer, single valid offer not appearing to be a proper response, space to be provided to the party for different areas not being clarified and non-definition of size of hoardings etc.
Izzatnagar – NER	Bulk rights tenders were floated for six times during 2009-10 to 2011-12 but could not be finalized.	No offer was received.
Chennai - SR	Tenders were invited twice in September 2006 at Reserve Price of ₹30.54 crore (five years) and in October 2007 at Reserve Price of ₹78 crore (five years). Reasons for this substantial increase in reserve price not made available to Audit	No offer was received as the reserve price was substantially increased.
Trivendrum - SR	Tenders were invited twice in July 2007 at Reserve Price of ₹6 crore with increase of 10,15, 20 and 25 per cent for the subsequent years and in January 2010 at Reserve Price of ₹5.92crore with increase of 10,15, 20 and 25 per cent for the subsequent years.	No offer was received.
Ranchi – SER	Tender for sole advertising rights over Ranchi division was first invited in July 2006 with a reserve price of ₹ 38.66 lakh, but no offer was received. Tender was further invited in October 2006 reducing the reserve price to ₹ 27.83 lakh, against which no offer was received. Against subsequent tender of February 2007, with same reserve price, no response was obtained.	No offer was received despite the fact that the tenders were floated three times during the year 2006 and 2007.
Secunderabad and Vijayawada – SCR	Tenders for bulk rights of divisions were invited in 2008-09, but the same were discharged. Thereafter, tenders were not invited for bulk rights of Divisions.	The contracts were discharged due to non fulfillment of eligibility criteria and lack of response
Bangalore – SWR	Tender was invited in August 2006.	Single offer was received and the same was discharged on technical grounds.
Raipur – SECR	Tenders were floated three times (RP – ₹5.12 crore)	Discharged as reserve price was very high

While in most of the cases, tenders were not finalized due to lack of response, audit observed that the Board had revised the criteria for fixation of reserve price frequently on the grounds of poor response as under:

- May 2006/ June 2007 - Reserve price equals three times earnings of entire division in immediate preceding year
- December 2008 - Reserve Price not less than 1.5 times of previous year's actual earnings

- April 2010 - Reserve price equals three times of the highest annual earnings of the Division during any of the three preceding years but should not be less than 1.5 times of the highest earnings during any of the three preceding years
- January 2012 - Reserve Price shall not be less than highest earnings during any of preceding three years
- August 2011 - Definition of earnings would exclude earnings from trains, tickets and onboard infotainment.

The frequent revisions in the criteria of reserve price underscored the fact that adequate market inputs had not been factored into for obtaining better response to tenders floated. Audit also observed that in three cases (ER, ECoR, SER) unrealistic quotation of reserve price was cited as ground for poor response/ tender getting discharged.

Railway Board, in its further orders (October 2006 and June 2007) clarified that in case of no response to sole advertisement rights for the entire division, a cluster of stations may be selected for award of sole advertisement rights or station as a whole may be given for sole advertisement rights.

With the same sample of 32 divisions, Audit noticed that in 13 divisions of nine Railways[8], not a single cluster of stations/ station was identified for the advertisement rights. However, out of overall 139 clusters of stations/ stations identified for publicity in 20 divisions of 12 Railways, only in respect of 82 clusters/ stations, contracts were awarded; the details of which are tabulated below:

Rly	Division	Total number of cluster of stations/ stations identified	Number of cluster of stations/ stations where tenders were finalized	Remarks
CR	Mumbai	7	5	
	Pune	6	0	
ER	Sealdah	7	0	Only offer received for one cluster could not be finalized as the reserve price were wrongly put as ₹0.52 crore instead of ₹1.06 crore and the offer was received for ₹0.61 crore.
	Howrah	8	8	Howrah station was divided into 8 zones, out of which, contracts for four Zones awarded to three different firms between Sept'07 and Oct'08 with total contract value of ₹3.50 crore for three year period and had expired in October 2011. Fresh tenders for these four zones could not be finalized (till July 2012).
ECR	Samastipur	10	9	
ECoR	Khurda Road and Waltair	18	9	

[8] ECR, ECoR, NR, NCR, NWR, NER, NFR, SCR, WCR

NWR	Jaipur	11	11	
NER	Lucknow	4	4	No cluster was formed. However, four stations of Lucknow division were under sole advertisement rights since March 2011. (contract value ₹1.22 crore)
SR	Chennai	1	1	No cluster was formed. However station wise rights were given (5 stations)
	Trivendrum	6	5	
SER	Kharagpur and Chakradharpur	7	5	
SWR	Bangalore and Mysore	6	6	
WR	Mumbai Central and Ahmedabad	44	15	Tenders were invited in June 2007 only for suburban Section (Churchgate to Dahanu Road) instead of entire BCT Division. The single offer received for ₹55.54 crore could not materialize due to dispute on making available vacant sites to the advertiser. Moreover, despite the approval of floating of tenders for cluster of stations of BCT division, delay in approval of cluster of stations (26 months) and subsequent delay in awarding the contract (24 months) led to loss of revenue.
WCR	Bhopal	1	1	One cluster of 10 stations was formed
SECR	Raipur and Bilaspur	3	3	
		4	4	
	Total	**143**	**86**	

The outcome of clustering/ station-wise approach was clearly more effective compared to a division whose jurisdiction covered a vast geographic span. Audit also observed that the reserve pricing in the case of clusters did not undergo frequent revision as in the case of Division as a whole. Also, the Zonal Railways had the leverage to fix a higher price than the highest annual earnings in the preceding three years in case the potential of the station/cluster so demanded.

Given the above outcome, the Railway Board should have followed up more pro-actively with the Zonal Railways on actions taken in respect of 57 stations/ clusters yet to be awarded for advertisement rights.

1.6.4.2 Non/short recovery of licence fees and delay in execution of agreements

The various advertising contracts that shall be entered into by the Zonal Railways shall incorporate escalation clause year on year, to the extent, prescribed by the Railway Board. Audit scrutiny of records of 32 Divisions of 16 Zonal Railways revealed that in 44 contract cases of three Railways (SR, SCR, WR), no agreements had been executed. Thus, there was a potential risk of non-recovery of license fee in respect of these contracts.

Further, in respect of 47 contract cases involving seven Railways (CR, NWR, SR, SCR, WCR, WR and SWR), license fee/ penalty on delayed payment to the tune

of ₹ 7.75 crore were either not recovered or short recovered. The summarized position is tabulated below.

(₹ in crore)

Railway	Cases where license fee/ penalty on delayed payment were not recovered/ short recovered		Cases where agreements were not executed	
	No.	Amt. recoverable	No.	Contract Value
CR	9	1.31		
NWR	6	0.52		
SR	4	0.49	1	0.35
SCR	43	1.12	27	10.05
WCR	1	0.20		
WR	3	3.34	14	21.25
SWR	5	0.77		
Total	**71**	**7.75**	**42**	**31.65**

1.6.4.3 Delay in finalization of Tenders

As per Railway Board's order (May 2000), a proposal regarding commercial publicity should be cleared within a period of 45 days from conceptualization to finalization. This was extended from 45 to 90 days in November 2011 with the condition that ideally the tenders should be finalized at the earliest subject to maximum limit of 90 days. Specific reasons were to be recorded in case of delay beyond the stipulated time limit.

Audit noticed that on 16 Zonal Railways, 270 tender cases were finalized beyond the stipulated time limit of 45/90 days, details of which are tabulated as under:

Range of delay	No. of contract cases	Total Contract Value	Loss of revenue due to delay	Zonal Rlys involved
1 - 3 months	165	53.27	6.07	All Rlys
3 – 6 months	52	12.88	1.92	All Rlys
Above 6 months	5	0.67	0.20	NER, SER, WCR and Metro

Annexure III

1.6.5 Internal Control Mechanism

Internal controls help to ensure compliance of operations with applicable procedures, norms and regulations for economical, efficient and effective realization of common goals and objectives.

Joint Inspections of Stations, Trains in Car Sheds/wagons depots conducted by Audit along with Railway officials revealed that there was poor compliance arising from poor monitoring of implementation of the Board's instructions at various levels.

1.6.5.1 Deficient record management and unauthorized displays

As per Operating Manual, the Station Master is required to maintain a register showing full particulars of each advertisement exhibited at the station in the prescribed form. It is also mentioned in the Joint procedure orders of respective Railways (Western Railway - February 1994), advertisement register in the prescribed format incorporating details of payments, date of expiry/removal was to be maintained and checked regularly at station level and in case of any irregularity, immediate action for removal of unauthorized display should be taken and a report submitted that no expired/ unauthorized advertisement is on display.

During joint inspections of three stations of each Zonal Railway conducted by Audit during June to August 2012 in association with Railway officials, audit observed:

- Advertisement Registers had not been maintained by selected stations on seven Zonal Railways (CR, ER, NFR, SCR, SWR, WCR & WR). Further, on four Zonal Railways (ECoR, NER, SER & SECR) the Registers had not been maintained properly/ updated and checked by Sectional Commercial Movement Inspector (CMI). In respect of Surat station of WR, it was noticed that the Station Manager was not even aware of the requirement of maintaining the Advertising Register.
- On nine Zonal Railways[9], Hoarding/Boards were displayed even after the expiry of the currency of contract.
- On six Zonal Railways (CR, ER, NER, SCR WR, & SECR) there was excess display of advertisement material.
- On eight Zonal Railways (CR, ER, NER, NFR, SCR, SER, WR & SECR) illegal/unauthorized advertisements displayed at selected stations.

Unauthorized use of extra space (above window level) for advertisements in Coach on ER

[9] CR, ER, ECoR, NER, SR, SCR, SER, WR & SECR

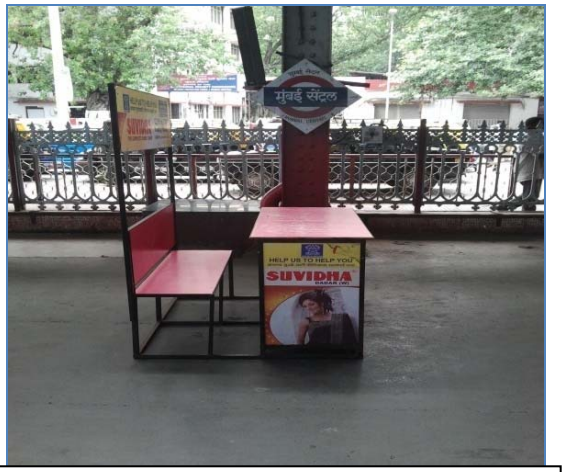
Advertisements displayed without mandatory details as mentioned in contract agreement at TATA NAGAR Station on SER

Advertisements displayed without mandatory details as mentioned in contract agreement above at Nallasopara Station on

Non- standard size Board on FOB at Andheri Station of WR

Illegal advertisement along the Railway Track at Bidhannagar Road on Eastern Railway

- Lack of monitoring of displays at Stations was evident from the Tables and Benches used by GRP at suburban stations of WR which carried unauthorized advertisement stickers of 'Suvidha Complete Family Shop' resulting in leakage of revenue. It was noticed that till date Railway Authority had neither granted any permission for such advertisements nor had objected to this illegal advertisement in Railway premises.



Benches provided by 'Suvidha Complete Family Shop' at Mumbai Central Station

- On Mumbai division (CR), three contracts for display of advertisements in EMU local trains had to be foreclosed. The Railway Administration could not provide clear site to the contractor due to unauthorized and illegal display of advertisements on the trains and Railways failed to prevent such displays resulting in loss of ₹0.73 crore.
- Illegal/unauthorized pasting of stickers/ posters were displayed inside the EMU / passenger trains in five Zonal Railways (CR, ER, SER, SR & WR). Though WR Administration claimed that action was taken in some cases, these efforts did not yield the desired result and menace continues unabated.

Some of the illegal advertisements pasted/displayed in EMU coaches of suburban trains on Mumbai Central Division.

The deficient record management and lack of vigilance, indicates a clear risk of possible collusion between Railway authorities and the illegal users/ treapassers resulting in unauthorized display of advertisement and leakage of revenue.

1.6.5.2 Non- inclusion of clause of Service Tax

In SWR, Railway Administration failed to incorporate a suitable clause regarding the payment of applicable service tax in the advertisement contracts in terms of Finance Act 1994. As a result, Railway Administration had been served with a demand notice for ₹1.76 crore towards service tax and penalty of equal amount not recovered from the contractor for the period from May 2006 to June 2009. The demand notice was yet to be settled with the Central Excise Authorities.

1.7 Conclusion

Commercial publicity from exploitation of railway assets is generally considered to be a rich source for augmenting total earnings of the railways considering that some of these assets are located in busy thoroughfares and city hubs. However keen the Ministry was in realizing the potential, it failed to ensure that a proper assessment of the demand potential was conducted by the Zonal Railways involving external agencies and market experts. Moreover, the targets were

entirely driven by the Ministry and the budget estimates submitted by the Zonal Railways did not reflect estimated earnings on this account. Due to lack of active involvement and commitment, the Zonal Railways failed to develop a strategic focus for preparing the Master Plan for effective exploitation of identified assets/media. The lack of knowledge of the market potential resulted in low response to advertising tenders floated by the Zonal Railways.

Furthermore, there was indifferent compliance of contract management in terms of poor record maintenance in respect of contracts awarded and execution of agreements involving high risk of recoverability of outstanding licence fees from the contractors. Deficient record management and lack of vigilance also encouraged unauthorized/illegal displays of hoardings.

In view of the considerable potential through commercial publicity for augmenting total earnings of the Indian Railways, the Ministry needs to seek more active involvement of the Zonal Railways in exploiting the railway assets to the optimum level. In order to ensure better accountability, it is desirable to provide for specific budget head for earnings from commercial publicity so that the Zonal Railways are held responsible for earnings estimates projection as well as performance delivery.

Chapter 2 – Engineering – Open Line and Construction

The Engineering department of Indian Railways has two distinct organizations, namely Open Line and Construction. While the Open Line is responsible for maintenance of all fixed assets of Indian Railways, i.e. Tracks, Bridges, Buildings, Roads, Water supply etc., the Construction Organization is responsible for construction of new assets such as New lines, Gauge conversion, doubling and other expansion and developmental works in Railways.

At the Railway Board level, the engineering department is headed by Member Engineering. Major policy decisions are taken at the Railway Board level who is assisted by Additional Member (civil engineering) and Additional Member (works).

At the Zonal level, the department is headed by Principal Chief Engineer (PCE) who is assisted by various chief engineers for tracks, bridges, planning, track machines, general matters etc. In addition, each Zonal Railway has a construction unit headed by a Chief Administrative Officer who is responsible for major construction works such as new lines, doubling, gauge conversions etc., and is assisted by various chief engineers (construction).

Each Zone is divided into four to seven Divisions each, with an average track length of about 1000 km and staff strength of about 15000 headed overall by a Divisional Railway Manager. The Divisions are basic units for execution of works. At this level, the Engineering department is headed by Senior Divisional Engineer.

The responsibility of thematic study on implementation of line capacity augmentation works on High Density Network (HDN) routes was undertaken with the objective to evaluate the extent of integration achieved in planning and selection of line capacity augmentation works on the identified routes vis-à-vis economy, efficiency and effectiveness in project implementation. The responsibility of implementing this project devolved on Engineering – Open Line and Construction departments.

For this study, audit examined capacity augmentation on three HDN routes [HDN 2 – Mumbai-Howrah, HDN 5 – New Delhi–Chennai and HDN 7 – Mumbai–Chennai] besides Delhi-Mathura portion of HDN 3 and covered 162 works including 42 works that were included in the Blue Print. The records maintained in the Railway Board, Zonal Railways/ Construction Organizations concerned, RVNL and their offices where the projects were under implementation were examined for assessment and evaluation of overall planning and co-ordination issues both within the Zonal Railway and across the zones.

This chapter contains the audit findings of the above thematic study.

Implementation of line capacity augmentation works on High Density Network (HDN) routes 2, 5 & 7 (including part of HDN 3: New Delhi-Mathura Jn. section)

Executive Summary

The XI Five Year Plan for Indian Railway had projected an ambitious freight target of 1110 million tonnes by 2011-12 against 726 million tonnes at the end of X five year Plan (2006-07). Pronounced congestion on certain routes carrying bulk traffic became a regular feature. Railway Board identified seven such High Density Network (HDN) routes connecting four metro cities, their diagonals and Delhi- Guwahati and adopted an action plan titled 'Blue Print' in 2007-08 to execute line capacity augmentation works for achieving enhanced throughput. This document proposed to take up 124 works on seven HDN routes and complete them on priority. This included clear priority in terms of providing administrative sanctions and allotment of requisite funds over a definite time period for project completion. To implement this project, a paradigm shift in planning was required; from routine piece-meal sectional approach to a route wise approach. This would up-grade the throughput capacity along the entire HDN route besides elimination of bottlenecks for optimum utilisation of rolling stocks and maximising the returns on the investments.

Audit conducted during 2012-13, a sample study of progress of implementation of line capacity augmentation works identified in the Blue Print or otherwise on three HDN routes. These routes were selected in view of their importance in transporting bulk freight including coal, steel, iron ore etc i.e., HDN 2 (including 2A & 2B), HDN 5 (including part of HDN 3: NDLS-MTJ section) and HDN 7 (including 7A) for the period April 2007 to March 2012 with the following important audit findings.

- The Blue Print did not comprehensively cover all the line capacity augmentation works on HDN routes for priority execution and required up-dation through feedback from the Zonal Railways. However, no further revisions to the Blue Print were made. **(Para 2.5.1.1)**
- Despite the emphasis laid in the Policy document on end-to-end completion for achieving enhanced throughput, absence of integrated approach was observed in identification, sanctioning and execution of the works. There was no policy in place to prioritize/fast track sanction of line capacity augmentation works on HDN routes as these works were proposed by the Railway Administration like any other work and no priority in sanction and funding was accorded by the Railway Board. **(Para 2.5.1.2)**
- Gaps and missing links on HDN routes, continued to exist with regards to provision of double line, Railway Electrification and Automatic Block Signalling (ABS) due to non-adoption of integrated approach in identification, planning and execution of the works. Though the installation of ABS has been considered important for increasing the throughput on parts of

golden quadrilateral routes, most of the portion of HDN routes had not been identified for its installation. **(Para 2.5.1.3)**.

- Slow progress of works was accompanied by huge surrenders/ diversions of funds. **(Paras 2.6.2, 2.6.3.1 and 2.6.3.2).**
- The congestion of traffic during entry in Delhi region could not be eased as line capacity augmentation works for the provision of fourth, fifth and sixth lines in identified portions on busy Delhi- Palwal section remained incomplete, due to change in executing agencies, change in scope of works and other site problems. **(Para 2.7.2.3)**
- Absence of an integrated approach in planning for project implementation across the Zonal Railways, resulted in time over runs leading to non-accrual of anticipated benefits of ₹ 921.17 crore and huge cost overruns of ₹1985.71 crore **(Para 2.7.1)**
- Similar works either executed or in the process of execution by RVNL and the Zonal Railways, were sanctioned during the same period with variation in rates. Further, the rates of certain works were higher as compared to the rates of works sanctioned subsequently, resulting in additional financial liability of ₹243.41 crore **(Para 2.8)**.

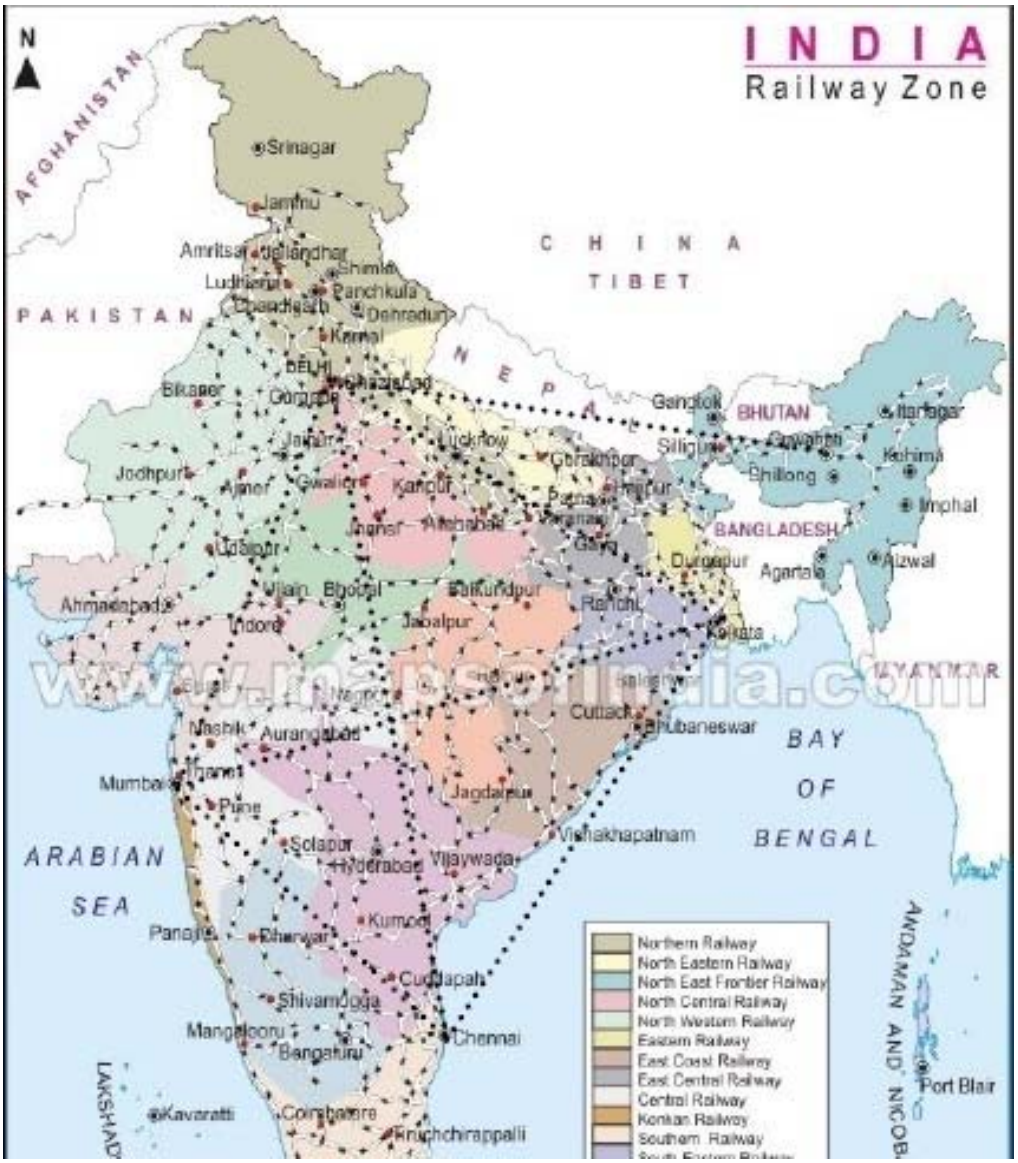
2.1 Introduction

The Indian Railway network comprising 64,460 Kms through the length and breadth of the country is the predominant mode of transportation for long-distance passenger traffic and bulk freight. A common rail track is used for both passenger and freight traffic. With increase in passenger and freight traffic over the recent years, the rail network has experienced severe capacity constraints. The major hub of activity, namely the Golden Quadrilateral and its diagonals connecting the major metros – Mumbai, Delhi, Chennai and Kolkata constitute merely 25 per cent of the total network; but carry around 70 per cent of total freight resulting in consequent over-saturation in levels of capacity utilisation in a number of stretches. In a number of cases, the sections are single line, some non-electrified, others not fit to carry freight of higher loads and already congested requiring additional build- up of capacity. There were a number of critical bottlenecks which constrained further growth of traffic. Non-uniformity of the network prevents optimum utilisation of the same.

The Eleventh Five Year Plan (2007-12) accorded high priority to significant capacity creation not only in terms of building exclusive freight corridors but also through low-cost capacity additions by adopting a route-wise planning for overcoming capacity constraints. For the first time, route-wise planning was emphasised over piece-meal, section-wise approach. This required a paradigm shift in both the planning and implementation of the projects.

In order to handle the anticipated freight projections of over 1100 million tonnes, Railway Board drew an Action Plan titled 'Blue Print' (2007-08) for seven High Density Network (HDN) routes that also incorporated critical sections of coal, iron ore routes, linkages between sources of raw material and steel plants, connectivity with ports for container traffic as well as for facilitating high speed

passenger travel. These seven HDN routes included all the four routes of Golden Quadrilateral and their diagonals, high density feeder/ alternate routes and also Delhi-Guwahati Trunk route. These are illustrated in the map below:-



The Action Plan thus identified 124 line capacity augmentation works at an estimated cost of ₹14,184.77 crore to be completed on priority. While directing the Railway Board to finalize the 'Blue Print', the Minister of Railways had mandated (May 2007) that

(i) all these works be sanctioned either in the supplementary budgets (2007-08) or latest by the main budget for 2008-09; and

(ii) necessary throughput enhancement works be identified in an integrated manner using a route-wise approach, rather than a piece-meal approach to derive maximum benefits.

2.2 Audit objectives

Apart from Zonal Railways, Rail Vikas Nigam Ltd (RVNL), a Special Purpose Vehicle constituted under the Companies' Act (January 2003) was also responsible for the execution of a number of line capacity augmentation works. These works were entrusted to RVNL as a part of National Rail Vikas Yojana (NRVY) and the Company was mandated to raise their own resources for project development and completion. An earlier Audit Report (Report of the Comptroller and Auditor General of India -Union Government- Railways- No.34 of 2010-11), had highlighted inter-alia, that the original mandate of RVNL had not been fulfilled as the basket of projects transferred to RVNL kept changing and included non-bankable projects and the Company was largely dependent on the Ministry for project funding, thereby resulting in a paradox of competing for scarce resources. Action taken by the Ministry had not adequately addressed the issue of project implementation.

In the above context, Audit conducted a study (2012-13) to evaluate the following

- Extent of integration achieved in planning and selection of line capacity augmentation works on the identified routes;
- Economy, efficiency and effectiveness in project implementation;
- Co-ordination among Railway Board, Zonal Railways and RVNL in prioritization, execution and monitoring of works on HDN routes.

2.3 Scope and methodology

Audit selected the following three HDN routes in view of their importance in terms of both passenger traffic and bulk freight including Coal, Steel and Iron Ore, with the principal focus on study of line augmentation works. These pertained to gauge conversion, doubling, additional lines, railway electrification, automatic signaling and traffic facility works.

- HDN 2 – Mumbai-Howrah along with the link route of Bilaspur-Anuppur, Katni-Bina-Kota and Jalgaon- Surat involving CR, SECR, SER, WCR and WR;
- HDN 5 – New Delhi–Chennai via Mathura Junction-Jhansi-Bhopal-Itarsi-Nagpur-Ballharshah involving NR, NCR, WCR, CR, SCR and SR. New Delhi-Mathura Junction section of HDN route 3 of the Railways is also a part of HDN5 and hence included in the study in view of its critical link; and
- HDN 7 – Mumbai–Chennai along with link route of Guntakal-Hospet-Hubli-Vasco involving CR, SCR, SR and SWR.

The records maintained in the Railway Board, Zonal Railways/ Construction Organizations concerned, RVNL and their offices where the projects were under implementation were examined for assessment and evaluation of overall planning and co-ordination issues both within the Zonal Railway and across the zones. The selected routes were studied by Audit on an end-to-end basis in terms of their existing features, the proposed works and missing links, if any. The Audit assessment also focused on the comparative efficiencies achieved in project implementation by the Zonal Railways and RVNL.

The study covered a five year period from 2007-08 to 2011-12.

2.4 Sample Size

The sample study in respect of the three routes selected covered all identified works in the Blue Print and overall 162 works were audited as below:

SNo.	Category of works	Sample Size	No of works
1	Works identified in the Blue Print	100%	42
2	Works mentioned as Sanctioned and in progress in the Blue Print	Estimated cost -₹5 crore and above	39
3	Works under sections identified for Systemic Capacity augmentation in the Blue Print	Estimated cost -₹5 crore and above	09
4	Works (other than identified in the Blue Print) in progress as on 01.04.2007 and sanctioned during 01.04.2007 and 31.03.2012	Estimated cost -₹5 crore and above	72

2.5 Audit findings

2.5.1 Project Planning

The construction on HDN routes required a paradigm shift in both the planning process and execution of works from the routine sectional, piece-meal approach of Indian Railways to an integrated route-wise approach. This would up-grade throughput capacity along the entire route and eliminate bottlenecks and would thus maximise returns on the investments undertaken. The Blue Print had visualised that the works identified would yield not only benefits during the XI Plan but also beyond. This included clear priority in terms of providing administrative sanctions and allotment of requisite funds over a definite time period for project completion.

Minister of Railways (MR) instructed in November 2007 that Railway Board should try to take up all the works included in the Blue Print in the Works Programme of 2008-09 in one go and funds should not be allowed to become a constraint for sanction and execution of these projects. As a follow up, the Chairman Railway Board directed General Managers of the Zonal Railways (November 2007) to ensure the inclusion of all the 124 works in the Works Programme of 2008-09 itself duly prioritising 49 works as high priority, 26 works as medium and nine works as long term. No prioritisation was done in respect of 31 works while nine other works were deferred.

Audit observed that as of January 2008 proposals for inclusion in Preliminary Works Programme for the year 2008-09 were received in Railway Board in respect of only 24 out of 124 works. Even out of 49 high prioritised works, proposals were received only for 13 works.

Audit observed (2012-13) that in respect of selected HDN 2,5 &7 routes (including part of HDN 3 –Delhi-Mathura Jn. section) the pace of inclusion of Blue Print works in works programmes had not shown much improvement even

by March ended 2012. Out of 42 Blue Print works, proposals for 11 works had yet to be received including six high priority tagged works.

2.5.1.1 Blue Print- Completeness

A total and comprehensive approach required complete integration of all related augmentation works during planning and project execution. However, it was observed in Audit that-

a) The 124 works identified in the Blue Print included works pertaining to systemic capacity augmentation of feeder routes also. Audit observed that in these 124 works, line capacity augmentation works pertaining to all identified feeder routes were not included. It is not clear whether all the identified feeder routes were considered for inclusion of works in the Blue Print or not.

b) As many as 105 line capacity augmentation works were sanctioned by the Railway Board during 2007-08 to 2011-12 on the 10 Zonal Railways involved in selected HDN routes. None of these were included in the Blue Print. This indicated that the Blue Print was incomplete.

c) Work-wise targets for completion were not fixed for works included in the Blue Print and was indicative of poor project management.

d) The Blue Print indicated that 40 sections were fit to carry 25 T axle load. However, an analysis by Audit revealed that the assessment was incorrect as none of these sections were fit to carry 25 T axle load as shown below:

HDN route	No of sections	Blue print status	Actual status
2	20	Fit to carry 25T axle load	Fit to carry 20T to 22.32T
7	20	Fit to carry 25T axle load	Fit to carry 20.55T to 22.86T

e) Contrary to the indication in the document, no attempts were made to update the Blue Print through further feedback from the Zonal Railways (March 2012).

As such, the Blue Print adopted by the Railway Board was not complete in all respects and was also based on some incorrect assessments.

2.5.1.2 Level of priority

All the works included in the Blue Print deserved high priority in terms of planning for execution and monitoring. Audit observed (2012-13) that the overall sense of priority allocated to the works on HDN routes was unexceptional.

(i) A macro analysis of the position of line capacity augmentation works either in progress as on 1 April 2007 or sanctioned thereafter during 1 April 2007 to 31 March 2012 on ten Zonal Railways (CR, NCR, NR, SCR, SER, SECR, SR, SWR, WCR and WR) related to the selected HDN routes revealed the following:-

Works	Works in Progress as on 01.04.2007 & sanctioned during 01.04.2007 to 31.03.2012			Works sanctioned on HDN Routes			% of works on HDN Routes w.r.t. total Works on the Zones		
	No. of works	Track length (in kilo metres)	Anticipated Cost (₹ in crore)	No. of works	Track length (in kilo metres)	Anticipated Cost (₹ in crore)	No. of works	Track length (in kilo metres)	Anticipated Cost (₹ in crore)
Gauge Conversion (GC)	48	9591.71	18477.73	4	1328.86	1486.51	8.33	13.85	8.04
Doubling/Multiple Lines (DL/ML)	138	5986.08	22934.03	62	3039.35	14507.48	44.93	50.77	63.26
Railway Electrification (RE)	21	4192.05	3888.84	8	1778.4	1533.38	38.10	42.42	39.43
Traffic facility	760		5830.84	302		2831.89	39.74		48.57
Grand Total	**967**		**51131.44**	**376**		**20359.26**	**38.88**		**39.81**

The above table indicates that the overall share of HDN works vis-à-vis total works both in terms of number and sanctioned cost accounted for less than 40 per cent of works sanctioned/ in progress. Also, the total average track lengths covered by these works was approximately 36 per cent. However, in relative terms, a significantly higher share was accounted for by works under DL/ML (50 per cent) followed by RE (42 per cent) and traffic works (40 per cent approx.). Considering the fact that significant throughput enhancement was expected to be achieved by decongestion of the saturated sections of HDN routes that carried 70 per cent of total freight, there was substantial scope for higher levels of investment and resource allocation as between the HDN routes versus rest of the works.

(ii) As many as 42 works identified in the Blue Print pertained to the selected HDN routes. Out of these, 17 works were sanctioned in time by the Railway Board. Nine works were sanctioned belatedly after a lapse of one to three years (HDN 2-Four, HDN 5-Three and HDN 7-Two works) though these were proposed by the Zonal Railways by 2008-09 with the exception of one work proposed during 2009-10. **(Annexure IV)**

Proposals for three works [10] had been submitted by the Zones in 2008-09, 2009-10 and 2010-11 respectively, Railway Board's sanction was awaited (March 2012). Two works[11] had been sanctioned partially. The reasons for not sanctioning the works/ partial sanction were not available on record. Further, 11 works had not yet been proposed for sanction by the zones (March 2012). **(Annexure V)**

(iii) Keeping in consideration their operational requirements, 10 Zonal Railways related to the selected three HDN routes had identified 76 additional line

[10] Ballharshah-Vojayawada 3rd line remaining portion (HDN5-SCR), Wardha-Nagpur 3rd line (HDN2-CR) and Grade Separator at BINA (HDN5-WCR)
[11] Goelkera-Sini 3rd line(HDN2- SER) and Manmad- Bhusawal 3rd line (HDN2-CR)

capacity augmentation works on HDN routes. They proposed them (2003-04 to 2011-12) for the sanction of Railway Board. These works (anticipated cost- ₹ 1316.77 crore) had not been sanctioned by the Railway Board (March 2012). Reasons thereof were not available on the records of the Zonal Railways. (**Annexure VI**)

(iv) During 2007-08 to 2011-12, 4,504.13 RKMs of Gauge Conversions, 1,691.31 RKMs of Double Line/Multiple Line, 1,162.70 RKMs of Railway Electrification as a whole, were completed by ten Zonal Railways. However, within this, the overall share of completed works on HDN routes was only 42 per cent. The completion of traffic facility works on HDN routes was marginally higher as out of 485 Traffic facility works, 217 works (44.74 per cent) were completed.

Thus, there was no policy in place to prioritize/fast track sanction of line capacity augmentation works on HDN routes. All the works on these routes included in the Blue Print or otherwise were proposed by the concerned Zonal Railway authorities like any other work and no priority in sanction and funding was accorded. The progress of these works was monitored by Zonal Railways on par with other works.

Railway Board accepted (January 2013) that the process and procedure for identification and proposing the work is the same for priority works or otherwise and no separate criteria is adopted for works on HDN routes. There is a large shelf of pending projects and due to high throw forward and very meagre funds availability for completion of the already sanctioned projects, all proposals can not be sanctioned.

Above contention is not acceptable as the line capacity augmentation works identified in the Blue Print were for a very specific purpose and thus, required separate attention. Further, MR had already directed to take up all the works in one go and not allow funds to become a constraint for the sanction and execution of these works. In fact, the overall progress of works executed on HDN routes was not commensurate with the original sense of purpose underlying the scheme and left much scope for a more focused management approach. Thus, Indian Railway failed to implement the paradigm shift in planning and to implement an integrated route approach required for a multiplier increase in throughput capacity.

2.5.1.3 Lack of integration- Missing links

The Standing Committee on Railways, in its 16th Report (2005-06), had recommended that Railways should identify areas and connect all the missing links of Gauge Conversion, Double Line, Electrification and Signalling works for achieving greater throughput in passenger and freight delivery. The Blue Print had mandated that an integrated approach route-wise should be adopted for identifying necessary throughput enhancement works on HDN routes for maximum benefits rather than piece-meal sectional approach. The Blue Print had at the same time cautioned that the works identified were not exhaustive and the gaps left out would be covered through further deliberations. Audit observed that

a few of the missing links over the HDN routes were identified by the Railways subsequently, but many were left uncovered.

(i) Missing links due to non-identification of sections

To enhance throughput, HDN routes required availability of certain minimum infrastructure on the entire track. The minimum infrastructure required has been identified as follows:-

- Double line on the entire HDN route;
- Electrification of the entire tracks; and
- Automatic Block Signalling (ABS).[12]

Further, in case a section already has double line or triple line track and its overall line capacity has been saturated, the minimum requirement for line capacity augmentation would be the provision of an additional line along the existing tracks and stations.

An examination of the selected HDN routes indicated that there were number of sections that had not yet been identified for the provisions of all these features and there were missing links/gaps. The missing links on the HDN routes is discussed below:-

- **HDN route No.2 (with 2A and 2B)-** The track length of the HDN2 route is 3162.40 RKMs. It was seen that the total route length was already electrified. Further, most of the track consisted of a double time except for 703.90 RKMs and had been identified for provision of a double line. This would provide a double line on the entire route length easing congestion. However, installation of ABS was awaited on 2916.01 RKMs. Out of this, only 274.73 RKMs (9.42 per cent) had been identified for installations of ABS.

- **HDN route No. 5-** The track length of the HDN5 is 2185.53 RKMs. It was seen that the total route length was already electrified and there was no single line section on the entire route. However, ABS had been installed on 243.69 RKMs (11.15 per cent) only and out of remaining 1941.84 RKMs, 478.63 RKMs (24.65 per cent) were identified for ABS.

[12] In ABS, the signals are automated and operate in conjunction with track circuiting or other means of detecting the presence of a train in a block section. When a train enters a block section, the stop signal protecting that block changes automatically to on or the stop aspect. As the train moves ahead out of that block, the signal aspect changes automatically to caution. This is an advanced system in comparison to Absolute Block Working, widely used on Indian Railways for ordinary train routes. In this system, the track is considered to have a series of sections and if a train is occupying track in a section (block section), no other train is allowed to enter that section. Further, no train can enter an empty block section with out first securing permission of the station in advance.

- **HDN 7 route (with 7A)-** The route length of HDN7 (with 7A) is 1679.09 RKMs. The single line sections on this route measuring 614.29 RKMs had been identified for providing double lijne. However, only 382.34 RKMs (22.77 per cent) had been electrified. Out of remaining 1296.75 RKMs, 455.57 RKMs[13] (35.13 per cent) have not been identified for Railway Electrification. Further, installation of ABS was awaited on 1564.61 RKMs, out of which only 65 RKMs (4.15 per cent) had been identified for installation of ABS.

The details of sections not identified for the installation of ABS on these HDN routes are available in **Annexure VII.**

The above analysis indicates that the line capacity augmentation works required for throughput enhancement on the HDN routes were not identified in an integrated manner using a route-wise approach as envisaged in the Blue Print. The gaps left out in the Blue Print were not covered through further deliberations with Zonal Railways. Further, lowest priority was given to installation of ABS.

It was observed that Railway Board had decided (September 2005) that as a general policy, only C routes (sub-urban sections) would be provided with automatic block signalling and no further work of auto-signalling would be taken up as it may clash with an existing technology. The Blue Print had identified limited number of sections consisting of three sections (264.80 RKMs) on HDN2 and three sections (54.67 RKMs) on HDN5 in non-suburban sections for installation of ABS. The work for one section (134.90 RKMS) on HDN2 was frozen by the Railway Board, two works (107.57RKMs) were progressing and three works (57 RKMs) not proposed by the Zonal Railways for inclusion in Annual Preliminary Works Programme for sanction.

The Blue Print emphasised installation of ABS on the HDN routes. Railway Board however, failed to review its policy framed in 2005, after approval of the 'Blue Print' (2007-08). Installation of ABS is important as it leads to increase in throughput on the same track. In fact, a study and research work by a retired Railway Engineer has indicated that provision of ABS is the best interim solution on parts of golden quadrilateral routes as usually more than two trains can be pushed into this system at any stage of time against only one under existing Absolute Block System of working, without loss of speed. This results in practically doubling the track capacity. The system can be provided on single as well as on double line section.[14] Thus, the reasons for Railway Board's policy for restricting installation of Automatic Block Signalling (ABS) to suburban routes only is not clear, especially as installation of ABS leads to increase in throughput on the same track.

Thus, the existing policy decision in regard to non-suburban routes required a fresh review. However, there was no evidence of the same having been conducted especially in relation to HDN routes. This resulted in a sub-optimal approach of excluding a large proportion of the absolute block working sections

[13] (SC Railway- GTL-BAY- 48.54 RKMs and SW Railway- BAY-HPT-407.03 RKMs)
[14] Source- Indian Railway Signal Engineering (volume IV) by Shri Pramod P. Goel, Former DyCSTE/ CORE

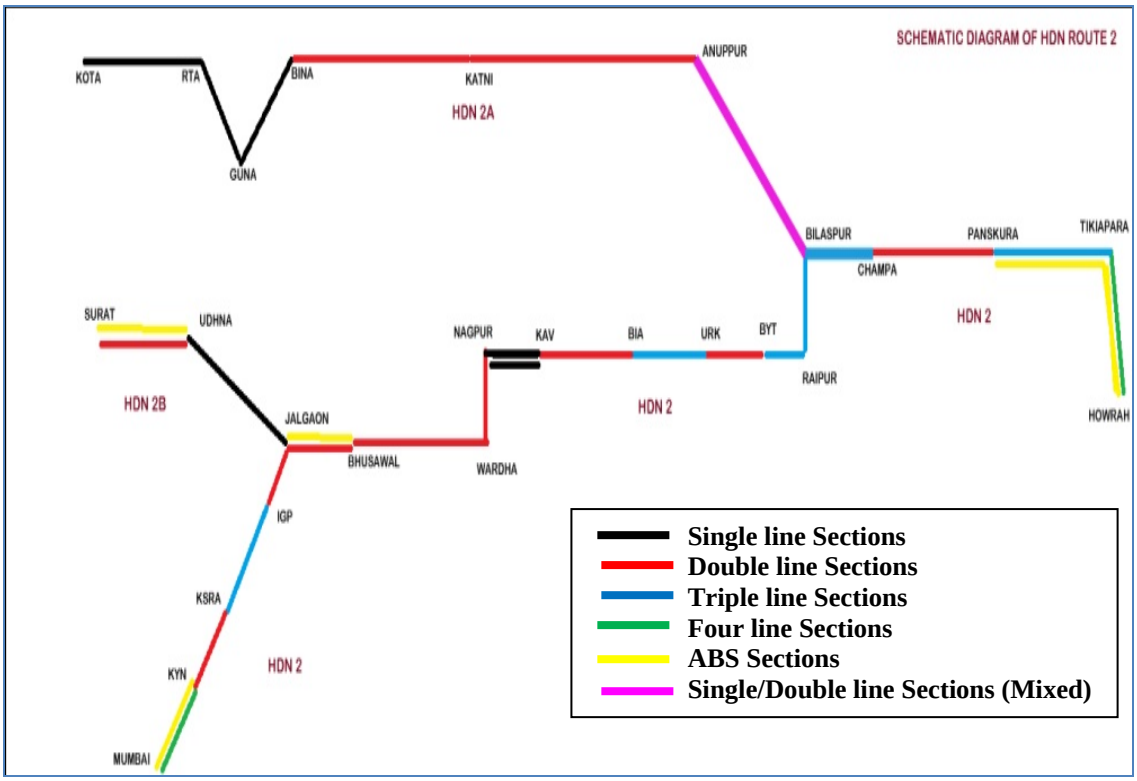
from being automated/continuous auto-signalling. This is likely to have an adverse impact on safety and line capacity.

(ii) Non-elimination of missing links due to slow and varying progress of works

Audit observed that in the sections identified for carrying out different types of line capacity augmentation works, either the works had not been started or those were progressing slowly/ unequal pace (March 2012) resulting in non-elimination of missing links. HDN route wise position is illustrated as under:

HDN route No.2 (with 2A and 2B) – Non-commencement/slow progress of double/ triple line works

HDN route No.2 (with 2A and 2B) consists of Mumbai- Howrah main route (HDN2) and two link routes viz. Bilaspur- Anuppur- Katni-Bina-Kota (HDN2A) and Jalgaon-Surat (HDN2B). The total route length of these routes is 3162.40 RKMs. This route is very important for coal traffic. The schematic diagram of HDN route 2 including 2A and 2B is given below:



From the schematic diagram it is observed that there are large sections where works providing double and third lines were in progress. It was observed that

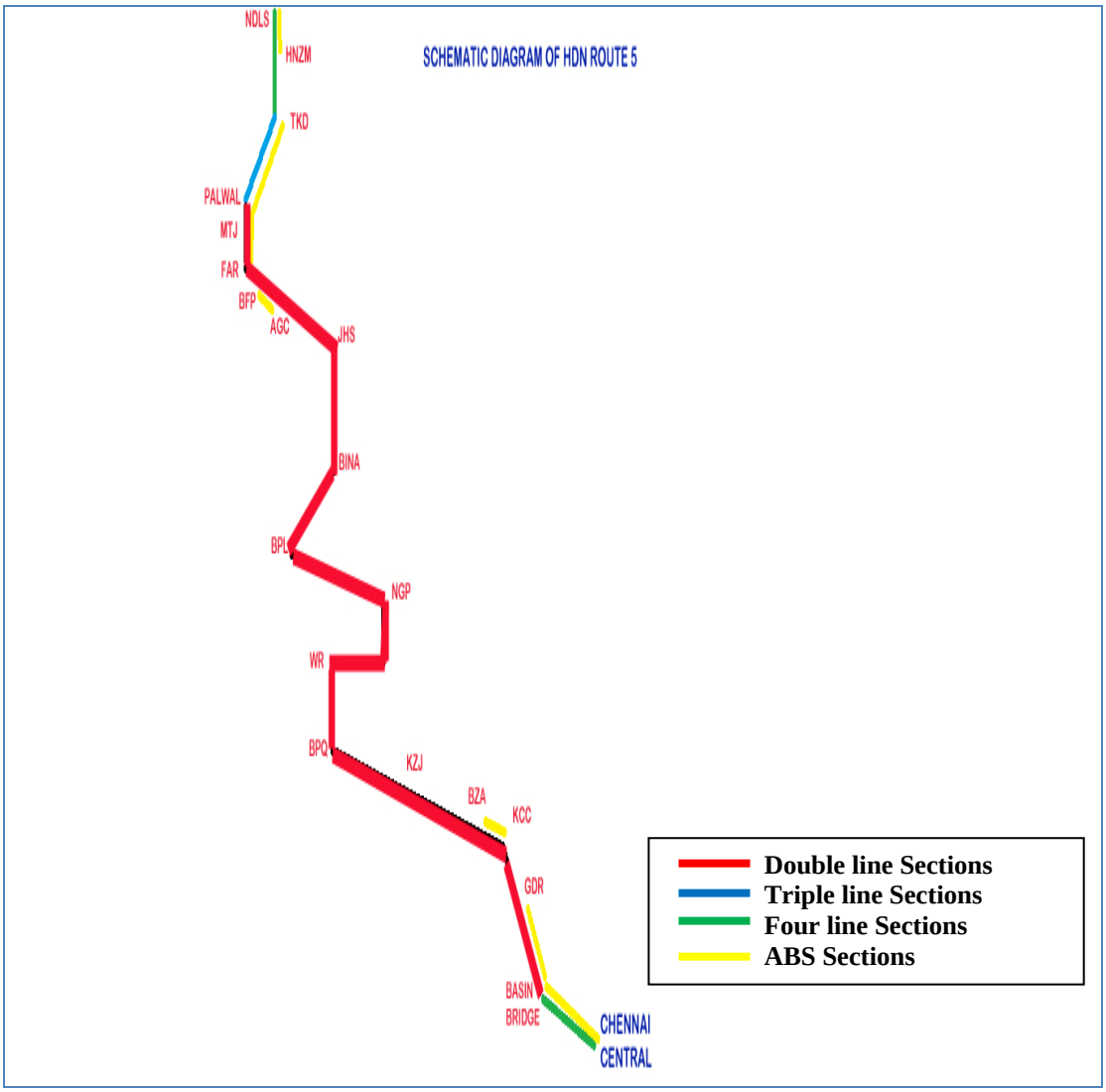
- On WR, the progress of doubling work between Udhana- Jalgaon was 19 per cent only.

- On CR, work for the construction of third line had not been started in 330 Kms long sections viz Kalyan-Kasara-67 Kms, Manmad- Bhusawal- 184 Kms and Wardha- Nagpur-78 Kms).
- On WCR, doubling work in Bina –Kota section (282.60 Kms) had not started and the progress of doubling work in another single line section Guna – Ruthiyal (20.47 Kms) was two percent only.
- On WCR, the work for the construction of third line between Bina- Katni was at initial stage only as Preliminary Engineering cum traffic survey was in progress.
- On SECR, doubling work had progressed in 87.60 RKMs long portion. The progress of Salaka Road- Khongsara work was 39 per cent and of Khodri-Anuppur, progress was 47per cent.
- On SECR, works for the provision of third line in 474.70 RKMs long portion were progressing at uneven pace. Whereas the work in Rajnandgaon–Gondia-Nagpur (234 RKMs) section had not started, the progress in other three portions was Jharsuguda–Champa (151.70 RKMs)- 10 per cent, Bhatapara–Urkura (58.20 RKMs)- 86 per cent and Durg–Rajnandgaon (30.80 RKMs)-10.5 per cent respectively.
- On SECR, Durg-Gondia (134.9 RKMs) and Bhilai- Urkura (29.00 RKMs) were identified for Auto Signaling in the Blue Print. Durg-Gondia work sanctioned in 2008-09 had been frozen in September 2009. Zonal Railway Administration had not proposed the work for Bhilai- Urkura section. However, the work in Gondia-Nagpur section (129.90 RKMs) sanctioned in 2007-08 was still in progress (25 per cent).
- On SER, the works for the provision of third line in 94.10 RKMs long portion were progressing unevenly (Rajakharswan- Sini -15.00 RKMs-35 per cent, Sini-Adityapur-16.00 RKMs-15 per cent, Kharagpur-Panskura -44.70 RKMs-85 per cent and Manoharpur-Goelkara -34.10 RKMs-48 per cent).

It may be seen that the works for providing double lines and triple lines had either not been started or were progressing very slowly. Thus, despite substantial investment, the benefit of this investment would not be made due to lack of prioritisation and synchronisation in implementation.

HDN route No.5 – Slow progress of third line works

HDN route No.5 consists of Delhi-Chennai via Jhansi-Bhopal-Itarasi-Nagpur-Ballarshah. The Delhi- Mathura section falling on this route is also a part of HDN route No3. This common portion has been included in HDN3 in the Blue Print. The HDN route No.5 is important for steel traffic. The total track length of this HDN route is 2185.53 RKMs. The schematic diagram of HDN 5 route is as under:



From the schematic diagram it may be seen that the entire route is at least double line and some portion also have triple/ four line sections. This indicates that that entire route carries very high density traffic. Works to provide third line were being implemented to enhance the line capacity of the route. However, the following was observed:-

- Delhi- Palwal section of NR, a part of HDN3 route has three lines. The work for providing third line in Palwal- Bhuteshwar section (83.40 RKMs) falling on NCR was progressing slowly and the progress was 70 per cent.
- On WCR, sections measuring 230.03 RKMs had been identified for the provision of third line. The work in Bina – Bhopal (143 RKMs) was progressing (45 per cent), work for Budhni- Barkheda (33.00 RKMs) had not yet been commenced and work in remaining two sections viz Bhopal-Barkheda and Budhani- Itarsi (total 54.03 RKMs) were sanctioned in 2012-13 only.
- On SCR, out of three sections (Ballharshah- Kazipet, Kazipet-Vijayawada and Vijayawada-Gudur) identified for provision of third line (total 757.35

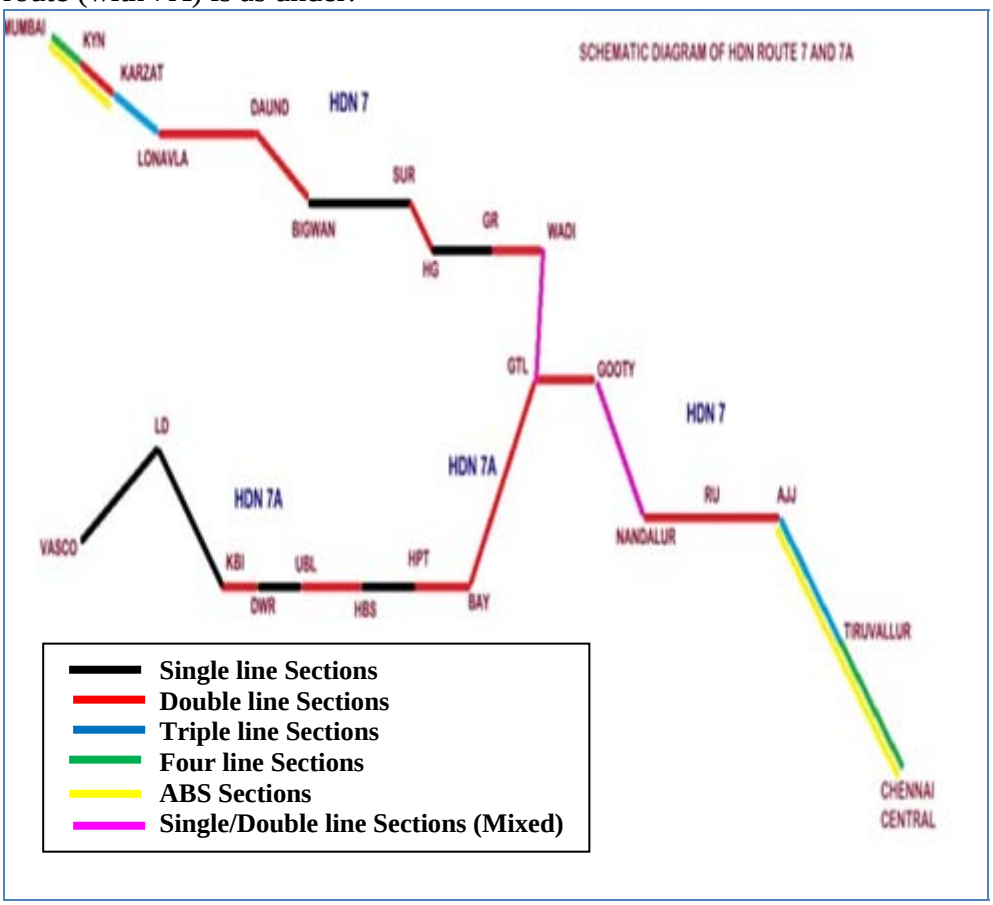
RKMs), work for only 28.84 RKMs long portion (Raghavapuram-Mandmarri-24.47 RKMs and Mancheryal- Peddampethad-4.30 RKMs) had been sanctioned and the progress of the work was 25 per cent only.

- On SR, whereas the progress of work for the provision of third line between Attipattu- Korukupet (17.95 RKMs) was 83 per cent, the work between Chennai Beach- Korukkupet (4.10 RKMs) had not yet been started.
- Three sections measuring 407.76 RKMs had been identified for the provision of ABS in NCR. However, work had not been taken up on any of these sections.

It may be seen that a major portion of double line track has not been considered as yet for the provision of third line and wherever these works had been sanctioned, there were progressing slowly thereby not easing the problems of capacity constraints.

HDN route No.7 (with 7A) – Non-commencement/ slow progress of double line works and Railway Electriciation

HDN route No. 7 (with 7A) consists of Mumbai- Chennai main route (HDN7) and link route Guntakal-Hospet-Hubli-Vasco i.e. iron ore circuit (No.7A).This route is important for iron ore traffic and for providing Port connectivity. The track length of the route is 1679.09 RKMs. The schematic diagram of HDN 7 route (with 7A) is as under:



From the schematic diagram it may be seen that there are many single line segments requiring the provision of double line for capacity augmentation. In addition there were certain patches of mixed sections (single / double line) resulting in bottlenecks along the route. It was observed that:

- On CR, two single line sections viz Bhigawan – Mohal (127 RKMs) and Hotgi- Gulbarga (98 RKMs) had been identified for the provision of double line. However, work had not yet been started in any of the section.
- On SWR, the entire section of Hospet-Vasco (308.15 RKMs) had been sanctioned for the provision of double line. The work has been assigned to RVNL. Zonal Railway has completed patch doubling of 43.85 KMs as their own and actual work was yet to started by the RVNL.
- Seven sections on CR measuring 414.57 RKMs and two adjacent sections on SCR measuring 426.61 RKMs had been identified for Railway Electrification. Though the progress of work in Renigunta-Guntakal section (308 RKMs) of SCR was 48 per cent, the work had not started in remaining section (118.61 RKMs) of SCR and adjacent seven sections of CR.

It may be seen from the above that doubling works were either not started or were progressing very slowly. The Railway Electrification works had also not been started in a major portion of the route. It is pertinent to mention that although HDN7A is an important route as it is associated with iron ore traffic and provides Port connectivity, it has not been identified (March 2012) for Railway Electrification and installation of ABS. Double line track is also not available on the entire link route.

The above analysis conducted in respect of selected HDN routes clearly indicated that the planning process was weak. The Indian Railways had not been able to modify their planning process from a piece-meal sectional approach to an integrated route-wise approach. No prioritisation was carried out of the sanctioned works to focus scarce resources on sections which would remove bottlenecks on the routes or connected important sections for transporting freight. For instance, Port connectivity works and iron ore routes were not given importance. This coupled with large gaps in the identification of creation of minimum requirements of double line, Railway Electrification and Automatic Block Signalling led to very slow augmentation of line capacity on the High Density Network routes.

2.5.1.4 Load bearing capacity

As part of capacity enhancement measures, the XI Plan had also proposed that tracks on iron ore routes would be suitably strengthened for carrying 25 T Axle loads. The planners excluded these works from the purview of the Blue Print as a separate exercise was being done for the purpose.

Audit observed (2012-13) that out of 115 [15] sections covering 7027.03 RKMs, 38 [16] sections spread over 1223.93 RKMs were identified outside of the Blue Print

[15] HDN 2 – 55 Sections (3162.41 RKMs), HDN 3 & 5 – 25 Sections (2185.53 RKMs) and HDN 7 – 35 Sections (1679.09 RKMs)

for strengthening of carrying capacity to 25T Axle Load. However, only three sections involving 42 RKMs were augmented for carrying 25T Axle Load (SER under HDN 2) as on 31 March 2012. Further, out of 15 sections identified on HDN 7 route (SR and SWR) for augmentation of load bearing capacity, condonation of the Commissioner of Railway Safety (CRS) was awaited (March 2012) in respect of seven sections of SR where bridges were not fit to carry 25T Axle Load. The reasons for exclusion of bridges that formed part of sections identified for augmentation process were not on record. In the balance eight sections of SWR though the augmentation works had been completed, CRS sanction was awaited (March 2012).

The above analysis clearly reflects that inadequate efforts were made towards integration of various work components to secure maximum advantage as envisaged in the original strategy.

2.5.1.5 Systemic Capacity Augmentation over feeder routes

Audit studied feeder routes of selected three HDN routes that were prioritized in the Blue Print for systemic capacity augmentation and were not covered in the main HDN route. It was observed that:-

- On HDN 2 and 2A, there were four feeder route sections (53 sub-sections-total length 701.55 RKMs)[17] that required systemic capacity augmentation works. Out of these sub-sections, capacity augmentation works were not identified in six sub-sections measuring 46.12 RKMs.
- Out of ten line capacity augmentation works identified on 47 sub-sections, three works had not yet been started, one work had been completed and remaining six works were in various stages of progress as given below:-

Rly	Section	Name of the work	Year of sanction	Physical progress in %
SER	Dumitra-Champajharan	Dumitra-Champajharan Doubling. (19 Kms)	2007-08	90
SER	Champajharan -Bimalgarh	Champajharan -Bimalgarh Doubling. (21 Kms)	2010-11	10
SER	RNC-MURI	Muri-North outer cabin-Muri doubling (1.4 Kms) of section with provision of 2nd bridge over subernarekha	2008-09	40
SER	THE-RNC	Ranchi-Construction of platform No.4& 5	2008-09	90
SER	THE-RNC	Hatia-Yard remodelling& coach maintenance	2004-05	100 (completed)
WCR	KTE-SGRL	Marwasgram -Joba up-gradation with P.I. & addition loops & sand humps-eight stations.	2009-10	16
WCR	KTE-SGRL	Three new crossing stations at Gajarabahara between Deoragram –	2006-07	60 (crossing stations at Piparya Kalan and

[16] HDN 2 – 21 Sections (664.90 RKMs), HDN 3 & 5 – 2 Sections (20.88 RKMs) and HDN 7 – 15 Sections (538.15 RKMs)

[17] Bondamund- Kiriburu (11 sub-sections total length 88.20 RKMs), Bonamunda- Hatia- Bokaro Steel city (33 sub-sections total length 278.22 RKMs), Dongaposi- Rajkharsawan (8 sub-sections total length 75.00 RKMs) and KTE- SGRL (one sub-section length 260.05RKMs)

		Saraigra, at Kanchanpur between Joba-Dubrikalan and at Pipaariya Kalan. between Khannabanjari- Salhana.		Gajarbahara completed and opened in December 2009 and July 2011 respectively.
WCR	KTE-SGRL	Niwas Raod and Bargawan upgradation of Traffic facilities	2010-11	0 (not started)
WCR	KTE-SGRL	Kahana Bunjari-Beohari- Proposed panel Inter locking with Std III additional loop & isolation	2010-11	0 (not started)
WCR	KTE-SGRL	Sursurai ghat- jhara-Conversion of D class station to B class crossing station	2011-12	0 (not started)

(i) Due to non completion of the doubling of Dumitra– Bimlagarh section through Champajharan, the anticipated annual return of ₹ 29.67crore (29.97 per cent of ₹99 crore for three years) was yet to accrue (March 2012). Similarly, non completion of doubling of Muri-North outer cabin-Muri with provision of 2nd bridge over Subarnarekha has resulted in non-accrual of anticipated annual return ₹ 8.34 crore (48.48 per cent of ₹ 17.22 crore).

(ii) While the work at two crossing stations (Pipariya Kalan and Saraigara stations) was completed and opened for traffic in December 2009 and July 2011 respectively, the work at Kanchanpur station could not be progressed due to non-mutation of Railway land in the name of Railway. As a result, the line capacity could not be augmented and anticipated additional freight revenue of ₹ 24.70 crore could not be earned through coal traffic during April 2010 to March 2012.

(iii) The work of up-gradation of panel interlocking and additional loops with sand humps for simultaneous reception (eight stations) viz Marwasgram, Katangikhurd, Salhana, Mahroi, Vijaysota, Chhateni, Dubrikalan and Joba in Katni- Singrauli section was sanctioned in 2009-10 to be completed by January 2012. The meager physical progress (16 per cent) was on account of non-availability of clear site, non-availability of funds, delay in supply of drawings of buildings etc.

The delayed sanction of the identified line capacity augmentation works on feeder routes of HDN2&2A and /or slow progress of these works resulted in non-enhancement of systemic capacity of feeder routes and denial of anticipated financial benefits.

2.6 Financial Management

2.6.1 Audit analyzed (2012-13) the pattern of fund allotments during the period of the review. Year-wise comparison of Budget Grant (BG) for line capacity augmentation works over HDN routes (excluding New Line works) with that of the anticipated cost thereof revealed that the allotment of BG every year was less than 10 per cent during the entire period. In fact, the share of funding exhibited a declining trend with a slight increase in 2011-12.

(Fig. in crore of Rupee)

	HDN Routes			Percentage (HDN Routes)	
Year	Anticipated Cost	Budget Grant	Actual Expenditure	Budget Grant on Anticipated Cost	Actual Expenditure on Anticipated Cost
2007-08	10229.65	943.10	971.19	9.22	9.49
2008-09	12943.64	1157.69	1022.30	8.94	7.89
2009-10	15865.97	1179.31	1163.14	7.43	7.33
2010-11	18571.79	1134.32	943.65	6.10	5.08
2011-12	23416.46	1643.56	1139.34	7.02	4.87

This indicated the low priority attached to implementation of works on HDN routes. Further, this state of affairs was much in contrast to the statement of the Minister of Railways that funds should not be allowed to become a constraint for execution of works on HDN routes. Not only were the budget allotments meager, the executing Railways had not been able to fully utilize the same.

2.6.2 A comparison of total Budget Grant (BG) of ten Zonal Railways viz., CR, NCR, NR, SCR, SER, SECR, SR, SWR, WCR and WR related to selected HDN routes and the Actual Expenditure (AE) incurred by these Railways for capacity augmentation works (excluding New Line works) vis-à-vis that on HDN routes of the respective Railways revealed that the share of BG on HDN routes during the review period averaged 34 per cent (approx) while the actual utilisation of funds on HDN works registered an average of 30 per cent of the total expenditure of the Railways as a whole as exhibited in the Table below:

(Figure in crore of ₹)

Year	Selected Zonal Railways as a whole		On HDN Routes		Percentage on HDN Routes over that on Selected Zonal Railways as a whole		Percentage utilization of Budget Grant on HDN Routes
	Budget Grant	Actual Expenditure	Budget Grant	Actual Expenditure	Budget Grant	Actual Expenditure	
2007-08	2911.66	3330.97	943.10	971.19	32.39	29.16	102.98
2008-09	3766.28	3956.93	1157.69	1022.30	30.74	25.84	88.31
2009-10	3671.63	4127.81	1179.31	1163.14	32.12	28.18	98.63
2010-11	3287.28	3351.61	1134.32	943.65	34.51	28.16	83.19
2011-12*	4215.65	2725.19	1643.56	1139.34	38.99	41.80	69.32
Total	**17852.50**	**17492.51**	**6057.98**	**5239.62**	**33.93**	**29.95**	**86.49**

** Includes Budget Outlay under Capital (Bonds) also*

It is clearly evident that the non-HDN works represented the bulk share of total fund allotment (66 per cent). Further, the major share of actual utilization of funds (70 per cent) was accounted also for by the non-HDN segment and the increasing surrender of funds during the period was attributable to HDN segment which rose to nearly 30 per cent during 2011-12. Thus, even the funds made available, however disproportionate in totality, were not only not fully utilized

but surrendered. This undermined the objective of accelerated development of the routes for handling anticipated growth in traffic volumes (70 per cent of freight traffic plied on HDN routes that formed only 25 per cent of rail network).

2.6.3 Against this backdrop, audit conducted a detailed analysis (2012-13) of 154 works out of 162 selected works over selected HDN routes and noticed cases involving surrender of funds, diversion/ irregular diversion of funds and fictitious booking of expenditure as discussed below. The position in respect of remaining eight works could not be analysed as these were entrusted to RVNL to whom Railway Board had allotted funds as lump sum advance for the projects under execution, as a whole, instead of work wise grants.

2.6.3.1 Surrender of funds

Audit observed (2012-13) that a total Budget Grant of ₹2840.10 crore was allotted by the Railway Board for 77 specific works for line capacity augmentation during the review period (2007-08 to 2011-12) that was got reduced to ₹1453.34 crore at Final Grant stage. Against it, the actual expenditure incurred was ₹1727.76 crore and a sum of ₹1112.34 crore was surrendered that amounted to 39 per cent of the Budget Grant. The surrender of allotted funds to such a large extent was mainly attributed to non availability of clear site, delay in finalisation of estimates, plans and drawings etc as detailed below.

S. No	Brief reasons for surrender	No of works	Amount of surrender. (₹in crore)
1	Delay in Land acquisition, law & order problem and non handing over of clear site	14	291.29
2	Delay in finalisation of Estimates & drawings	16	178.09
3	Delay in finalisation of tenders, contracts and discharge of tenders	12	130.31
4	Dropping/freezing of works	9	117.49
5	Delay in supply of materials and non receipt of anticipated debits etc	2	2.75
6	Minor variations	3	1.24
7	Slow progress of works in contracts and due to delay in coordination with CRS in obtaining for removal of slip sidings for ABS work	12	56.38
8	Indecision of Railway in continuing with the work of ABS and to hand over work to RVNL for execution.	2	61.23
9	Works being executed by RVNL/MVRC for which reasons not available	7	273.56
	Total	**77**	**1112.34**

This clearly indicated that the pace of execution of works was out of sync with the provisioning of funds at the planning stage and reflected inadequate co-ordination as between concerned departments of Zonal Railways.

2.6.3.2 Diversion of funds

Audit observed (2012-13) that during the execution of 17 works on selected HDN routes, funds to the extent of ₹ 116.40 crore were diverted to other works. Out of this, only ₹10.81 crore were diverted to other works on HDN routes and the balance i.e. ₹ 105.59 crore on works to non-HDN routes. The details are given in **Annexure VIII.**

(i) Irregular Diversion of funds

On Western Railway, a total sum of ₹ 149.58 crore was booked to Udhna-Jalgaon project during 2010-11 and 2011-12 out of which only ₹ 95.67 crore pertained to the work. The balance amount of ₹53.91 crore (₹20.11 crore during 2010-11 and ₹33.80 crore during 2011-12) was spent on works other than HDN routes without seeking re-appropriation[18].

Similarly, on Northern Railway, out of a total amount of ₹61.15 crore booked during 2009-10 for construction of 4th line between TKD-PWL, only an amount of ₹21.71 crore actually pertained to the work. The entire balance amount of ₹39.44 crore was spent on Open Line works of Ambala and Delhi Divisions constituting irregular diversion of funds.

(ii) Fictitious booking of expenditure

Audit observed (2012-13) that although the work 'Shelvona River side Rail Terminal (under HDN 7A of SWR) had not commenced (March 2012) due to land acquisition problems, there was a fictitious booking of ₹ 0.50 crore under this work during 2011-12 towards expenditure on Earthwork. On highlighting the issue, Railway stated that the expenditure had been booked as per Railway Board's instructions.

Thus, in addition to poor planning, indifferent attitude by the Zonal Railways resulted in surrender of funds and their diversion to purposes other than HDN works.

2.7 Progress of works and cost overrun

2.7.1 Audit conducted a scrutiny of 162 sample works (2012-13) sanctioned for execution on selected HDN routes and observed that ten works had been frozen/ dropped/ proposed for dropping, 45 works were yet to start **(Annexure IX)** and 53 works were in progress **(Annexure X)** as follows:

Percentage of physical progress	No of works
Less than 25%	14
Between 25% and 49%	11
Between 50% and 74%	12
Between75% and 99%	16

[18] Ankleshwar–Rajpipla GC, Surendranagar–Viramgam DL, Akodia–Sujalpur DL, OL works of ADI Divn & Ratlam-Mhow-Khandwa GC

Out of 54 works completed, 33 works were completed with a delay ranging from six to 58 months. **(Annexure XI)** Further, target dates for completion had not been fixed in respect of 37 works.

Audit could not make a financial assessment of non-accrual of anticipated benefits in respect of 93 works as Rate of Return (RoR) and/or the target dates of completion were not available. However, in respect of another 31 works in progress/completed as on 31.3.2012, audit assessed non-accrual of anticipated benefits to the extent of ₹921.17 crore due to various reasons as tabulated below:

Sl No	Reasons in brief	No of works	Amount of non accrual of anticipated benefits. (₹ in crore)	Time overrun (in months)	Ref to SL No of Annexure-VIII
1	Delay in land acquisition.	3	71.37	17 to 36	12,24&26
2	Delay on account of removal of encroachments and clearance of site.	7	126.99	8 & 96	1,10, 14, 15, 19,21 &22
2	Delay in approval of plans & Drawings and changes in lay out	4	221.94	16 to 36	3,7,16&25
3	Delay in supply of permanent way materials by Railways	3	144.82	18 to 24	4,8&9
4	Delay in completion of allied/residual works	3	57.29	1 to 15	28,29&30
5	Slow progress by RVNL	2	174.89	9 and 84	5&13
6	Disturbances to works (Law & Order)	2	81.26	9 and 12	6&17
7	Delay in decision on executing agency, etc	2	15.46	12 and 27	11&31
8	Delay in finalisation of estimates, tenders & contracts	3	6.41	14 and 30	18,20&23
9	Delay in commissioning due to non availability of requisite man power for maintenance	1	12.86	10	27
10	Due to slow progress of works in contracts	1	7.89	7	2
	TOTAL	**31**	**921.17**		

(Annexure XII)

In addition, 56 works suffered cost overrun amounting to ₹1,985.74 crore due to delay in completion of works. **(Annexure XIII)**

2.7.2 Lack of integrated approach in execution of works

While the works are planned by the Railway Administration and Railway Board, these are executed mainly by the construction organisation of the Zonal Railways. Railway Board assigned the execution of some of these works to Rail Vikas Nigam Limited (RVNL) also. Out of 162 works covered in this study, 18 works were assigned to RVNL which included four works that pertained to 42 line capacity augmentation works identified in the Blue Print in respect of three selected HDN routes. Audit scrutiny revealed that the manner of execution of works in various route segments lacked a planned and integrated approach, resulting in uneven progress of works in critical sections. This was also reflected in inadequate co-ordination within the Railway Administrations as well as

between the Zonal Railways and RVNL involved in the execution of works. Some of these cases are discussed below:

2.7.2.1 Doubling works

A review of progress of doubling works being executed on HDN 2A, 7 and 7A revealed the following:

SNo.	HDN	Railways	Progress of works
1	2A	SECR & WCR	Doubling works of Salka Road- Khongsara and Khodri-Anuppur (total length-87.60km), two critical sections identified in the Blue Print, were sanctioned in 2005-06 and 2006-07 respectively. The works had progressed 39% and 47 per cent respectively only (March 2012). However, the doubling work in a nearby critical section Bina-Kota (282.60 RKMs) on WCR was assigned to RVNL in July 2011 and was yet to start (March 2012).
2	7	CR	Out of total Doubling work from Daund to Gulbarga (300.77 RKMs), the work over Sholapur- Hotgi (15.07 RKMs), Daund- Bhigwan (27.68 RKMs), Mohal-Sholapur (33.11 RKMs) sections was completed in July 1999, February 2002 and May 2008 respectively. However, the execution of doubling work of balance 224.91 RKMs (Bhigwan – Mohal-127 RKMs and Hotgi- Gulbarga 97.91 RKMs) transferred to RVNL was yet to be started (March 2012) though the Detailed Estimate for the work had been sanctioned by RVNL in April 2010.
3	7A	SWR	The doubling work of entire Hospet-Vasco section (352kms) was identified in the Blue Print (HDN7A). The work was transferred to RVNL in parts i.e. from Hospet to Thanaighat -201 Kms- in December 2007 and from Thanaighat to Vasco- 151kms-- in October 2010). The doubling of the entire project was included in the Pink Book in 2010-11. RVNL sanctioned the Detailed Estimate for Hospet- Thanaighat in March 2010 and started the process for acquisition of 13 hectares of land in March 2011. The work was in the initial stage of land acquisition (March 2012). In the mean time, SWR has completed as their own the patch doubling in Dharwad - Kambaraganvi and Hubli –Hebsur (total 43.85 RKMs) falling on Hospet-Thanaighat section. No work had been executed on Thanaighat- Vasco section (March 2012).

The progress of doubling works on above important sections indicate that Ministry's decisions to transfer the works of certain segments to RVNL had not proved to be fruitful as RVNL had failed even to commence the works denying the augmentation of line capacity in an integrated manner.

2.7.2.2 Third line works

On HDN2 &2A, works for providing third line were not progressing at even pace on SECR and works on adjacent sections on WCR had not been started. The progress of these works is exhibited below:

	Third line work	Year of sanction	Physical progress	Reasons for slow progress
1	Jharsuguda-Champa (151.70 RKM) -SECR	2009-10	10%	Delay in sanction of Detailed Estimate
2	Bilaspur- Bhatupura (46.40 RKMs)-SECR	1997-98	100%	Completed in 2005-06
2	Bhatpara-Urkura (58.20 RKM)-SECR	1997-98	86%	Transferred to RVNL in March 2003. Slow progress.
3	Drug-Rajnandgaon (30.80 RKM)-SECR	2010-11	10.50 %	Delay in commencement of work due to delayed finalisation of tender.
4	Rajanandgaon-Gondia- Nagpur-(234 RKMs) SECR	-	-	Initial stage of Survey
5	Bina-Katni (WCR)	-	-	Initial stage of Survey

It is evident from the above that there was no integrated approach in the execution of works.

2.7.2.3 Fourth, Fifth and Sixth line works

Delhi- Mathura section of HDN route No.3 forms part of the important entry into the Delhi region and is a major point of congestion. It also forms part of HDN route No.5. On this stretch, three lines have already been provided between Delhi-Palwal[19] and construction for the provision of third line is in progress in further portion [Palwal-Bhuteshwar (Mathura)]. Works for the provision fourth, fifth and sixth lines in identified sections[20] have been sanctioned. There were however, substantial delays in implementation of these works in NR which are discussed below-

- Railway Board sanctioned (2006-07) the work of 4th line between Tughlakabad and Palwal at a cost of ₹ 83 crore and entrusted the work to RVNL for its planning and execution. RVNL sanctioned the detailed estimate (June 2007) for ₹123.90 crore. The work was not commenced and transferred back (April 2008) to NR. Subsequently, the Detailed Estimate were revised to ₹278.92 crore (September 2012) on account of time over-run (₹ 37.08 crore), change in scope of work (including specifications and quantities) and relocation of jhuggies. Audit observed that the reasons for changing the executing agency were not on record. Further, the construction work between Faridabad New town and Bhallabgarh (four Kms) could not be taken up due to non removal of 752 Juggies by the Delhi Division.

[19] Excluding Tilak Bridge-Hazrat Nizamuddin
[20] Tughlakabad-Palwal for fourth line and New Delhi -Tilak Bridge for fifth and sixth lines

- The work to provide 5th & 6th lines between New Delhi and Tilak Bridge on NR (HDN3) was sanctioned for ₹ 39.44 crore (2000-01). The target date of completion was fixed as March 2004. The estimate was revised to ₹53.15 crore (May 2007) to include widening of the RUBs at Tilak Bridge and Shivaji Bridge to accommodate eight tracks and to provide additional platforms at these two stations. The physical progress of the work was 80 per cent (March 2012). The main reasons for delay were non shifting of underground S&T cables and OHE High Masts from work site, delay in handing over of complete site due to delay in exchange of Masjid land/ dismantling of quarters, delay in transfer of land from CPWD, change in drawings in pile foundations, delay in finalization of lay out and GAD of Bridge No.8, non finalization of GAD of RUB at Shivaji Bridge, non-availability of traffic block from DCP/Traffic, Delhi and increase in quantities against various items of works. The estimate has again been revised to ₹140.69 crore and submitted to the Railway Board for approval.

Proposed 5th & 6th lines between New Delhi and Tilak Bridge (NR)

Audit observed that there were substantial delays in the provision of additional lines due to change in decision regarding the implementing agency and scope of work. Further, co-ordination between Railway Board and Railway Administration was poor. Thus the major capacity constraints while entering into Delhi Region could not be eased.

2.7.2.4 Auto Block Signalling

Railway Board sanctioned ABS in very limited stretches. Despite this, implementation of ABS on the sections was delayed due to poor co-ordination between the Board and Railway Administration as discussed below-

- ABS work in Gondia-Nagpur section (129.9 RKM) sanctioned in 2007-08 was progressing (25 per cent) and expenditure to the tune of ₹ 46.20 crore had been incurred. The execution of work was held up for last one year due to indecision as regards continuance of the work. It was noticed that the Railway had a proposal to drop the work in view of operational problems such as stalling of locos due to steep gradient. However, the proposal for dropping the work was yet to be submitted to Railway Board (March 2012).

- The progress of ABS work in Pune –Lonawala section (65 RKMs) on CR over HDN7 (not on class C route) was hampered due to delay in initiating timely action to get the clearance from the Commissioner of Railway safety (CRS) for removal of slip sidings. Since these slip sidings had been existing prior to award of contract for ABS work in 2006, the clearance from the CRS could have been obtained prior to award of contracts. Railway raised this issue with the CRS for the first time in October 2009 only. CRS rejected the proposal for removal of slip sidings. As of March 2012, the physical progress of the entire work was 40 per cent and expenditure booked, ₹19.71 crore. The work was lying incomplete even after 40 months of originally scheduled date of completion.

2.7.2.5 Deficient Planning leading to dropping of works after commencement

Audit observed following cases where line capacity augmentation works had to be dropped due to poor planning;-

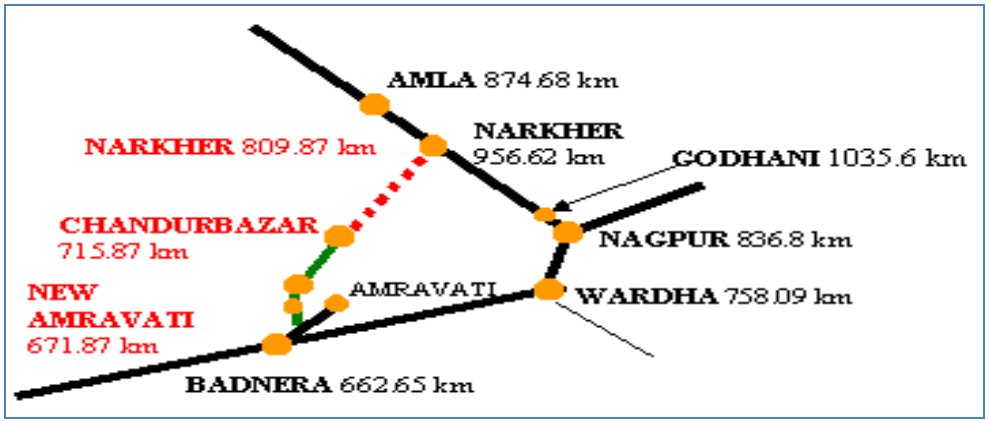
- SWR decided (September 2007) to provide a new crossing station between Koppal and Ginigera stations of Gadag- Hospet Section under Hubli Division (HDN 7A). The provision of crossing station was justified to increase line capacity on this iron ore carrying route. However, the facts that the said crossing station would come up at barely three Kms from the existing station and doubling of entire Hospet (HPT) – Vasco (VSG) section was being taken up were ignored and an expenditure of ₹6.35 crores was incurred. Subsequently, the Railway decided to drop the work (September 2009) on the above grounds which entailed unfruitful expenditure assessed at ₹4.31 crore.
- On this issue being pointed out in Audit (May 2012), Railway Administration stated (June 2012) that the need for having another station so close to existing station, was under review. The works had been put on hold and necessary action to finalise the contract *as is where is basis* was in progress. Further, the earthwork already completed would be utilised for ensuing doubling work. It is clear that the decision to create another crossing station was taken in violation of the Blue print that had provided for the doubling of entire HPT-VSG. Besides, the Zonal Railway were also aware that the doubling had been entrusted to RVNL in December 2007. Hence, the reply was an afterthought and reflected a casual approach.
- In the work "Strengthening of stations on Iron Ore routes by additional loop lines and extension of running lines/ sidings (seven stations) on Hubli (UBL) Division of SWR over HDN 7A", the work at two stations Vasco (VSG) and Consolium (CSM) was proposed to be dropped due to issues related to land acquisition. The work at VSG station was dropped after incurring an infructuous expenditure of ₹0.96 crore. Railway Administration stated (July 2011) that the expenditure was incurred for provision of shunting neck within the available Railway land. Audit, however, observed that the amount was paid to the contractor for making up of bank, excavation in trenches and provision of concrete items and not for linking of shunting neck, as claimed by the Railway Administration.

2.7.2.6 Poor progress of linked projects

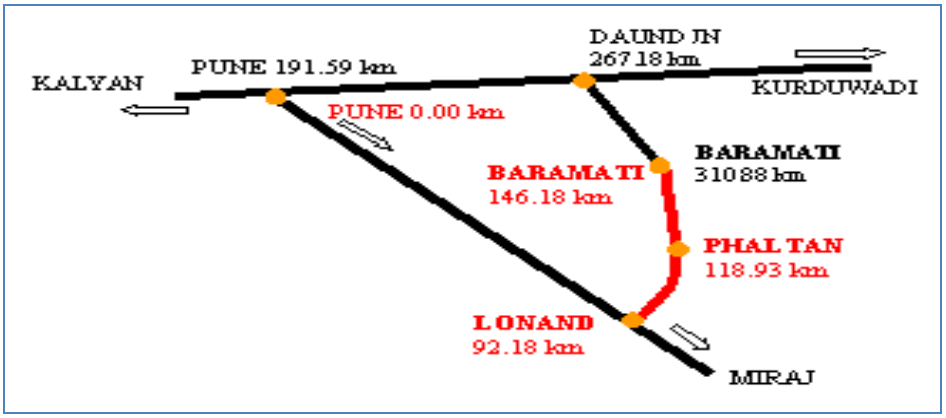
Audit observed following cases where traffic density could not be eased due to poor progress of works linked to main projects:-

- Railway Board had sanctioned (December 1995) the Detailed Estimate of ₹150.66 crore for the construction of a new line Badnera- Amravati- Narkher: (138 KM). This line would link HDN-.2 and HDN-5 and ease the oversaturated traffic on Badnera- Nagpur section on HDN-2 and Amla – Nagpur section on HDN-5. Though the work was targeted for completion within six years i.e by December 2001, it was still incomplete (March 2012).

  Audit observed that in view of insufficient funds, CR took up (July 2002) the work for construction of first 44 Kms line from Amravati to Chandubazar that was completed (February 2006). The completed section (44 Kms) had not yet been commissioned for traffic as CRS inspection had not been carried for want of completion of residual works and also the posting of required maintenance staff. The physical progress of the entire project was 96 per cent (March 2012) and an expenditure of ₹516.26 crore had been incurred.



- Railway Board had sanctioned (2002) construction of a new line between Baramati- Lonand via Phaltan (54 KMs) at a cost of ₹138.48 crore for providing a shorter link (65 KMs) to North South traffic between Daund-Miraj and elimination of congestion of traffic on Daund- Pune section of HDN 7.

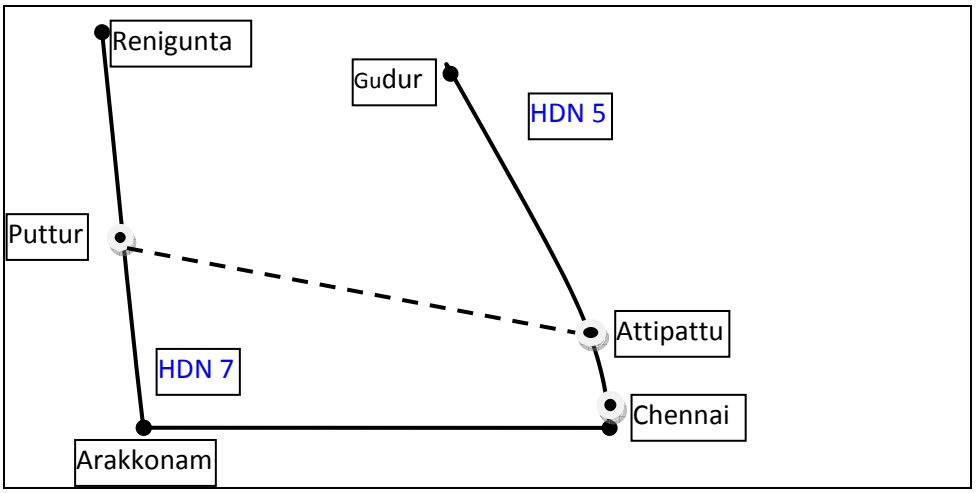


Audit observed that although the work in Lonand- Phaltan section (26.75 KMs in Phase I) taken up for execution had progressed up to 82 per cent

(March 2012) after incurring expenditure of ₹112.83 crore, the project completion was delayed on account of difficulties in resolving the problem of land acquisition between Baramati and Phaltan section (27.25 RKMs).

When the issue regarding non-completion of new link was taken up earlier in Audit (Paragraph No 3.1.3 of Report No CA 11 of 2008-09-Railways), Ministry of Railways stated (December 2009) in the Action Taken Note that completion of Lonand– Baramati alignment was being pursued and efforts were being made to connect the line up to Baramati. However, the land acquisition problem had not yet been resolved (March 2012) and there were no possibilities in the near future for the availability of shorter link for traffic between Daund and Miraj besides elimination of congestion of traffic on HDN 7.

- Construction of a new line between Attipattu and Puttur (HDN7) on SR was included in the Pink Book [21](2008-09). This line was proposed to provide a link between Chennai-Gudur line (HDN-5) and Arakkonam-Renigunta line (HDN-7) and easing density of traffic carried over HDN7 from Chennai Port. Audit observed that the Detailed Estimate for this important new line providing connectivity to two HDN routes was submitted by SR Administration belatedly in February 2011 which was sanctioned by the Railway Board in September 2011. The reasons for the delay in initiating the commencement of project were not available on records.



2.8 Inter-zonal comparisons of rates including RVNL works

As brought out in the preceding paragraphs, lack of integrated approach in planning for execution resulted in fragmented progress of works with cost over-runs. Effective co-ordination of the executing agencies would have promoted a proper environment for cost-effectiveness in project implementation. Further Audit observed that comparative efficiencies could not be assessed in respect of 54 works completed as these were dissimilar works and not comparable. As,

[21] Final Works Programme approved by Railway Board assigning initial budget allotment

such, Audit decided to undertake comparisons of estimates sanctioned for various works, namely doubling, third line, auto-signalling , etc, across the Zones including RVNL using a comparable time-period. Where comparisons involved differences in sites/regions, an allowance of 25 per cent over the lesser variant was allowed. This revealed certain anomalies in rate per route km as discussed below:

- A comparison of per km rate as per sanctioned estimates in respect of construction of third line sanctioned during the same period on RVNL and Railways revealed that per unit rate was higher on RVNL resulting in additional financial liability to the extent of ₹73.43 crore.

Rly	Name of the work being executed by RVNL	Month & Year of sanction of Detailed Estimate	Rate per km (RVNL)	Month & Year of sanction of Detailed Estimate. (Zonal Rly/ Name of the similar work)	Rate per km of similar work as per sanctioned estimate of zonal railway (after increasing by 25%)	Difference in rate per km	Extra Liability (₹)
SER	Goelkera-Manoharpur 3rd line (Route-A) HDN-2	July 2009	9.52	Sep 2009/SCR/ RGPM-MMZ (Triple Line)(Route-A) HDN-5	6.85	2.67	73.43

- A comparison of per km rate as per sanctioned estimates in respect of construction of fourth lines by RVNL was higher as compared to that sanctioned subsequently by RVNL. The extra liability on account of the above worked out to ₹11.09 crore.

Rly	Name of the work being executed by RVNL	Month & Year of sanction of Detailed Estimate	Rate per km as per sanctioned estimate of RVNL	Month & Year of sanction of Detailed Estimate by RVNL for similar work. (Name of the work)	Rate per km of similar work as per sanctioned estimate (after increasing by 25%)	Difference in rate per km	Extra Liability (₹)
SER	Santragachi-Tikiapara 4th line (Route-A) HDN-2	February 2006	8.36	2008-09/SR/ Tiruvallur - Arakkonam -4th line (Route-A) HDN-7	6.38	1.98	11.09

- A comparison of rate per unit for similar works being executed on same/different zones and sanctioned during the same period indicated that rate per unit was higher in 11 works even after adding 25 per cent for different site conditions. The additional financial liability on different Zones worked out to ₹ 87.38 crore. **(Annexure XIV)**

- In the case of four identical works, the rates sanctioned on a Railway were higher in comparison to those sanctioned on the adjacent sections of same or different Railway during subsequent period. The additional financial liability on this account worked out to ₹71.51 crore. **(Annexure XV)**

The above anomalies in rate estimates has highlighted the relevance of setting up proper benchmark estimates for different categories of works that can be adopted across zones with allowances for site conditions.

2.9 Inclusion of stores items in works contracts at higher rates

While works contracts result in savings of procurement costs on account of miscellaneous items, it is also pertinent that when a large number of similar works are taken up, it is reasonable to adopt bulk procurement mode in the interests of economy. In fact, this issue could also have been effectively dealt with by a co-ordination mechanism had once been constituted. On a comparative analysis of rates of identical stores items included in Works Contracts (52 Nos.) with that of Stores Contracts, it was revealed that the Works Contract rates were considerably higher. In 12 cases (with extra liability of ₹5 lakhs and above each), the avoidable additional expenditure due to inclusion of stores items in works contracts worked out to ₹1.69 crore. **(Annexure XVI)**

2.10 Delays in land acquisition

Land is a critical component of a railway project. The status of availability of Railway land for a project is ascertained from the Land Registers being maintained in each Division of the Zonal Railway. Proper and updated Land Registers help the Railway Administration in carrying correct assessment of land requirement for execution of works. As land acquisition is a long lead item, additional land requirements need to be timely assessed and action initiated in co-ordination with the State Government.

Audit observed (2012-13) that additional land requirements for the line capacity augmentation works were necessitated in 22 out of 162 cases (13 per cent). However, in 19 of these cases (SECR-3, CR-5, SWR-6, WCR-1, SR-3 and SCR-1) Railway Administration were not able to assess actual land availability with them for lack of maintenance / updated Land Registers. There were delays in initiation of land acquisition process by the administration in respect of ten selected works which ranged from three months to 36 months. In respect of six cases of completed acquisition the time taken ranged between 12 months and 56 months. **(Annexure XVII)**

2.11 Impact on Capacity Utilisation - Charted Line Capacity and Percentage Utilization

Charted line capacity of a section is the optimum number of trains that could be run on a section in a day after giving allowance for maintenance block and utilisation of line capacity is expressed in terms of percentage of trains with reference to charted capacity. It was a significant objective of capacity augmentation works to improve line utilisation by creating additional capacity on High Density Network.

An analysis of Charted Line Capacity and Percentage Utilization of the 113 sections on HDN 2, 5 & 7 routes for 2011-12 with reference to that of 2007-08 revealed that Line capacity had increased in 60 sections and remained the same in 43 sections. It declined in 10 sections for no logical reasons on record. The percentage utilization had increased in 82 sections, declined in 30 sections and remained the same in one section. Further, increase in percentage utilization in 82 sections despite line capacity enhancement in 60 sections clearly indicated that the works planned fell short of desired levels and /or the data used in the Blue Print was not properly validated.

On comparison of the Charted Line Capacity and Percentage Utilization for 2011-12 with that projected in the Blue Print for 2010-11, it was observed that out of 113 sections, the growth in Line capacity was less than the projected growth in 58 sections and percentage utilization had outstripped the targets in 79 sections. However in 34 sections, growth in charted line capacity exceeded the projected growth with percentage utilisation less in 32 sections. The reasons for non achievement of projected charted line capacity in 58 sections could be attributed to non completion of many line capacity augmentation works. Further the fact that 79 sections had increased percentage utilisation with reference to projections indicated that the Blueprint had not correctly captured the ground data. **(Annexure XVIII)**

2.12 Conclusion

The ambitious objective of Eleventh Five Year Plan (2007-12) to complete the identified capacity creation over HDN routes for meeting mid-term and long term projected growth of both passenger and freight traffic within the plan period remained unfulfilled largely due to lack of commitment towards augmentation and non-adoption of an integrated approach in planning and implementation of the capacity augmentation works. There was lack of effective initiatives at Railway Board level for identification, planning and funding for line capacity augmentation works on HDN routes. Lack of co-ordination between Railway Board, Zonal Railways and RVNL delayed implementation of work and resulted in their uneven progress in various route segments. This resulted in huge time and cost over runs. The overall cost effectiveness was also undermined by substantial rate variations across different zones for the comparable time periods.

2.13 Recommendations

- Railway Board needs to institutionalize an effective system of monitoring and co-ordination under the oversight of Railway Board to look into the implementation of the HDN works by the Zonal Railways and RVNL.
- In order to enhance the line capacity and provide safe operation of trains, Railway Board may reconsider their policy (2005) for installation of Automatic Block Signalling (ABS) on sub-urban sections only.

Chapter 3 – Signal and Telecommunication

The Signalling Department is responsible for Safe Train operations and maximizing the utilization of fixed and moving assets such as train rakes, locos and tracks etc. The Telecommunication Department caters for safety related and operational communication needs of the Indian Railway network.

The Signal and Telecommunication Organization is headed by Member-Electrical and is assisted by Additional Member (Signal) and Additional Member (Telecommunication). At Zonal level the organization is headed by Chief Signal & Telecommunication Engineer (CSTE) who is assisted by Chief Signal Engineer, Chief Communication Engineer, CSTE (Planning), CSTE (Projects) and CSTE (Construction).

Maintaining signalling assets is the primarily the responsibility of the Signalling Department. A thematic study on 'Performance efficiency of Signalling assets – Indian Railways' was conducted by audit covering a period of four years from 2008-09 to 2011-12. The study examined the implementation of the targets laid down in the Corporate Safety Plan (2003-13) which special focus on monitoring of signal failures and performance efficiency of signal assets. The audit methodology included scrutiny of documents, analysis of data at the S&T branch of Zonal Headquarters (except Metro Railway) and Divisional Headquarters. The related records of 179 Railway stations were test checked for assessing age profile and maintenance schedules of S & T equipments.

This chapter contains the audit findings of the above thematic study.

Performance efficiency of Signalling assets – Indian Railways

Executive Summary

Modern signalling systems play a key role in enhancing safe and reliable train operations. Indian Railway have initiated action under the Corporate Safety Plan (2003-13) to upgrade and modernize their signalling systems. Proper and timely upgradation, inspection and maintenance of signalling assets are essential to enhance their performance efficiency and ensure optimum use of existing line capacity. Audit conducted the present study during 2012-13 to evaluate the overall performance efficiency of signalling assets with special reference to efficacy of monitoring systems, preventive maintenance of signal equipment and replacement of aged assets. Some of the key findings were:

- Signal incidence per thousand ZISTU is a key performance indicator to monitor signal incidences. The indicator was within the tolerance limit only in six out of sixteen Zonal Railways. However, the basic units assigned to Signal and Telecom (S&T) equipment for calculation of ZISTU had not been revised for four decades. As ZISTU was not assessed uniformly across Zonal Railways the same cannot be considered as a fair indicator of signal incidents.
- The data collected for different signalling equipment indicating Mean Time Between Failures (MTBF) and Mean Time To Repair (MTTR) showed wide variations across Zonal Railways and the same brand/make. No standard norms for monitoring down time and response time were prescribed for assessing the performance of the equipment.
- Dissimilar signalling systems existed on 26 sections with more than 100 per cent line capacity utilization, resulting in slower signal communications and movement of traffic.
- While the overall progress in upgrading systems vis-à-vis targets under the Corporate Safety Plan was satisfactory, in some Zonal Railways, more than one – third of the targets as on 31 March, 2012 were yet to be achieved.
- In 32 'A' route stations, 64 signalling equipments out of 93 were dated and overdue for replacement.
- There was substantial shortfall in adhering to the maintenance schedules in test checked stations.

3.1 Introduction

Modern signalling systems play a key role in enhancing safe and reliable train operations. Indian Railway (IR) have initiated action under the Corporate Safety Plan (CSP) - (2003-13) to upgrade and modernize their signalling systems. The XI Plan recognized that a commitment had been made to the Parliament that replacement of over-aged assets would be sanctioned on concurrent basis so that arrears were not accumulated. Further, it was envisaged that efforts would be made to expedite the remaining safety related works planned in the CSP.

3.2 Audit objectives and scope of study

An earlier performance audit on "Signalling and Telecommunication" forming part of Comptroller Auditor General of India's Report No.PA 26 of 2008-09 Union Government (Railways) highlighted progress made in implementation of various targets laid down in the CSP. The present study was conducted during June-July 2012 to evaluate the follow-up action taken by the Ministry, with special focus on:-

- Monitoring of signal failures;
- Performance efficiency of signal assets;
- Efficiency in preventive maintenance including replacement of over-aged assets.

The study covered a period of four years from 2008-09 to 2011-12.

3.3 Audit criteria and methodology

Provisions included in the Signal Engineering Manual (SEM) and the recommendations of the CSP accepted by the Ministry were the sources for the criteria adopted in aduit. Report of the Working Group on Railway Programmes for the XI Five Year Plan (2007-12) and guidelines and instructions issued by the Railway Board (RB) from time to time were also considered.

The audit methodology included scrutiny of documents, analysis of data at the S&T branch of Zonal Headquarters (except Metro Railway) and Divisional Headquarters. Field units were test checked as shown below for assessing age profile and maintenance schedules of S&T equipment.

Category of Route	No. of stations test checked
A	53
B	42
C	21
D & D Spl.	30
E & E Spl.	33
Total	179

3.4 Audit findings

3.4.1 Effectiveness in monitoring signal failures

3.4.1.1 Adherence to the tolerance limit of signal failures

Signal failures in IR are being monitored through an index called Signal failures per 1000 Zonal Integrated Signal and Telecom Units (ZISTUs). The work load of S & T department in a Zonal Railway is measured in terms of Zonal Integrated Signal and Telecom Units (ZISTUs) which comprises of

(i) equated workload for maintenance of signalling equipment (ZESU);

(ii) Equated workload for maintenance of telecom equipment (ZETU) and

(iii) Equated workload for management of S&T workshop (ZEW) on that Zone.

For the purpose of quantifying the work to be performed, basic units were evolved (1969) for each Signal &Telecom equipment. ZISTU is also used in IR as a Key Performance Indicator of signal failures and expressed as signal failures per 1000 ZISTUs as explained below:

$$\textit{Signal failures per 1000 ZISTU} = \frac{\textit{Total signal incidence X 1000}}{\textit{ZISTU}}$$

CSP (2003-2013) envisaged a consolidated target whereby all types of signal defects would reduce from the level of 13.19 incidences per 1000 ZISTUs at the end of March 2003 to 7.91 by the end of March 2008 and further to 5.28 by March 2013. As against this, the level achieved by IR was 5.30 incidences per thousand workload of ZISTU at the end of March 2012 as detailed below:

Zone	Total signal incidences	ZISTU	Signal Incidences per thousand work load of ZISTUs
CR	15292	3183.21	4.80
ECOR	4099	721.72	5.68
ECR	11898	1496.60	7.95
ER	20160	2898.00	6.96
NCR	9967	2949.46	3.38
NER	2886	2203.05	1.31
NFR	6922	666.86	10.38
NR	18348	2549.80	7.20
NWR	9068	674.03	13.45
SCR	10905	1551.21	7.03
SECR	6463	848.46	7.62
SER	6995	1444.37	4.84
SR	5514	3802.76	1.45
SWR	3626	720.87	5.03
WCR	9544	1356.00	7.04
WR	10892	1727.30	6.31
Total	**152579**	**28793.70**	**5.30**

Audit analysis revealed that six zones (CR, NCR, NER, SER, SR and SWR) achieved the target envisaged in the CSP in March 2012 itself. In other zones, the signal incidences ranged between 5.68 (ECoR) and 13.45 (NWR) ZISTUs at the end of 2011-12.

Audit observed that while the signal incidences per 1000 ZITSU had declined during 2011-12 as compared to 2008-09 and were closer to the tolerance limit prescribed (5.28), audit considers this to be mainly due to non-revision of weights for various S&T equipment and yardsticks as discussed in the succeeding paragraph.

The overall signal failures per 1000 ZISTU (5.30) in IR show a decreasing trend. However, the signal failures were within the tolerance limit only in six Zonal Railways.

3.4.1.2 Adoption of Basic Unit

The basic units assigned for ZISTU during 1969 were not updated to cover modern signalling equipment like digital electronic exchanges, Solid State Interlocking (SSI) system, data communication equipment for Passenger Reservation System, auxiliary warning system, data loggers and Block Proving by Axle Counters (BPAC). As a result, Zonal Railways adopted different units for the same equipment. For example, basic unit adopted for different equipment varied as under:

- Basic units for BPAC ranged from four to 100 units across Zones.
- For electronic interlocking, basic unit was not assigned in eight Zones (SER, SR, SWR, SECR, CR, ER, NER and NR). Two Zones (ECR & WR) adopted two units. For other Zones details were not available.
- For data loggers, different units were assigned by Zonal Railways depending upon the number of ports. The basic units for data loggers ranged from five to 20 across 10 Zones. Of these, there was no differentiation based on the number of ports in ECR & NER. SWR has not assigned any unit to data loggers.

Thus, the ZISTU calculated by the Zones were not comparable due to the adoption of different basic units by them.

3.4.1.3 Impact of inclusion of ZEW

One of the components of ZISTU included equated workload for management of S&T workshop (ZEW) on that Zone. Adoption of this index across all Zones is not equitable resulting in non-comparable data. In a test check carried out by audit over four Zones, the following was observed:-

(For the year 2011-12)

Sl. No	Particulars	CR	SR	ER	WCR
1	ZESU	1560198.10	348187.00	1767810.00	561786.10
2	ZETU	934515.00	519038.00	538941.00	794173.16
3	ZEW	688500.00	2937600.00	591462.00	0.00
4	ZISTU (1+2+3)	3183213.10	3804825.00	2898213.00	1355959.26
5	Total Signal incidences	15292	5514	20160	9544
6	Signal incidences per 1000 ZESU (5/1)	9.8	15.84	11.40	16.99
7	Signal incidences per 1000 ZESU+ZETU (5/(1+2))	6.12	6.36	8.74	7.04
8	Signal incidences per 1000 ZISTU (5/4)	4.80	1.45	6.96	7.04
9	Value of materials manufactured, overhauled and repaired in workshop	15.30 crore	65.28 crore	13.14 crore	0

- Out of the four Zones, WCR does not have a workshop and hence ZEW is not computed. Hence, signal incidences per 1000 ZISTU is found to be the highest in WCR.
- As only seven out of the 16 Zones have workshops, ZEW is calculated only for these Zones and this gives them a tremendous comparative advantage over other Zones as signal incidences per 1000 ZISTU will be lower in these Zones due to inclusion of an additional parameter, namely ZEW.
- ZEW is calculated by considering the value of materials manufactured, overhauled or repaired in the workshop. Hence, a Zone handling high value materials gets a tremendous edge over other Zones. A case in point is SR which handled materials worth ₹ 65.28 crore as against ₹ 15.30 crore and ₹ 13.14 crore of CR and ER respectively and hence its signal incidences per 1000 ZISTU is 1.45 as against 6.36 signal incidences per 1000 ZESU+ZETU.

Audit is of the view that the present system of computation of signal incidence per 1000 ZISTU does not give a true picture of signalling defects in IR as it gives an unfair edge to Zones having signalling workshops and handling large value materials in the workshop. Further, due to non-revision of basic units for more than four decades and adoption of widely varying units by different Zones for new equipment, measuring of signal failures per 1000 ZISTUs in its present form did not represent a true and fair trend of signal incidences.

The basic units and yardsticks for S&T equipment have not been revised for four decades. This has led to adoption of different equated S&T units and yard sticks by Zonal Railways in respect of newly introduced modern signalling and telecommunication equipment. As ZISTU was not assessed uniformly across Railway Zones, the work load was not brought on comparable terms and on realistic basis. Thus, the achievement of incidences per thousand ZISTU was not only deceptive but rendered the monitoring of signal failures ineffective. Thus it cannot be stated with certainty that the targets fixed in Corporate Safety Plan (2003-13) have been achieved.

3.4.2 Performance of signalling equipment

3.4.2.1 Analysis of MTBF and MTTR

Efficiency in monitoring performance of signalling equipment and its maintenance is determined by a normative measure to be prescribed, i.e. Mean Time Between Failures (MTBF) and Mean Time to Repair (MTTR). In the Comptroller and Auditor General of India's Union Government (Railways) Report quoted in Para-2 ibid, audit had recommended that benchmark for MTBF and MTTR should be fixed to enhance the quality of monitoring the efficiency of modern signalling equipment. Ministry of Railways, in its Action Taken Note (February 2011), stated that norms for MTTR would be issued. Audit observed that these norms had not yet been issued by Ministry of Railways.

Further, analysis of actual down time of signalling equipment across various Zones during 2008-09 to 2011-12 revealed large variations in MTBF and MTTR of Integrated Power Supply System (IPS), Data Loggers, BPAC and SSI as detailed below:

Equipment	Brand	No failure reported since installation	MTBF (in hours)		MTTR (in hours)	
			Lowest	Highest	Lowest	Highest
Integrated Supply System (ISS)	Amarraja Batteries	ECOR	3957.35 (NER)	650758.00NFR	0.82 (NWR)	744 (NFR)
	HBL NIFE	NFR	13521.23 (ER)	1086888.80 (SER)	0.75(NR)	1440.00 (NCR)
	STATCON	NFR, Metro	26632.82 (SER)	410496.00 (NWR)	0.43 (SR)	2590.43 (SCR)
Data Loggers (DL)	EFFT Tronics	Metro	8952.96 (SER)	765928.00 (NR)	5.50 (NWR)	914.04 (WR)
	HBL NIFE	SWR, WR	1027.89 (SCR)	391848.00 (NR)	2.57 (NWR)	198248.00 (NR)
	Crompton	ECoR, NWR, WCR & WR	352.98 (SCR)	94224 (ECR)	1.07 (SCR)	1414.29 (SR)
Solid State Interlocking (SSI)	US & S	NR	5584.94 (SECR)	106911.47 (SR)	0.89 (ECoR)	12.87 (NCR)
	Ansoldo	…	2291.48 (SR)	208284 (NWR)	0.08 (SR)	14.43 (ECR)
BPAC	CEL	…	845.07 (ER)	45933.00 (WR)	0.46 (EcoR)	744 (NFR)
BPAC	Blydne	…	3488.14 (SCR)	13054.10 (WCR)	0.87 (SCR)	193.05 (WCR)

It could be seen from the above that

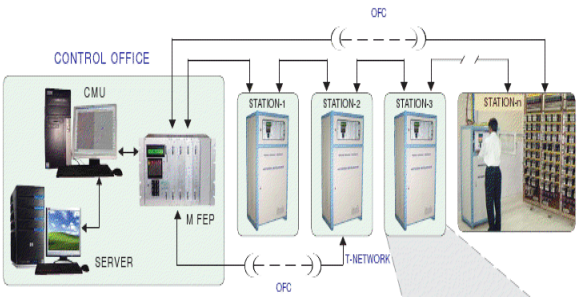
- no failures were recorded since installation by many Zonal Railways, which seems highly improbable;
- MTBF in the case of ISS reported by Zones was very high in respect of HBL NIFE (1086888 - SER) and Amarraja Batteries (650758 hours – NFR) make. Similarly, wide variations were also noticed in respect of other equipment. In respect of DL and SSI, the MTBF was very high. (765928.00- 208284)

These large variations, in the absence of a standard norm did not lend themselves to reasonable conclusions, besides raising issues of data reliability. Standard norms for monitoring downtime and response time for equipment maintenance need to be therefore put in place.

MTBF and MTTR of modern signalling equipment varied widely across Railway Zones and brands. Standard norms for monitoring downtime and response time have not been prescribed.

3.4.2.2 Utilization of Data loggers

A Data Logger (DL) is a device that monitors real time events and records the functions of track circuits, points, signals, Axle counter signals etc. It has the capability to perform statistical analysis, predict faults and generate failure reports.



Data loggers in net work

Railway Board had expressed concern (July 2010) that the devices were not being properly utilized on account of lack of involvement of staff, improper upkeep of the device, absence of Annual Maintenance Contract (AMC) with Original Equipment Manufacturers (OEMs), poor follow up in case of failures, etc, and reiterated instructions to all Zonal Railways to ensure correct configuration of the wiring of the devices with the approval of Chief Signalling Engineer, training in correct and proper use of the DL being imparted to the technical staff and in the extraction and print-out of the reports. They play an important role in analyzing the causes of an accident, if any.

Audit assessed the performance and utilization of data loggers, Zonal Railway wise and observed the following:

- Networking of DLs was complete in only five Zones (SR, WR, SCR, ECoR and NWR) out of 16 Zones (except Metro Railway).
- All relays were required to be proved through DL for effective monitoring of relays as per the directives of Railway Board (June 2011). Audit, however, observed that, all relays were connected to DLs in only three (NER, CR, ECoR) Zones. In six Zones (ECR, SER, NCR, SWR, NR and ER) only vital relays were proved through DL. In Seven Zones (WR, SECR, SCR, WCR, NWR, NFR and SR) connection to DL was partial. Audit observed that not connecting all the relays to DL impaired its usefulness as failure occurring in these relays could not be effectively monitored.
- Exception reports from Data Loggers were required to be analysed through print-outs on a daily basis. Audit observed that the provision of printers was complete only in five Zones (WR, CR, SWR, SCR and ECoR).In the remaining 11 Zones, adequate printers to DLs were yet to be provided, which impaired proper analysis of the functioning of the assets. This defeated timely preventive maintenance.
- Only in three Zones (SECR, CR and WR) all data loggers were covered under AMC. In five Zones (ECR, SER, SR, NFR, NWR) the coverage was partial, ranging from 35 to 96 per cent. In seven Zones, details were not furnished and AMC is under implementation in one Zone.
- The terms of AMC stipulated that the failure had to be rectified and the system was to be restored within a period ranging from 24 to 90 hours in six Zones (SR, WR, ER, ECR, WCR and NWR). However, the maximum duration of MTTR was 1414.29 (Crompton), 914.04 (EFFT Tronics) and 198248 (HBL NIFE) hours as against the period prescribed in the AMC.
- During the period 2008-09 to 2011-12, there were 33 accidents involving collision over 11 Zones. Out of 33 collisions, DL was used in only seven locations. (SECR-1, SCR-2, ECoR-1, NR-2 and WR-1). DL was not available/ commissioned at eight locations where accidents occurred (ECR-1, SER-6 and WCR-1).

The installation of data loggers was not accompanied by proper networking resulting in non-proving of relays, inadequate maintenance and upkeep.

3.4.2.3 Provision of BPAC

Provision of Block Proving by Axle Counter (BPAC) reduces dependence on human element in train operation through a system of automatic counting of axles of a moving train over a section and enhances safety. Railway Board reiterated (November 2009) their earlier instructions of July 2002 and October 2003 that Zonal Railways must provide BPAC in all A and B routes in a contiguous manner. Audit observed that though priority was to be accorded for all A and B routes, 830 stations in A and B routes were without

BPAC/Absolute Block System (ABS), whereas 1103 stations in D, D Special and E routes were provided with BPAC/ABS.

3.4.2.4 Non-provision of Integrated Power Supply system

For a robust Signalling system installation, reliable power supply system is vital. Railway Board issued (September 2009) instructions to all Zonal Railways to ensure availability of adequate power supply for signals at all stations including block huts in both electrified and non-electrified routes. Railway Board again reiterated (July 2010) that work for provision of adequate power supply was to be completed on A, B & C routes by March 2011, D special and E special routes by September 2011 and D & E routes by December 2011. Further during a meeting of Chief Safety Officers held in September 2010, it was decided to provide Integrated Power Supply (IPS) with battery back up in order to avoid signal blanking. Audit reviewed the action taken by Zonal Railways and observed the following:

- In nine Zones (WR, NER, SECR, CR, SCR, ECR, ECoR, WCR and ER), IPS system had been provided to the extent of 73 to 91 per cent.
- In SR, the Administration prioritized (Feb 2011) the reliability improvement works by providing IPS system, maintenance free earths, lightning dischargers and replacement of batteries and improved maintenance of DG sets. However, IPS was provided to the extent of 26 per cent.
- IPS system had been provided to the extent of 55 per cent in two divisions test checked (Kharagpur and Adra) in SER and 61 per cent in SWR.

In view of the above findings, Audit is of the opinion that Railway Board's instructions to ensure provision of IPS in all routes remained unfulfilled by March 2012.

3.5 Analysis of signal failures

There is a significant correlation between safety and reliability of assets. As reliability of asset improves, dependence on human judgment decreases and safety is enhanced. Details of causes of signal failures during 2008-09 to 2011-12 are tabulated below:

Sl. No.	Causes of failure on S&T Account	2008-09	2009-10	2010-11	2011-12
1	Equipment failure	12290	12541	7298	6860
2	Lamp fusing	3797	3285	3854	4015
	Out of the above, failure of LED/HMU/CR due to power surge	Not available		2280	2766
3	Cable	4638	4141	5498	5890
	Out of the above, failure of cable terminator due to vibration	Not available		338	317

4	Relay failure	5290	5812	6504	6319
	Out of the above, failure due to high resistance in metal to carbon contacts	Not available		6062	5719
5	Point machine	1200	1357	1365	1551
6	Fuse blown off	3792	4171	4545	4043
7	Power equipment	3326	3248	3406	2978
8	Bad maintenance	2732	2463	4205	4307
9	Track Circuit Failure	Not available		5905	6263
10	Block Instrument failure			10132	11555

Our analysis revealed the following:

- Equipment failure had been declining during the period (except in 2009-10) in IR. However, it showed an increasing trend in CR.
- Failure due to lamp fusing generally showed an increasing trend (except in 2009-10) despite replacement of filament lamps in signals by LEDs (Light Emitting Diodes).
- Cable failure was on an increasing trend in NCR, SR, and WCR. The total cable failure in IR increased from 4638 (2008-09) to 5890 (2011-12).
- Majority of relay failures (6062 out of 6504) during 2010-11 and 2011-12 (5719 out of 6319) were on account of high resistance in metal to carbon contacts in relays (excluding CR, ECR, SER, SWR, WR).
- Failures on account of bad maintenance of equipment were much higher in 2010-11 and 2011-12 compared to earlier years.
- Block Instrument failure was the single largest cause of signal failure.

Block instrument

3.5.1 Availability of dissimilar signalling equipment on same route

Signalling infrastructure of the same standard in all sections of a particular route is important to ensure maximum utilization of the existing railway lines. It was highlighted inter- alia in Comptroller and Auditor General of India's Report quoted in para-2 ibid that similar standard of signalling had been provided in only one Zonal Railway (SWR). The Ministry (February 2009) replied that modern signalling on

Semaphore signal at Malda Town (ER)

all Broad Gauge sections would be approved by the year 2020.

Audit reviewed the progress and observed that 26 sections across the Zonal Railways where utilization was more than 100 per cent of line capacity across the Zonal Railways did not have signalling equipment of similar standard. Existence of equipment with dissimilar standard has safety implications.

3.5.1.1 Replacement of dated signal equipment

Replacement of old and ageing assets through upgraded modern signalling system is an essential step towards achieving Indian Railway's goal of a collision free system.

The Comptroller and Auditor General of India's Report quoted in para -2 ibid had inter-alia highlighted shortfall in provision of modern signalling equipment vis-a- vis targets in the CSP (2003-2013). In reply, the Ministry had stated that not only fund availability, but also manpower and resource capabilities needed to be strengthened (February 2011).

3.5.1.2 Age profile of signalling asset

Audit test checked age profile of assets like signalling equipment/machines, point machines, relays, battery chargers, signal transformers and cables available at 98 selected stations across Indian Railways and observed the following:

- Out of 93 signalling equipments[22] available in 32 stations on 'A' category routes, 64 items (69 per cent) had outlived their prescribed life. However, there are yet to be replaced. These assets had exceeded their prescribed life as below.

Period in excess of prescribed life	No. of equipment
Up to 1 year	5
Above 1 year and up to 5 years	13
Above 5 years and up to 10 years	13
Above 10 years	33

The reasons attributed by Railway Administration for non-replacement of aged signalling assets were:–

- satisfactory performance of the assets (though they were over aged);
- continued use of over-aged assets by overhauling;
- delay in sanction of new assets;
- want of material, stores, equipment, and
- proposed upgrading of signalling system to Panel Interlocking (PI), Route Relay Interlocking(RRI).

[22] Point Machines, RRI, Lever Frame, Electronic Signalling System like SSI, Axle Counter, AFTC, IPS etc., Battery Charger, DG Sets ,Inverters

3.5.1.3 Instances of assets aged more than 50 years

The Jeumont Track Circuit at Chennai Central was installed during the early 1960s (exact date of installation not available on record). This track circuit was installed at berthing track of all 11 platforms in Chennai Central Station to indicate whether a platform is occupied or not. Trains can be received only when the platform is unoccupied. In the event of failure the loco pilot should depend only on the "calling on signal" and proceed with speed of 15 kms per hour. The relays used in the Track circuit were imported from Japan during 1947 and spares are not available. The old circuit is yet to be replaced with modern track circuits. Though the Track circuit is in working condition, yet there is an element of inherent risk of failure due to use of over aged equipment.

3.5.2 Provision of modern signal equipment

Audit reviewed the progress of provision of modern signalling equipment in 16 Zones (except Metro) vis-à-vis targets laid down under the Corporate Safety Plan (2003-2013) as tabulated below:-

Name of the signalling asset	Provided as on 31st March 2012 (stations)	Balance to be provided vis-à-vis targets under CSP	Percentage to be provided
Electronic Interlocking (EI)	4897	643	11.64
Route Relay Interlocking (RRI)/Panel Interlocking (PI)			
Block Proving Axle Counter (BPAC)	3264.5	1481.5	31.22
Data loggers (DL)	5000	645	11.43
Light Emitting Diode (LED)	4672	769	14.13
Multiple Aspect Colour Light Signalling (MACLS)	5089	337	6.21
Track Circuiting – FM to FM	5230	133	2.48
Complete Track Circuiting in station section	6056	497	7.58
Integrated Power supply (IPS)	3951	885	18.30

From the above table audit it is seen that there were substantial shortfalls in achieving target of provision of modern signalling equipments vis. BPAC and Integrated Power Supply as on 31st March 2012.

3.5.3 Operation and maintenance

3.5.3.1 Preventive Maintenance

Corporate Safety Plan laid stress on preventive maintenance as opposed to corrective maintenance for preserving the longevity of the equipment to fulfill the functions for which it is designed. In the C&AG's Report quoted in para-2 ibid there were instances of non adherence/delay in adherence to the

maintenance schedule attributed to shortage of manpower. In their Action Taken Note, the Ministry had stated that the maintenance organization had been strengthened by issuing new norms for maintenance of new signalling assets. Audit observed that the shortage of staff for maintenance persisted at various levels during test check of compliance of maintenance schedules at selected stations for the year 2011-12 for various signalling equipment as prescribed in the Indian Railway Signal Engineering Manual Part-II (September 2001 edition).

Audit noticed shortfalls as below:-

- Out of 179 stations test checked, there was shortfall in adherence to maintenance schedules in 109 stations (61 per cent).
- There was shortfall in conducting maintenance schedules at all levels viz. Mechanical Signal Maintainer, Senior Section Engineer, Junior Engineer.
- There was shortfall in maintenance in 22 stations of 'A' category routes over seven Zonal Railways (CR-3, ECR-5, NCR-3, SR-1, SER-4, SECR-4 and WR-2).

The Zonal Railways attributed shortfall in the maintenance schedules to shortage of manpower.

3.6 Efficient utilization of training facility by S&T personnel

The CSP had recommended a broad-based strategy on human resource development which included imparting of training to various categories of staff for skill up-gradation. The Ministry, in their Action Taken Note to C&AG's Report No.26 of 2008-09 quoted in para-2 ibid had stated that the shortfalls in maintenance schedule primarily arose on account of shortage of trained manpower and intensive training was required for proper maintenance of the new technological signalling devices. Audit analyzed the data on training course conducted by the Indian Railway Institute for Signal Engineering and Telecommunication (IRISET) at Secunderabad and the ten Zonal Training Centers vis-à-vis slots actually utilized and observed the following:

- All training slots were utilized by NFR in respect of NGOs during the four years period of 2008-09 to 2011-12.
- In respect of other fifteen Zones[23], 13009 out of 48061 slots offered to the NGOs were not utilized during the four years period of 2008-09 to 2011-12. Thus only 73 per cent of the training slots were utilized as against the RB's instructions (1999) to ensure capacity utilization of more than 90 per cent.
- There was under utilization of slots in all the training centers, except in SCR and WR during 2009-10.

The under- utilization of training slots was attributed by Zonal Railways to:-

- Non-fulfillment of quota for training slots by Divisions (NER);
- Sickness, long absence and shortage of staff (SECR, WCR,WR);

[23] CR,ECoR,ECR,ER,NCR,NER,NR,NWR,SCR,SECR,SER,SR,SWR,WCR and WR

- Non-availability of full strength of instructors, dearth of vital modern training equipment and non-updating of the Training Centre's modules. (SER).

3.7 Accidents due to collision

CSP (2003-2013) envisaged that the Indian Railways should attain a Collision-free status by ensuring completion of all safety related works by upgrading

Accident involving Gyaneswary Express in 2010-11 (SER)

Collision accident in 2011-12 (SR)

signalling technology and equipment and efficiency in maintenance. Audit observed that as a result of the various safety works executed under SRSF, the average number of collisions per annum had come down from 22.5 during 1998-99 to 2001-02 to 8.25 during 2008-09 to 2011-12. However, during 2008-09 to 2011-12, out of 587 consequential accidents, 33 were due to collision. Analysis of the inquiry reports in 27 cases revealed that human error of judgment and non-observance of the rules was cited as the major cause.

It was thus evident that in order to realize a collision-free system, the Indian Railways would have to expedite completion of up-gradation of signalling technology that would significantly reduce human intervention, upgrade preventive maintenance and human resource skills.

3.8 Conclusion

The performance efficiency of signalling assets measured by existing norms provided an optimistic outlook in regard to signal incidences. However, the basic units and yardsticks for monitoring signal failure have not been revised for decades. They were not reliable in presenting a fair view of actual progress achieved in signal incidences. The Indian Railways need to revisit the basis of measurement of signal failures in view of the ongoing modernization of the signalling systems for ensuring effective performance monitoring, targeted implementation of the up-gradation of signalling assets and address manpower and training issues for ensuring better preventive maintenance and achieving a collision – free environment.

Chapter 4 Performance Audit on "Cleanliness and Sanitation in Indian Railways"

Cleanliness and Sanitation in Indian Railways is a multidisciplinary responsibility and vests with various departments of the Railways viz. Medical, Engineering, Commercial and Mechanical. While the Mechanical Department is responsible for cleanliness and sanitation in coaches, other departments are responsible for maintaining cleanliness within the station premises. Health and Medical departments are responsible for ensuring hygiene of catering services and maintaining quality of drinking water at stations.

This chapter incorporates the audit findings on the follow up action taken by the Indian Railways on the audit observations made in previous Reports on cleanliness and sanitation and on the recommendations made by the Public Accounts Committee (PAC). The study covered the various initiatives taken by the IR during the period 2007-12 to maintain cleanliness and sanitation at stations and in trains. The Performance Audit was carried out with a view to obtaining reasonable assurance whether the commitments made by the Ministry of Railways had actually resulted in improvement of cleaning operations and enhancement in efficiency of handling wastes generated at stations and trains and is intended as a follow-up regarding the action taken by Indian Railways subsequent to the Audit Report No.6 of 2007 on Cleanliness and Sanitation in Indian Railways. For this, audit selected a sample of 212 stations from various categories for a detailed test check.

This chapter contains the audit findings of the above Performance Audit.

Cleanliness and Sanitation in Indian Railways- A Follow Up Report

Executive Summary

Indian Railway (IR) covers about 64460 route kilometers through high density urban areas as well as vast rural and forest areas. It provides services to 2.2 crore passengers and operates 11842 passenger trains daily. An effective system for maintenance of cleanliness and sanitation at stations and trains is, therefore, essential for sustained and efficient operation of IR.

A Performance Audit on "Cleanliness and sanitation in IR" was earlier taken up and the results included in the Audit Report No.6 of 2007 (Railways) of Comptroller and Auditor General of India. The deficiencies in maintaining cleanliness at stations and in trains highlighted in the report were also further studied by the PAC. In the light of Audit Findings and evidence tendered before them, the Public Accounts Committee (PAC) in their Eighty Third Report (2008-09) also highlighted the areas of concern in maintaining cleanliness and sanitation on IR.

Following audit observations and recommendations of PAC, IR adopted various measures and laid down comprehensive guidelines on issues responsible for maintain cleanliness at stations and in trains. The actions taken by the IR were, however, not translated into improvement in cleanliness due weaknesses in monitoring mechanism. Detailed action plan for maintaining cleanliness and sanitation at stations and on trains was not formulated at the zonal level.

Mechanised cleaning adopted as per the recommendation of Working Group constituted in September 2012 could not be effectively implemented at all major stations due to inadequate provision of washable aprons or damaged and uneven platform surfaces. Measures like 'Clean Train Station' and 'On Board House Keeping Services' adopted for ensuring cleanliness and sanitations in trains were also not adequately effective due to deficient planning and inadequate monitoring at the zonal level.

The deficiencies pointed out in the previous Audit Report and the recommendations of the PAC were not addressed completely. Shortcomings in collection and disposal of garbage remained unresolved. The commitment of IR to PAC regarding implementation of green toilets in trains was not fulfilled Delay in implementation of green toilets had adversely affected maintenance of sanitation and hygiene on trains and station premises.

Improper management of linen and slow progress in setting up of automatic mechanized laundries led to large scale of outsourcing of cleaning of linen and increased passenger dissatisfaction. Remedial measures initiated by the IR to ensure adequate safe drinking water were inadequate. IR also failed in implementing laid down norms for making provision of water taps and maintaining the existing facilities.

Highlights

- **Despite assurance rendered to the Pubic Accounts Committee (PAC), detailed action plan for maintaining cleanliness and sanitation at stations and on trains was not formulated at the zonal level. Frequency of inspections for different categories of stations for monitoring cleanliness by the officers was not clearly defined.** ***(Para-4.9.2 and 4.9.4)***
- **Mechanised cleaning could not be effectively implemented at all major stations due to inadequate provision of washable aprons or damaged and uneven platform surfaces. The availability of infrastructure in the field for improving the standard of cleanliness was not commensurate with the policies and guidelines laid down in this regard.** **(*Para 4.9.5.1)***
- **The commitment of Indian Railways (IR) to PAC for assessment and implementation of remedial measures to overcome the shortcomings in collection and disposal of garbage remained unfulfilled.** **(*Para 4.9.5.2)***
- **There was no significant difference in maintenance of toilets. Filthy condition of existing toilets was observed though the issue was highlighted in the previous Audit Report.** **(*Para 4.9.5.3)***
- **The Clean Train Station scheme was not effective in improving en route cleaning of trains due to deficient planning and inadequate monitoring at the zonal level. The deficiencies pointed out in the previous Audit Report were not addressed completely. On Board Housekeeping Service for cleaning of coaches was far from satisfactory.** ***(Para 4.9.6.1 and 4.9.6.2)***
- **The commitment of IR to PAC regarding implementation of green toilets in trains was not fulfilled despite extensive trials during the last two decades. Delay in implementation of green toilets had adversely affected maintenance of sanitation and hygiene on trains and at station premises besides posing threat to safety of the rail tracks.** ***(Para 4.9.6.3)***
- **Lack of efficient control on monitoring mechanism specified by the Ministry of Railways' guidelines on management of linen were not effectively monitored resulting in frequent supply of unhygienic and poor quality of linen to its passengers. Slow progress in setting up of automatic mechanised laundries led to large scale of outsourcing of cleaning of linen and increased passenger dissatisfaction.** ***(Para 4.9.7.2 and 4.9.7.3)***
- **Provision for availability of drinking water was not made as per prescribed norms. Even the existing facilities were poorly maintained. There was shortfall in the periodical testing of water**

samples though there was an increasing trend in the percentage of unfit samples collected from different stations across zones.

(Para 4.9.7.7)

Gist of recommendations

- IR needs to frame a time bound action plan and strengthen its monitoring mechanism at the zonal level for effective implementation of its policies and guidelines.
- IR needs to expedite implementation of bio-toilets in coaches to prevent open defecation and maintenance of hygienic surroundings. IR should put in place an effective internal control system for efficient linen management and pest and rodent control.
- IR may expedite the implementation of New Catering Policy 2010 and strengthen monitoring mechanism for effective implementation of the policy and strict compliance of its guidelines/instructions for ensuring provision of safe drinking water.
- IR need to effectively monitor the fulfilment of the various commitments made in the Citizen's Charter through designated benchmarks, quality assurance and quality control etc. at stations and on board.

4.1 Introduction

IR is the single largest system of public transportation in India covering about 64460 route kilometers through high density urban areas as well as vast rural and forest areas. It provides services to 2.2 crore passengers and operates 11842 passenger trains daily. The sheer quantities of passenger operations put tremendous pressure on the existing infrastructure and calls for an effective system for maintenance of cleanliness and sanitation at stations and in trains. The requisite standards framed by the Government of India are required to be implemented for catering to the high passenger traffic density. This considerably impacts the environment on account of waste generation.

Provision of clean and hygienic surroundings is one of the commitments made by IR in its Citizen Charter. Thus providing adequately clear passenger amenities like drinking water, urinals etc. at stations as well as on board is an integral part of the various cleanliness related activities of the IR as a committed service provider.

Sanitation is indeed a major and critical challenge faced by IR as effective management of disposal of human excreta into the open throughout the length and breadth of the country through its toilets on trains has been one of the main source of environmental pollution.

The Performance Audit contained in Audit Report No. 6 of 2007 (Railways) of Comptroller & Auditor General of India on “Cleanliness and Sanitation in Indian Railways”, highlighted the deficiencies in planning and inadequacy of standards/ norms of cleanliness framed by IR. It further highlighted the inadequate provision of water supply and other infrastructure for providing a

clean and hygienic environment. In the light of Audit Findings and evidence tendered before them, the Public Accounts Committee (PAC) in their Eighty Third Report (2008-09) also highlighted the areas of concern in maintaining cleanliness and sanitation on IR.

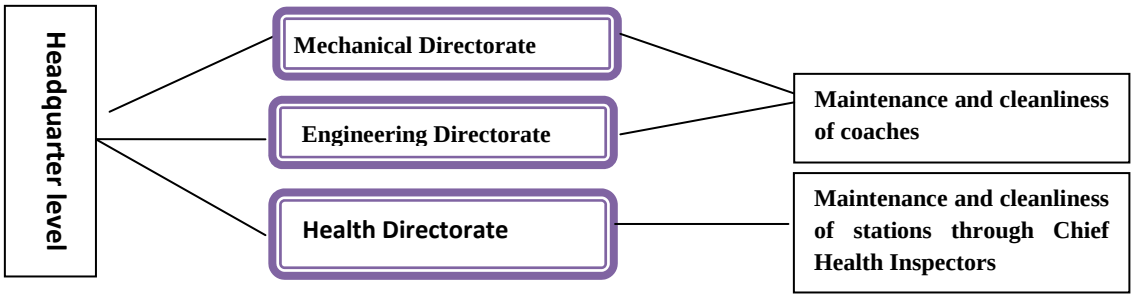
Ministry of Railways (MoR) in their Action Taken Note on the Audit observations and also on the recommendations of PAC, elaborated its Action Plan and commitment to bring improvement in cleanliness at stations and in trains and adopted various measures[24] to improve the level of cleanliness in coaches and at stations.

4.2 Organisational Set-up

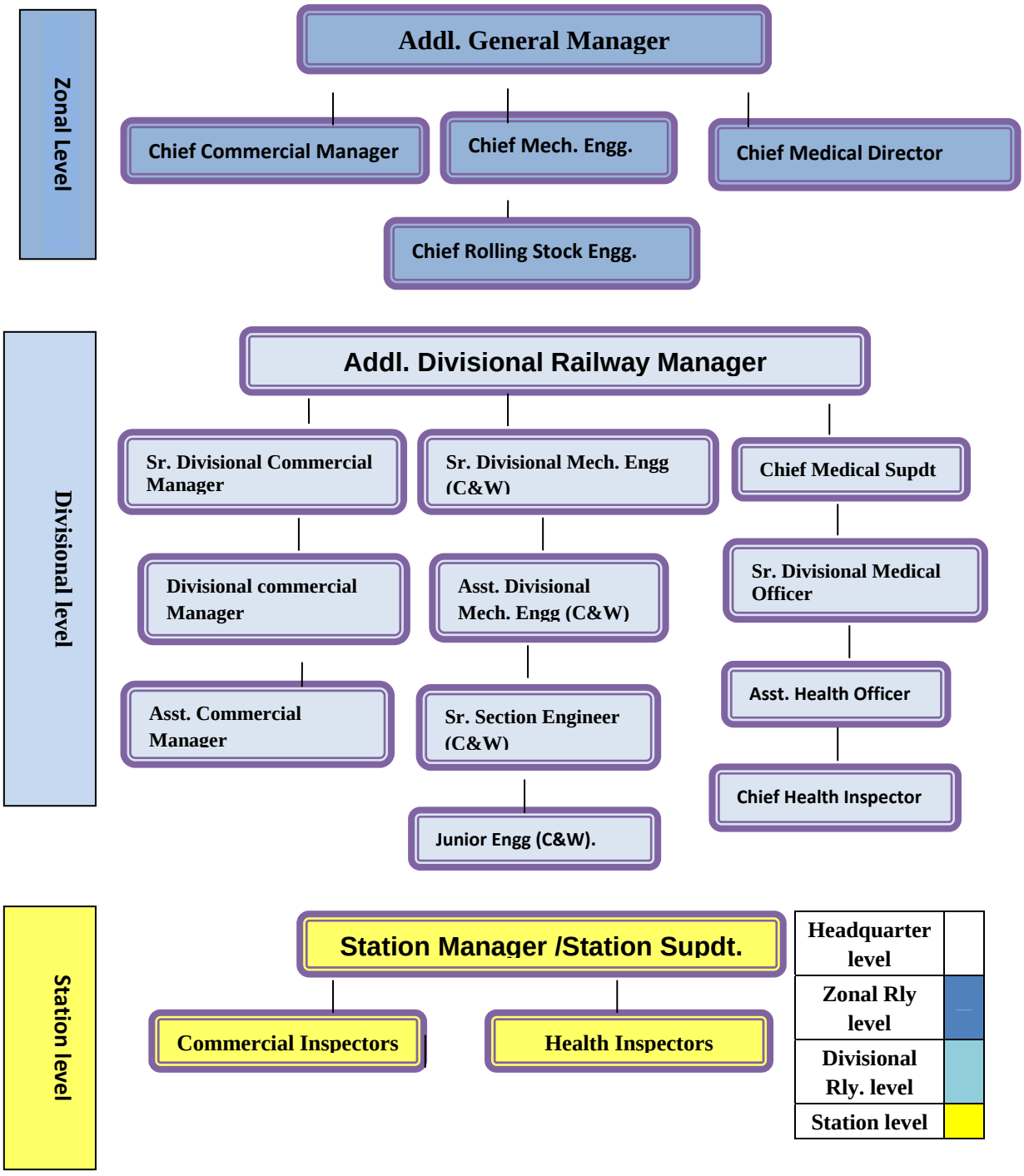
Cleanliness in IR is a multidisciplinary responsibility with various departments of the Railways viz. Medical, Engineering, Commercial and Mechanical. As per Para 903 of Indian Railway Medical Manual Volume - II, all the sanitation work within the station premises shall be under the control of the Commercial Department. The sanitation and cleanliness of coaches is the responsibility of Mechanical Department.

Based on the specific concern of PAC regarding initiatives of Additional Divisional Railway Managers (ADRM) / Additional General Managers (AGM) for maintaining cleanliness and sanitation at the stations and in trains, MoR stated that the AGM at the Zonal Level, ADRM at the Divisional Level and Station Manager/Station Superintendent at the Station level are the nodal officers/supervisors to coordinate with various departments responsible for maintenance of sanitation and cleanliness at stations and on trains

ORGANISATIONAL CHART



[24]Include mechanised cleaning, introduction of On Board Housekeeping Scheme, Clean Train Station Scheme, pest control measures, execution of rag picking contracts etc. It has also taken action to try and replace its present toilet system on trains with 'Green toilets'.



4.3 Audit Objectives

The Performance Audit was conducted covering the period 2007-12 to assess the efficiency and effectiveness of the follow up action taken by the MoR in maintaining cleanliness and sanitation on IR in compliance of PAC recommendations. The audit objectives were as follows:

- To assess that the initiatives of IR in compliance with the guidelines/instructions issued by the Railway Board (RB) from time to time were adequate, effective and complied with;
- To assess the effectiveness of the action taken by the IR in improving the quality of passenger services and amenities.

4.4 Scope of Audit

The follow up audit was conducted between August 2011 to December 2012 with a view to obtain reasonable assurance about the commitments made by MoR to PAC, which had led to improvement of cleaning operations, efficiency of handling wastes generated at stations and in trains including the actions taken by IR subsequent to the Audit Report No. 6 of 2007(Railways) on Cleanliness and Sanitation in Indian Railways.

The scope of the Performance Audit inter-alia includes-

- Assessment of efficiency in implementation of various guidelines issued from time to time by the RB and the action plan formulated by the Zonal Railways for maintaining cleanliness and sanitation on IR;
- A review of the effectiveness of various initiatives and remedial measures taken by the IR to address recurrence of the deficiencies brought out in the previous audit report and translated into improvement in cleanliness and sanitation on the ground.

4.5 Sources of Audit Criteria

The action taken by the IR with reference to the Audit Observations/Recommendations highlighted in the Audit Report[25] and also the action taken on the recommendations of PAC were adopted as audit criteria. In addition, guidelines as well as instructions issued by the RB subsequent to Audit Report and PAC Report on "Cleanliness and Sanitation on IR" were also taken into consideration to assess the performance of IR in improving cleanliness and sanitation at railway stations and in trains. These guidelines/instructions includes guidelines on cleanliness and sanitation of Railway stations (January 2007), monitoring cleanliness (July 2011), OBHS (October 2007), linen management (December 2009) etc.

4.6 Audit Methodology

Audit methodology, scope, objectives and criteria were explained during the entry conference by the concerned Heads of Departments at the Zonal level as well as with Senior Officers of Railway Board.

Records relating to guidelines/instructions issued by different Directorates of MoR involved in policy formulation and issue of directives to zones for implementation were examined between August 2011 and March 2012 to

[25] Audit Report No. 6 of 2007(Railways) of Comptroller & Auditor General of India

ascertain the initiatives and performance of IR towards improving cleanliness and sanitation at railway stations and in trains. At the Zonal level, Audit verified the compliance of various directives issued by the RB as well as at zonal levels.

Joint inspection at 212 stations and 88 trains was conducted between August 2011 and March 2012 with the Railway officials for real time assessment of the initiatives taken by IR and their performance. Besides, feedback was also obtained from passengers through limited passenger survey conducted at two major stations and in five Mail/Express trains of each zone.

4.7 Sample Selection

Data was collected from various Zonal and Divisional offices of the IR. In all, a sample of 212 stations from various categories[26] were selected **(Annexure XIX)** for detailed test check. The sampling technique adopted is explained below:

Sl No.	Description	Category	Sample Size
1.	Number of stations under different categories selected for audit that included stations, Joint Inspection by audit and Railway authorities.	A1	25 per cent subject to minimum of two stations
		A and B	10 per cent subject to a maximum of five stations, covering at least one station from each divisions, to the extent possible
		C, D and E	two stations from each category
2.	Trains including Joint Inspection	Five Express/ Mail/ Passenger Trains	• Trains having On Board House Keeping Services (OBHS) Pantry Car • Rajdhani /Shatabdi/JanShatabdi/ Ordinary passenger trains • Platform return trains

Feedback from passengers was also obtained through a passenger survey conducted in all zones as per the following sample size:

Passenger feedback	No. of passengers surveyed
At two Major stations dealing with maximum number of passengers per day.	75 passengers in each station.
Five Trains - Rajdhani, Mail and Express trains (including long distance trains), Shatabdi and Jan Shatabdi trains.	AC Passengers – 100 Non-AC Passengers – 250

[26] IR categorize stations on the basis of earnings. This categorization has been followed in the selection of audit sample size as it also broadly reflects the number of passengers using a station.

4.8 Acknowledgement

The audit objectives, scope of study and methodology were discussed with Advisor (Finance) at RB as well as the General Managers and concerned Departmental Heads in the concerned zones by the Principal Directors of Audit. The draft report was issued to the MoR in February 2013. A partial reply of the Ministry was received in March 2013. Audit sincerely acknowledges the valuable inputs provided on various aspects and the cooperation extended by Railways. The audit findings and recommendations were discussed with Advisor (Finance) in an exit conference held in March 2013 at RB. Similar exit conferences were also held by the Principal Directors of Audit in the zones, with concerned zonal authorities. Their views had been incorporated in the report.

4.9 Cleanliness at stations and on trains

During August 2002, IR launched 'Operation Cleanliness' which led to setting up of a Working Group (September 2002) to identify the problem areas and suggest remedial measures. The recommendations of the Working Group inter-alia include development of infrastructure, development of tools and plants/equipments, contracts for mechanized cleaning, aggressive campaign for educating the users etc. IR adopted various measures by synergizing technology, educating users and providing mechanized cleaning process/ equipments under schemes like 'On Board House Keeping Service'(OBHS) and 'Clean Train Stations'(CTS) to clean en route passenger coaches as well as during halt at identified stations etc.

4.9.1 Recommendations of PAC and their compliance by the IR

Based on the findings highlighted in the Audit Report No.6 of 2007 (Railways)[27], PAC examined the issues relating to cleanliness and sanitation on IR. PAC recommended that IR should draw up an action plan with identified milestones for provision of adequate infrastructure namely washable aprons, drains and sewerage system etc. along with conducive platform surfaces for each station duly prioritizing requirements. In their action taken note, MoR stated that an action plan had been devised and the Zonal Railways had been instructed to implement the same. The status update by the MoR on significant issues by way of oral and written evidence incorporated in 83rd Report (2008-09) on 'Cleanliness and Sanitation on Indian Railways' are mentioned below:

[27] Performance Audit on "Cleanliness and Sanitation in Indian Railways"

Issues	PAC Queries / Observations	Reply of the Ministry
Plans and Policies	Whether Railways have prepared any road map for addressing the issue of cleanliness in Railway premises. IR should draw up a plan of action with identified milestones for provision of adequate infrastructure namely washable aprons, drains and sewerage system etc. along with conducive platform surfaces for each station duly prioritizing requirements.	An action plan had been devised and the Zonal Railways had been instructed to implement the same. MoR asserted that the up gradation of passenger amenities, commensurate with increase in passenger traffic at stations including water supply, washable aprons etc. was a continuous process and was being undertaken through Annual Works Programme depending upon the availability of funds and other relative priorities.
Sanitation and up gradation of amenities in Railway Stations	Action taken by the IR for maintaining cleanliness and sanitation on platforms, trains, tracks etc	Comprehensive guidelines had been issued for mechnised cleaning of rakes in coaching depots. The OBHS and CTS schemes initiated to clean passenger coaches during transit as well as during halt at identified stations; initiation of pest and rodent control measures etc. MoR stated that regular supervision was being carried out to monitor cleanliness through Service Improvement Groups (SIG) operating at supervisory and officer's level. MoR also stated that 593 stations had been selected as 'model stations' and 637 (334 during 2006-07 and 303 during 2007-08) as 'modern stations' for providing upgraded passenger amenities.
Multiplicity of departments involved in maintaining cleanliness	System or mechanism in place for centralized monitoring of cleanliness and sanitation at prescribed standard.	Cleanliness is being reviewed periodically both at the Zonal level and Divisional level by the Additional General Manager and Additional Divisional Railway Manager respectively. Regarding creation of nodal agency, MoR asserted that considering the vastness of the cleaning activities, the works had been distributed among the different Directorates to ensure proper focus on their respective areas and therefore, the need of a nodal agency was not considered desirable.
Policy on waste Management	Why was there no comprehensive waste Management policy in IR?	There is a well defined system of collection of garbage at centralized locations at stations and final disposal to nominated municipal

	What are the deficiencies in the maintenance of cleanliness and management of waste generated at railway stations and in trains?	bins/landfill areas. MoR further stated that the basic problems in the areas of cleanliness are that the infrastructure of cleanliness and logistics has not been in conformity with the increased volume of passenger traffic. MoR also stated that the tools and plants used in upkeep of amenities were still rudimentary.
Green toilet project	How are the Railways going to implement the green toilet project on all the trains?	MoR stated that field trials were being conducted and their performance would be monitored for design validation before considering universal implementation on all IR's coaches.
Urinals and Toilets at stations	Prescribed norms for urinals and toilets at stations.	MoR stated that the norms for providing urinals and toilets for passengers had been fixed with reference to the category of station.
Cleanliness of Trains	Whether there was any specialized institutional mechanism in place to oversee sanitation on running trains.	A comprehensive OBHS scheme had been launched. Their cleaning activities were being monitored through passenger feedback, incognito checks by Railway officials in trains etc.

Working group constituted in September 2002, suggested action plan for improving cleanliness at stations and on trains. The action plan in respect of measures /initiatives to be taken up by the IRs were divided into short term[28], medium term[29] and long term plans[30]. In November 2002, MoR directed all Zonal Railways to prepare action plan accordingly.

On being highlighted the deficiencies in dealing cleanliness and sanitation issues through Audit Report No. 6 of 2007 (Railways), RB issued of comprehensive guidelines for provision of passenger amenities at stations, OBHS, pest control and linen management.

Subsequently, additional guidelines were issued in June 2009 for cleanliness at Railway stations/premises detailing therein the objective, strategy and action

[28] Short term action plan of time span three months include areas like re-launching of cleanliness drives through contracts, adoption of clean hour concept, delegation of powers, finalization of service contracts of pest control, garbage lifting, pay and use toilets, clean train stations at 15 stations etc.

[29] Medium term action plan of time span one year includes areas such as development of cleanliness standards and codes for service contracts for mechanised cleaning, effluent treatment plants at all A class stations, extension of clean train stations to 50 stations, development of logistics for picking, transporting and disposal of garbage within the station premises etc.

[30] Long term plans of time span three to five years include areas like provision of washable aprons, effluent treatment plants at major stations, provision of incinerators, modification of coaches by providing control discharge toilet in 20000 coaches to cover all Mail/Express trains, automatic coach washing machines at 25 depots etc.

plan[31] required to be adopted for improvement in cleanliness. The objective was to provide a hygienic environment at stations and railway premises by way of development of infrastructure, use of modern technology, clear demarcation of sanitation functions, posting of adequate supervisory staff to oversee cleanliness etc.

In September 2012, Committee of Executive Directors specified the norms and quantum of Minimum Essential Amenities[32], Recommended Amenities[33] and Desirable Amenities[34].

On scrutiny of records relating to monitoring of implementation of the revised instructions, audit observed that no action was taken at the Board level to ascertain the status of implementation of its revised instructions on provision of passenger amenities. MoR, however, stated (March 2013) that the Zonal Railways had confirmed the provision of minimum essential amenities at stations. Audit, however, observed deficiencies in adequate number of toilets/urinals, availability of drinking water, disposal of wastes etc.

4.9.2 Standards and Action Plan on cleanliness

Revised Guidelines issued by RB did not fix any standards for cleanliness; Zonal Railway issued a Joint Procedure Order (JPO) clearly demarcating the areas of responsibility of different departments. In this regard, PAC's recommendation was "there should be daily routine checks of cleanliness activities by the Divisional General manager and inspections at least once in every fortnight". MoR in their Action Taken Note stated that there were frequent checks on the standard of cleanliness at different levels. MoR also stated that a system of scorecard had been introduced for assessment and monitoring of cleaning activities..

Audit observed the following weaknesses in the system:

(i). Though the Zonal Railways issued JPO defining the responsibilities of different departments, no comprehensive action plan was formulated at the Zonal Level for implementation of the RB's guidelines (December 2006/January 2007). It was further observed that the RB's guidelines had also not insisted for framing of action plan at the Zonal level;

(ii). No norms or performance indicators for cleanliness activities were prescribed by either by the Zonal Railways or the RB. The standard of

[31] Action plan include development of infrastructure, development of tools and plants and equipments, mechanised cleaning of all major stations, activation of Service Improvement Groups, cleaning and maintaining toilets by private parties, fixation of responsibilities, launching of special cleanliness drives etc.

[32] Minimum Essential Amenities are the amenities to be provided at each category of station (on the basis of projected traffic/earnings) when a station is constructed.

[33] Recommended Amenities are the amenities to be provided at each category of station depending upon the actual passenger traffic dealt at the station.

[34] Desirable Amenities are those amenities which are considered desirable to improve customer satisfaction and interface process at the station.

cleanliness at stations was, however, being assessed through a 10 point scale in SR, SCR,NEFR and ECR zones;

(iii). Service Improvement Groups (SIG)[35] had been formed and inspections were being conducted both at the Zonal and Divisional level. Frequency of inspections of the SIG was, however, not prescribed; and

(iv). No norms (frequency) for surprise checks by the supervisory staff had been fixed. There was also no system of surprise checks in SECR,

Despite assurance rendered to the PAC, a detailed Action Plan was prepared by only Central Railway. MoR had not explained (March 2013) the reasons for not formulating detailed action plan by the remaining zones.

4.9.3 Segregation of Responsibility

The responsibility of maintenance of cleanliness lies with a number of departments viz. Commercial, Medical, Engineering, Mechanical and Operating. For better co-ordination and effective performance of cleaning activities, a unified command structure with well defined accountability is essential.

MoR informed PAC that Additional General Manager at the Zonal Level, ADRM at the Divisional Level and Station Manager/Station Superintendent at station level are the nodal officers/supervisors to coordinate with various departments for maintenance of sanitation and cleanliness. MoR also stated that frequent cleanliness review meetings were being conducted at the Zonal level with the DRMs and concerned Head of Departments to assess the deficiencies/failures to formulate remedial action.

Review of the follow up action taken by the Railways revealed that following audit observations on multidisciplinary approach on cleanliness, Zonal Railways demarcated the areas of responsibility of different departments through a Joint Procedure Order and the Commercial Department was made the nodal agency for coordinating among the various departments for cleanliness supervision.

4.9.4 Monitoring

In order to monitor improvement in cleanliness at Railway stations, trains and Railway premises, MoR instructed (June 2009) all Zonal Railways to report on weekly basis the improvement of different aspects of cleanliness such as drainage, dustbins, bedrolls etc. Chairman/RB in July 2011, directed all Zonal Railways for taking immediate action to improve the image of Railways in the public eye. He also directed that all initiatives in this regard should be personally monitored at the level of General Managers. The areas of focus which required immediate attention included cleanliness of coaches and stations, garbage collection, pest and rodent control, linen management etc.

[35] SIG generally comprises of heads of Commercial, Mechanical, Engineering and Medical Departments.

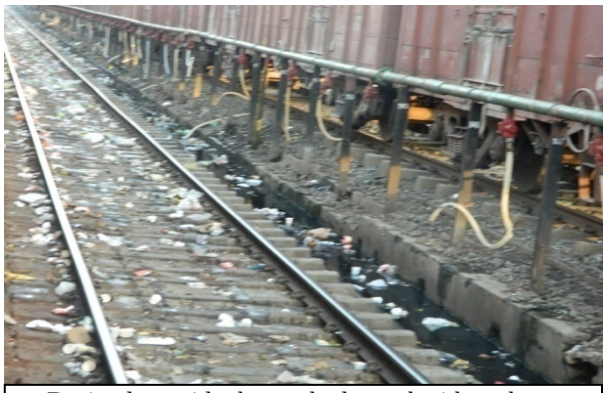
The action taken by the Zonal Railways along with the deficiencies were monitored by the RB through a monthly report from the Zonal Railways. Any deficiency on the initiatives in focused areas of cleanliness was referred to the concerned Railways for remedial measures. Thus measures to improve cleanliness were being adequately monitored at the RB level.

At the Zonal level, there is a system of inspection of cleanliness of stations by the officers at different levels[36].Audit observed that the frequency of inspections for various categories of stations by the different level of officers was not clearly specified. MoR stated (March 2013) that the improvement in cleanliness was being reported on weekly and monthly basis for RB's appraisal. Despite having a system of monitoring, deficiencies were observed in maintenance of existing infrastructure, services rendered through Clean Train Station, linen management, quality of drinking water, waste management etc.

4.9.5 Cleanliness at stations

4.9.5.1 Inadequacy of washable aprons and mechanized cleaning

The pre-requisite for mechanical cleaning are provision of a cement concrete apron (CC apron) on all platform tracks, even surface on platforms and circulating areas which are reasonably smooth for operation of machines. CC aprons are essential to keep the tracks between platforms free from night soil and garbage. Improper maintenance and damaged CC aprons and also uneven platform surfaces cause unhygienic surroundings at stations.



Drain along side the track clogged with garbage (Bilaspur/ SECR)

MoR in their Action Taken Note (December 2008) stated that washable aprons were planned to be provided at all major stations (A and B category) in a phased manner. They also stated that the repair and maintenance of washable aprons were being carried out on need basis. As per the orders issued by the RB, (December 2006) all Zonal railways to adopt mechanized cleaning at all A and B category stations. The implementation of these orders was examined in audit.

Test check by audit in 123 major stations[37] over 17 zones revealed the following:-

(i). Mechanised means of cleaning were adopted only at 65 stations i.e. only 53 per cent;

(ii). Out of 568 platforms, only 320 platforms (56 per cent) were provided with CC aprons. The maximum number of platforms without CC

[36] General Managers, Divisional Railway Managers, Service Improvement Groups.

[37] A1, A and B Category

aprons was observed in four zones[38] where the percentage ranged between 60 to 71 per cent.

(iii). Provision of washable aprons was found inadequate even in major stations of ER (Howrah, Naihati, Maldah, Bandel, Bardhaman and Sealdah) and SR (Ernakulam Town and Guruvayur);

(iv). At five stations[39] of CR, only one fourth of the area of the platforms could be used for mechanised cleaning. The remaining area was cleaned manually due to uneven surfaces and;

(v). In SWR damaged platform surfaces were not conducive for mechanical cleaning.

Joint Inspection with the Railway Officials to assess the extent of availability of CC aprons revealed the following:-

(i). Aprons were in dirty and damaged condition at some of the stations[40] test checked.

(ii). Covered drains are provided between tracks near the platforms for maintaining clean surroundings within the station premises. Absence of drains or drains clogged with garbage cause impediment in keeping clean washable aprons. Audit observed that in some[41] stations of SECR and SR, there were either no drains between tracks or drains were clogged /uncovered. For example, at Bilaspur station (SECR), the drain alongside the track was clogged with garbage;

(iii). Improper sanitation due to night soil deposit on damaged aprons or absence of washable aprons (Muri Station/SER, Jaisalmer, Alwar, Bikaner, Nagaur and Jodhpur of NWR, Ernakulam Station/SR, Naihati, Bandel, Barddhaman and Asansol of ER).

Thus, the Railway Administration was not able to effectively implement RB's guidelines (December 2006) for mechanised cleaning at all major stations. There was lack of synchronization between the guidelines/instruction of MoR and availability of infrastructure in the field for their implementation.

4.9.5.2 Waste Management at station

IR generates a huge quantity of non-biodegradable and bio-degradable wastes[42]. In IR, there is, however, no dedicated waste management cell. PAC recommended - "IR must frame a policy on waste management and lay down a mechanism whereby the quantum of garbage generated at stations can be

[38] NCR, ER, ECR and WR

[39] Pune, Ballarshah, Bhusawal, Sevagram and Igatpuri of CR

[40] (four stations[40] in SWR, PF No. 8 and 9 of Mumbai Central, Pune, LTT, Bhusawal and Ballarshah of CR, Bangalore (PF-7 and 8), VSG (PF1) , UBL (PF 2), Bijapur and Mysore (PF1) of SWR

[41] Bilaspur (SECR), Ariyalur, Ernakulam Town, Guruvayur, Coimbatore North, Tiruvallikeni, Chennai Beach etc

[42] Biodegradable wastes are capable of decomposing by micro organisms such as left over food, paper wastes etc.and non-biodegradable wastes are not decomposed naturally and remain in nature causing pollution to underground soil and water.

assessed realistically so that adequate collection, segregation and disposal facility along with necessary infrastructure could be put in place by the authorities". MoR in their Action Taken Note stated -"the garbage disposal system is already in place on IR".

Comptroller & Auditor General of India's Audit Report No 21 of 2012-13, (Railways), on "Environment Management in Indian Railways-Stations, Trains and Tracks" had observed that though a garbage disposal system was in place, the same was not effective due to lack of proper monitoring. The report, inter-alia, highlighted that the commitment of MoR for assessment and implementation of remedial measures to overcome the shortcomings in collection and disposal of garbage remained unfulfilled.

In this present audit exercise, the adequacy of dustbins at stations which is the primary garbage collection point within the station premises was examined. Audit observed that despite being pointed out in our previous audit report[43], MoR had not prescribed any scale for providing dust bins in the stations. However, in September 2012, MoR issued guidelines for making provision of dustbins at a spacing of 50 meter at A1, A and B category stations under Minimum Essential Amenities.

In the absence of any criteria (prior to September 2012) for assessing the adequacy of dustbins at stations, Audit conducted a survey of 2439 passengers at 34 railway stations across 17 zones between August 2011 and March 2012. Audit observed that on an average 42 per cent of passengers opined in favour of adequate number of dust bins except in CR where 54 per cent passengers felt that adequate number of dust bins was not available.

We also conducted a joint inspection with the Railway Officials at 212 stations over 17 zones and observed that dustbins were either without lids or were overflowing (NCR, WR, SECR and NWR).

Thus, inadequacy of dustbins and their poor condition contributed to unhygienic condition at station premises. A survey of 2186 passengers at 34 railway stations across 17 zones indicated that on an average 50 per cent of passengers felt that the cleanliness at stations 'requires improvement'. This opinion was buttressed by an in house 'Passenger Satisfaction Survey' (July 2012) by the Indian Railways Institute of Transport Management, Lucknow over Northern, North Central and North Eastern Railway to assess the standard of cleanliness. The survey of 696 passengers revealed that 39 per cent passengers rated the cleanliness of platforms as 'Poor'.

4.9.5.3 Toilets at Stations

Non-availability of required number of toilets and their unusable condition was highlighted in Audit Report No. 6 of 2007 (Railways) of the Comptroller & Auditor General of India on 'Cleanliness and Sanitation on Indian Railways'. In February 2007, MoR issued comprehensive instructions

[43] Audit Report No 6 of 2006-07, Union Government (Railways), Comptroller & Auditor General of India

specifying the revised norms[44] and quantum of minimum essential amenities at various categories of stations.

Test check in audit at 212 stations over 17 zones of the corrective action taken by the Railway Administration to provide adequate number of toilets at stations and also to maintain their cleanliness revealed that against the prescribed norms for provision of toilets, there was a shortfall of 66 *per cent* **(Annexure XX)**. If the number of toilets that were not in use is also taken into account, the non-availability of toilets rises to 74 *per cent*. Further, the toilets were not provided as per norms at 63 stations (29 per cent).

Passenger survey of 2314 passengers at 207 stations over 16 zones[45] revealed that 42 to 65 per cent passengers in seven zones[46] felt that the number of toilets at stations were inadequate. In five zones[47], 35 to 59 per cent passenger felt that the toilets at stations were very dirty.

Thus, absence of adequate number of toilets and filthy condition of the existing toilets not only deprived the passenger of a vital amenity but also created an unhygienic environment in station premises due to open defecation. MoR stated (March 2013) that toilets were being gradually converted into 'Pay and Use System' for good maintenance.

4.9.6 Cleanliness and Sanitation on Trains

Ensuring cleanliness and sanitation on trains is a major challenge to the IR due to the large number of passengers travelling. This problem is multiplied manifold in long distances trains. IR has introduced a number of schemes to improve the level of cleanliness and sanitation available on trains. The efficiency of implementation of these schemes was examined and the audit findings are discussed below:

4.9.6.1 Clean Train Station

IR launched the 'Clean Train Station' (CTS) Scheme in October 2002 for cleaning the interior of trains (coaches) especially toilets, aisles and vestibules by using state of-the-art equipment and machines. The Scheme was prescribed for limited mechanised cleaning attention by reputed and professional agencies to identified trains during their scheduled stoppages en route at nominated "Clean Train Stations'. RB directly monitors the implementation of this scheme. Each Zonal Railway is required to undertake such schemes in their nominated stations[48] as mandatory activity.

---

[44] As per revised norm, minimum requirement of urinals/toilets were 12/12 (A 1 Category),10/10 (A Category),6/6 (B Category),4/2(C Category),4/4 (D Category) and 1/1 (E Category)

[45] Excluding Metro Railways as there are no public toilets

[46] SECR,WCR,SR,SWR,NEFR,CR and NR

[47] SECR,WCR,SR,MR and NR

[48] Stations required to be covered under CTS are nominated by the RB on the basis of proposal submitted by the Zones

In Audit Report No.6 of 2007(Railways) of Comptroller &Auditor General of India, it was observed that the CTS scheme was largely ineffective due failure in cleaning of all coaches, non-placement of trains on the nominated platforms, inadequate deployment of manpower and machineries and lack of coordination among departments.

PAC also commented[49] that the CTS scheme could not achieve its perceived goals. MoR apprised the PAC that various initiatives were being taken which included cleaning of trains at the originating point with high powered jet machines.

The progress of implementation of CTS and its effectiveness over 16 zones was examined. Our objective was to assess whether the assurance of the MoR had actually translated into an improvement in cleanliness. Our examination revealed the following:

(i). Out of 30 stations identified under the CTS, it was implemented only in 28 stations (June 2012). Tender for the remaining two stations (Allahabad and Kanpur Central) in NCR were under process. In two stations (Bilaspur/SECR and Asansol/ER), CTS contract was terminated in October 2010 and November 2011 as it overlapped with the OBHS entrusted through separate contracts.

(ii). In respect of CTS contract at five stations[50], the currency of the contracts expired between June and October 2012. Since then, neither fresh contract was executed nor was the existing contract extended.

(iii). Instances of shortfall noticed in five zones during the period 2010-11 are shown below:

Zone	No. of Stations	Name of Stations		No. of trains identified for cleaning under CTS	No. of trains actually cleaned under CTS	Shortfall in per cent
SCR	2	Guntakal	Vijayawada	66	50	24
NWR	1	Jaipur		36	26	27
SR	1	Erode Jn		4579	4048	11
WR	1	Ahmedabad		10350	9197	11
NER	2	Chappra	Gorakhpur	55	34	38

Audit thus observed an average shortfall of about 20 per cent in the number of trains actually cleaned under the CTS.

iv) The trains cleaned under the CTS were only partially attended. Sleeper class coaches mostly remained unattended. For instance in SR, only 44 per cent of coaches were attended during the period April 2010 to

[49] 83rd Report (2008-09) on 'Cleanliness and Sanitation on Indian Railways'

[50] Itarsi Jn./WCR, Hubli Jn./SWR, Jhansi Jn./NCR, Balharshah/CR and Solapur Jn./CR

December 2010. The percentage of coaches which were not cleaned each month was in the range of 45 to 64 per cent. It was further observed that 37 per cent of toilets were not cleaned at Hubli (SWR) during 2010-11.

During joint inspection of trains attended through CTS project, audit observed that vestibules between coaches were littered with untreated food, used plastic plates, tea cups, etc. and thrown out on to the track. Toilets in most of the trains inspected were either chocked or dirty. This opinion was buttressed by the 'Passenger Satisfaction Survey' conducted by Indian Railways Institute of Transport Management, Lucknow (July 2012) on the Northern, North Central and North Eastern Railway. The survey of 696 passengers revealed that 45 per cent passengers rated the cleanliness of the toilets as 'poor'. Regarding overall cleanliness in the coaches, 34 percent passenger opined that the cleanliness in the coaches was 'good' and 28 per cent viewed it as 'poor'.

Vestibules used for storing garbage

On being pointed out (June 2012), MoR stated that hundred per cent coverage under CTS was not possible due to change in train schedules, change in nomination of platforms etc. The contention of the MoR was not acceptable as the percentage of trains not cleaned was high and not related to causes like change in train schedules and change in nomination of platforms. Further, MoR could not devise a suitable plan to ensure maximum coverage of trains/coaches within the existing constraints.

Thus, IR had only partially achieved the objective of maintaining cleanliness in trains mainly due to poor planning and inadequate monitoring at the zonal level. The deficiencies pointed out in our earlier report were still persisting, despite remedial action taken by MoR.

4.9.6.2 On-Board Housekeeping Service

With a view to improve the standard of cleanliness in trains particularly long distance trains, IR introduced 'On Board House Keeping Service' (OBHS) for mechanised cleaning of coach toilets, doorways, aisles and passenger compartments during the run of the trains. In October 2007, RB issued comprehensive guidelines for on-board attention

Human wastes in track covered with lime/bleaching powder at Ernakulam Town, SR

of cleaning of coaches and transferred the function from IRCTC[51] to the Mechanical Department. The guidelines, inter-alia, provided that the total outward/return journey of Mail/Express trains identified under the scheme must not be less than 16 hours. In July 2010, RB extended the scheme to platform return trains which have minimum journey of six hours. RB further emphasized that OBHS should result in perceptible improvement in the standard of cleanliness and hygiene in trains and a system of periodic review of contractors' performance should be put in place.

Scrutiny of records relating to implementation of OBHS in 16 zones[52] revealed the following:

(i). Out of 554 pair trains identified for implementation of OBHS, tenders for OBHS were finalised for only 350 pair trains (63 *per cent*). Out of 16 zones, the percentage of non-implementation in five zones (WCR,NR, NWR, NEFR and SR) ranged between 46 to 100 *per cent* **(Annexure XXI)**.

Howrah Barbil Jan Shatabdi/12021 under OBHS

(ii). Based on average Passenger Satisfaction Index (PSI) of a train on round trip basis, an amount of ₹ 0.53 crore was recovered as penalty between September 2010 and July 2011 from the contractors responsible for OBHS at Santragachi and Tatanagar station (SER).

Audit conducted a joint inspection with the railway officials in 88 trains over 17 zones to assess the efficiency and effectiveness of OBHS. The following general deficiencies were observed:

(i). Absence of adequate publicity through public address system in the station at the beginning of the journey about the presence of the Executive Housekeeper for cleaning and sanitation work in the running train;

(ii). The terms & conditions of OBHS agreement provides for disposal of garbage at notified stations en-route. It was observed that staff did not turn up for collection of garbage at the notified stations;

(iii). Sleeper class coaches were mostly left unattended and;

(iv). Lack of adequate supervision by Railway officials in respect of activities of staff involved in OBHS.

[51] IRCTC stands for Indian Railway Catering and Tourism Corporation

[52] Excluding Metro Railways as Metro Trains do not fulfill the criteria for coverage under OBHS

Survey of 3950 passengers conducted by Audit between August 2011 and March 2012 in 88 trains over 16 zones revealed that on an average 41 percent of AC and Non AC passengers were not satisfied with the performance of OBHS and felt that OBHS 'Needs improvement'.

Thus, the pace of implementation of OBHS in identified trains was slow. The performance of OBHS and the desired standard of cleanliness on trains through OBHS could not be achieved due to lack of adequate supervision by Railway officials.

4.9.6.3 Toilets in Trains

Sanitation generally refers to the provision of facilities for disposal of human wastes. It deals with maintenance of hygienic conditions through services such as collection and disposal of solid and liquid waste. The toilet in trains is one of the biggest source of environmental pollution.

Despite over two decades of field trials, MoR had not been able to finalise a model of toilet suitable to the Indian environment. Audit findings on this issue was highlighted in Audit Report No. 21 of 2012-13 (Railways) of Comptroller & Auditor General of India on 'Environment Management in Indian Railways- Stations, Trains and Tracks'.

4.9.7 Health and Hygiene

Maintaining a healthy and hygienic environment on sustainable basis to millions of passenger during their journey has remained a challenging task for the IR. Basic hygiene particularly appears to be the biggest concern in the minds of frequent travelers. Basic hygiene here would encompass quality of linen supplied to passengers and effectiveness of pest and rodent control.

IR also provides its passengers with food both at the stations and in its trains through its own caterers, contractors and authorized vendors. To a large extent, the catering on IR has been outsourced to IRCTC. Apart from food court, food plaza and fast food units, IRCTC supply food to passengers through its base kitchens and mobile catering services. IRCTC have their own system in place for monitoring and quality control of food.

4.9.7.1 Previous Report

Audit Report No.6 of 2007(Railways) of Comptroller & Auditor General of India had highlighted deficient contract management and weak monitoring along with failure to set quality benchmarks for the performance of the contractors which led to compromise in the quality of work done.

MoR in their action taken note stated that instructions had been reiterated to all Zonal Railways to ensure effective pest and rodent control mechanisms in the trains through professional agencies. Regarding linen management, MoR stated that the Zonal Railways had been suitably advised. In January 2010 and December 2010, MoR issued comprehensive guidelines on linen management and pest control respectively.

4.9.7.2 Linen Management

Availability of clean and hygienic linen supplied to passengers on board largely depends upon the quality of washing besides replenishment with new linen on age / condition basis. In December 2009, RB decided to entrust the comprehensive function of linen management on trains including washing, storage, supply and distribution of linen kit in trains etc., hitherto being managed by different departments, to the Mechanical (C and W) Department of the Railways as a single window agency. In zones having no provision for mechanised laundry, washing of linen was entrusted to outside agencies. Further, in January 2010, MoR issued comprehensive guidelines for linen management in condemnation of linen, stock verification etc.

The efficiency in linen management with reference to the instructions issued by MoR was examined. A scrutiny of records revealed the following:

I. The test check of linens prescribed at different levels by the RB was not being followed in the field offices of the zones as detailed below:

(i). No records were being maintained to show the details of test check conducted. Inspection at washing plant is not being conducted in the absence of specific clause in the existing contract, which is valid till November 2012 (Tiruchirappalli /SR);

(ii). Shortage in test check[53] by Junior Administrative (JA) grade officer and Assistant /Senior Scale officers (Nanded and Secunderabad/SCR, Pune/CR);

(iii). No inspection was done by JA Grade Officer/Assistant Scale Officer/Senior Scale Officer while receiving the washed linen in the depot (Rourkela/SER and ECoR) and;

(iv). Quarterly stock verification of the store depot was not being done (NCR).

II. Penalty amounting to ₹ 66.04 lakh was imposed for not adhering to quality norms (NWR- ₹ 0.39, NR- ₹ 16.15, ER- ₹37.10 and SER- ₹12.34). Washed linen to the extent of 39.21 and 23.16 percent was rejected as it did not meet the quality norms at the supervisory level at LTT[54] and Pune (CR) Stations respectively. Penalty[55] was also imposed on 30 occasions during 2010-11(CR).

A joint inspection was conducted with the Railway Officials in 88 trains over 17 zones to check the quality of linen supplied. The inspections observed the following:

[53] Two percent test check of washed linen in the depot once in every quarter by Junior Administrative grade officer, once in every month by Asst Scale Officer and on every consignment while receiving by the Supervisor.
[54] LTT stands for Lokmanya Tilak Terminus
[55] Quantum of penalty imposed could not be ascertained

(i). Linen supplied was dirty, torn /tattered and had outlived its prescribed life (SECR, ECoR, SR, ECR and SWR)

(ii). Tags indicating name of manufacturer, month and year of manufacturing were not available on each pillow cover and hand towel. In absence of tag, it was not be possible to ascertain whether the linen supplied was within its prescribed life (NCR[56],SCR ,SECR, ECoR, SWR and WR).

Survey of 1595 passengers conducted by Audit between August 2011 and March 2012 over 15 zones[57] revealed that on an average 43 per cent passengers felt that the general cleanliness of linen 'Requires improvement'; 48 per cent passengers felt that 'sometimes' linen was being supplied in torn or damaged condition.

Matter was brought to the notice of the MoR in June 2012. MoR stated (November 2012) that the linen were being supplied to the passengers as per the specification approved by the Board. Contention of the MoR was not tenable in view of the above deficiencies in linen management.

Thus, the lack of efficient control on monitoring mechanism specified by the MoR resulted in frequent supply of unhygienic and poor quality of service to its passengers. The results of the survey conducted by the Indian Railways Institute of Transport Management in July 2012 in some major stations (A1 and A category) over Northern, North Central and Northeastern Railways support the audit conclusion as it revealed that 45 per cent passengers felt that the quality of linen supplied was 'Poor'.

4.9.7.3 Setting up of automated mechanized laundries

To improve upon the standard of cleanliness and hygiene in linen being supplied to the passengers in trains, RB issued guidelines (December 2009) to Zonal Railways for setting up of mechanized laundries. Minister for Railways during her Budget speech (2011), proposed to set up 3 mechanized laundries at Nagpur, Chandigarh and Bhopal in addition to the 19 others already commissioned or being set up at various places across all zones.

A review in Audit revealed that out of 54 mechanized laundries[58] proposed to be set up in 16 zones, 15 laundries (27 per cent) have so far been commissioned in eleven zones[59] (May 2012). For seven mechanized laundries in six zones[60], only contract has been placed and the progress of work was very insignificant. Slow progress in setting up of mechanized laundries was indicative of lack of urgency in its initiatives in improving the standard of cleanliness and hygiene. This, in turn, led to large scale outsourcing of

[56]Kerala express (No. 12625)
[57] Except Metro Railways and Eastern Railways.
[58] Departmental-31,BOOT (Built,Operate,Own and Transfer) Model-18,BOO Model-2 and reconsideration demanded by the concerned zonal railways-3
[59] CR,ER,SR,NEFR,NR,SCR,SER,WR,SECR,WR and ECR
[60] CR,ECR,SECR,WR,SER and SWR

cleaning of linen and in increased passenger dissatisfaction besides compromising health risk.

Thus, the action plan and initiatives of IR for setting up of mechanized laundries to improve the quality of washed linen supplied to passengers was not aligned with its policies and guidelines.

4.9.7.4 Pest Control

For improving the performance of pest control measures, MoR in their Action Taken Note had stated that the instructions to Zonal Railways had been reiterated to ensure effective pest and rodent control in trains through professional agencies. MoR also stated that the Zonal Railways had been directed to launch special drives and depute officials for incognito checks in trains

In 2010, RB issued comprehensive guidelines/instructions to control the menace of pest and rodents in trains. These instructions specified the frequency of pest control treatment, quality of insecticides to be used etc.

Scrutiny of records relating to pest control measures undertaken by the IR disclosed the following:

- A shortfall in the periodicity of pest control as per norms prescribed was observed in ER, SER, CR, NCR and NWR.
- A penal clause had been included in the contract about the presence of cockroaches and rodents in coaches in ER. During 2010-11 penalties amounting to ₹ 7.66 lakhs was imposed on firms in two divisions[61] and;
- In ECR, though pest control measures were taken in all the selected trains, pesticides and chemicals used were not as per specification approved by the Central Insecticide Board.

During the joint inspection of 88 trains over 17 zones, Cocoons/Cockroaches were observed in AC and Non-AC Coaches of selected trains in six zones[62].

A passenger survey of about 1600 AC passengers and 4000 Non-AC passengers over 16 zones revealed that on an average 50 percent AC passengers and 47 percent Non-AC passengers felt that the pest control measures 'Needs Improvement'. Further, 24 percent AC passenger and 18 percent Non-AC passengers stated that they had always seen cockroaches/rats etc. in trains.

Matter was brought to the notice of the MoR in June 2012. MoR stated (November 2012) that the pest control treatment were being carried out in all the select trains periodically as per the norms laid down by the Board. Contention of the MoR was not tenable as there were a large number of

[61] Howrah (` 6.89 lakh) and Sealdah (`0.77 lakh)

[62] SCR, NCR, SER, SECR, WR and ECoR.

instances of cocoons/cockroaches being observed in AC and Non-AC Coaches of test checked trains in six zones[63].

Thus, despite highlighting the ineffectiveness of pest control in our earlier Audit Report and issue of comprehensive guidelines, IR has not been able to overcome the menace of pest and rodents.

4.9.7.5 Food Adulteration

In order to ensure standards of hygiene are maintained, the Prevention of Food Adulteration Act, 1954 and Prevention of Food Adulteration Rules, 1955 were passed. These rules direct that inspection of premises as prescribed by the Food (Health) Authority to satisfy himself that the conditions of the licenses are being observed, investigate any complaint and procure and analyse if necessary, samples of food which are being manufactured, stocked or sold or exhibited for sale in contravention of the provisions of the Act. Based on this Act the MoR framed guidelines for ensuring quality control of the food being supplied by them /their contractors to their passengers. The standing quality control (QC) check prescribed[64] by the MoR, provides for regular inspection of all eating places by the Medical Officer and Health Inspectors falling under their jurisdiction, annual medical examination of all Food handlers, collection and analysis of foods samples at Railway Food Analytical laboratories.

The above Acts have been replaced with the enactment and notification of the Food Safety and Standards Act 2006 and Food Safety and Standards Rules 2011 with effect from August 5, 2011. The detailed guidelines regarding sampling and tests to be conducted in Railways under the new Act are yet to be framed. However, the results of the food samples collected at stations and tested as per the provisions laid down in the earlier Acts and also as prescribed by the MoR formed the basis of our observations.

Our study in 212 stations across 17 zones revealed the following deficiencies:

(i). Testing of food samples as per PFA Act was not done during the period of review in 41 stations (19 per cent) over 11 zones. Even in major stations like Howrah and Sealdah (ER), shortage in sample testing of food under quality control check was noticed during 2006-10;

(ii). Out of 14763 samples required[65] to be tested under PFA Act, only 7309 samples (49 per cent) were collected and tested. Of them, 337 samples (4 per cent) were found adulterated or sub-standard;

(iii). Out of 17867 food samples required to be checked as per quality control check as prescribed[66] in the Indian Railway Medical Manual,

[63] SCR,NCR,SER,SECR,NEFR and ECoR

[64] Para- 1010 of the Indian Railway Medical Manual Volume II

[65] Two samples per month per station

[66] At least one/two/four samples should be collected by each Health Inspector

only 15447 samples were tested. On analysis, 868 samples (five per cent) were found sub standard.

Passenger surveys of 3382 Non-AC passengers and 1407 AC passengers conducted by Audit between August 2011 and March 2012 in 88 trains over 17 zones revealed that 29 per cent of Non- AC passengers and 25 per cent AC passengers felt that the quality of food was 'Poor'. Further, 54 percent AC passengers and 50 per cent Non-AC passengers opined that the quality of the food 'Requires Improvement'. This view was buttressed by a similar survey conducted by the Indian Railways Institute of Transport Management in July 2012 at some major stations (A1 and A category) which revealed that 31 per cent passengers felt that the quality of food was 'Poor'.

Thus, though the cases of adulterated or sub-standard food were not significant, there was lack of adequate monitoring in compliance with the statutory provisions including extant provisions of MoR for testing of samples. Despite imposition of penalty for adulterated or sub-standard foods, quality of food supplied had not been improved as expressed by the passengers.

4.9.7.6 Indian Railways Catering Policy 2010

The main objective of the New Catering Policy 2010 of IR is to provide hygienic, good quality and affordable food to the traveling passengers by adopting best trade and hospitality industry practices. As per this Policy, IR shall progressively take over management of all mobile catering services including base kitchens and mobile catering through departmental catering in a phased manner. On expiry of existing contracts presently being managed by IRCTC, fresh contracts will be awarded by the zonal Railways.

The new catering policy inter-alia provides for quality assurance programme and priority for solid waste management. The policy also emphasized the need of provision of suitable space in Rajdhani and Duronto trains for stacking and service of meals and installation of catering equipments and trolleys. This would eliminate the usage of vestibules and area around the toilets presently being used for this purpose and ensure hygienic services.

PAC in their 83rd Report (2008-09) commented on the various complaints regarding lack of hygiene and maintenance of base kitchens. PAC recommended that the issue of separation of garbage into degradable and non-biodegradable should be seriously taken care of. In response, MoR stated that IRCTC had been suitably advised to take corrective measures in this regard.

Review of the status of implementation of the New Catering Policy and improvement on the ground as a result of the assurance of MoR on PAC's observation revealed that the new policy had not been fully implemented in any of the zones and the process of taking over the Catering Services from IRCTC is still in a transition phase. Though some mobile and static units were taken over from IRCTC, they were continued with the same catering contractor with IRCTC.

Joint Inspection with the Railway Officials at 212 stations and in 88 trains over 17 zones to assess the extent of implementation of new catering policy generally revealed the following:

- The standard of cleanliness inside the pantry car including kitchen and store room of the selected trains was very poor;
- The capacity of the dustbins provided in pantry cars was found inadequate. Vestibule area was being utilized for garbage dumping by the catering staff in trains provided with pantry car. Vestibules and the area around the toilets were being used for stacking and making arrangement for distribution of food to passengers leading to unhygienic conditions;
- In NER, waste generated on trains were being thrown on to the tracks by the catering staff just before approach of the terminating station. Railway Administration (NER) stated that the pantry car contractors had been suitably instructed to collect the garbage in dustbins and unload them at the nominated stations.
- In all stations, separate dustbins for segregation of bio-degradable and non-biodegradable waste were not provided in static food stalls;
- In CR, base kitchen at Ballarshah station was found dirty and rats were seen in the kitchen store room. The Railway Administration had not framed any Quality Assurance Programme ;
- In SER, all the mini pantry cars attached with every coach of 12021 Howrah-Barbil Jan Shatabdi Express were in a dilapidated condition. Essential kitchen appliances like Freeze, Hot Case, Electric Switch Board, Water Boiler, Bottle cooler, Geyser and other equipments were not working properly.

Thus, the MoR has not been successful in improving standards of cleanliness and hygiene while catering directly to passengers.

4.9.7.7 Drinking Water

Inadequacy in drinking water supply at stations was brought out in Audit Report No.6 of 2007 (Railways), Comptroller & Auditor General of India. PAC also observed[67] that the inadequate water supply compounded by dirt and unhygienic surroundings made not only the amenity unfit for use. PAC, therefore, desired that the number of taps be increased expeditiously in a phased manner at all stations throughout the country. Subsequently, in January 2007, RB prescribed a minimum requirement of 12 taps per platform for major stations (category A1, A and B) and six taps per platform for category C and D stations.

[67] 83rd Report (2008-09) on 'Cleanliness and Sanitation on Indian Railways'

Test check in Audit in respect of measures adopted by IR for providing adequate and clean drinking water to passengers at Stations revealed the following:

(i). In two zones (SR and ER), the total number of drinking water taps available at the selected stations were less than the prescribed norms;

(ii). In six zones (SCR, SER, SECR, ECoR, NEFR and ER[68]) Reverse Osmosis plant as advised (November 2011) by the RB was not provided in any of the stations test checked. Water supplied at stations was treated by manual chlorination process;

Provision of adequate water supply was also checked during Joint Inspection and it revealed the following:

(i). Though provision for 20 taps had been made in Coimbatore North (A1 category station in SR), no water connection had been provided. Instances of water booths without taps were also found in six out of 14 stations test checked in SR. At Rameswaram and Tiruvallikeni stations (SR), the sinks were found clogged, creating unhygienic condition and making them unusable;

(ii). In NCR and WR, the only RO plant installed at Kanpur station and Valsad was found out of order.

Further, out of 2468 passenger surveyed by Audit over 17 zones, 42 per cent passengers felt that the tap water might not be safe for drinking and 46 per cent passengers felt that bottled water was safer. In all zones except SER, more than 30 per cent passengers responded that they never used tap water.

Thus, the initiatives and performance of the IR in providing adequate and safe drinking water was not commensurate with the commitments made before the PAC. The norms laid down by the RB were not implemented. Lack of maintenance of even the existing facilities was indicative of ineffectiveness of the system of internal checks put in place.

4.9.7.8 Quality of drinking water

As per extant instructions[69], Health Inspectors should check the presence of residual chlorine daily at various distribution points[70] randomly and record of the same should be kept. Health Inspectors should also collect water samples for bacteriological examination periodically and send water samples for chemical examination once in six months.

We examined the compliance to the extant instructions in respect of prescribed frequency of bacteriological testing and chemical analysis and their results at 212 stations over 17 zones. The result of the study is detailed in **Annexure XXII**.

[68] In ER, water was treated by both manual and auto chlorination and rapid sand filteration

[69] Para 913 and 914 of Indian Railways Medical Manual Volume II

[70] platforms, refreshment rooms, waiting halls, hospitals, schools and in the Railway colonies (preferably from farthest taps in the distribution systems)

Review of extent of unfit per cent[71] of water samples **(Annexure XXIII)** collected at 212 stations over 17 zones revealed that the maximum instances of unfit samples of water were noticed in respect of residual chlorine. There was also an increasing trend of instances of unfit samples. ECR, SWR and SER recorded the maximum number of cases of unfit samples (exceeding 50 per cent) particularly at two stations – Sagoli/ECR and Goraya/NR where all samples collected during 2010-11 were found unfit. A high percentage of unfit samples were also observed at New Jalpaiguri and Siliguri Junction of NEFR.

MOR stated that efforts were being made to cover all the stations as per the prescribed frequency in respect of bacteriological examination of water being supplied. MOR also stated that there was no shortfall in respect of chemical analysis in terms of Railway Board's policy on chemical analysis of water (April 2001). The contention of the Ministry was not tenable in view of the deficiencies in observing prescribed frequency.

Thus, weakness in monitoring compliance with the extant instructions on the part of both RB and the Railway Administrations resulted in substantial shortfall in the collection of samples for testing. There was an increasing trend in the percentage of unfit samples collected from different stations across zones.

4.10 Conclusion

On the basis of the recommendations made by the PAC, the MoR had initiated measures to improve the level of cleanliness and sanitation on stations and trains. However these measures were not translated into concrete improvement in the level of cleanliness on both stations and trains. The deficiencies and concerns pointed out in our earlier Audit Reports were only partially addressed. Weak monitoring of the quality of washed linen supplied to the passengers and slow progress in setting up of automated mechanised laundry had not only resulted in large scale outsourcing of washing of linen but also contributed passenger dissatisfaction. Lack of proper monitoring of the implementation of the guidelines/instructions had telling effect on the effectiveness of the pest and rodent control measures initiated by the IR.

Further, IR's efforts in implementing New Catering Policy 2010 in providing hygienic, good quality and affordable food to passengers and improving standards of cleanliness at stations were largely ineffective. Assurance to PAC for segregation of bio-degradable and non-biodegradable wastes was also not fulfilled.

Remedial measures initiated by the IR to ensure adequate safe drinking water were inadequate. IR also failed in implementing laid down norms for making provision of water taps and maintaining the existing facilities. The high rate

[71]Unfit percent refers to percentage of samples found unfit with reference to the total number samples collected and tested during the year at the selected station.

of unfit water samples was indicative of deficiency in the remedial measures taken by the Railway Administration.

4.11 Recommendations

- IR needs to frame a time bound action plan at the zonal level for effective implementation of its policies and guidelines.
- IR needs to strengthen its monitoring mechanism especially at the zonal level and ensure strict compliance of guidelines/instructions issued by the RB for achieving an improvement in the levels of cleanliness.
- IR needs to expedite implementation of bio-toilets in coaches to prevent open defecation and maintenance of hygienic surroundings.
- IR to effectively monitor the quality of washed linen supplied to passenger and initiate pest and rodent control mechanism.
- Implementation of New Catering Policy 2010 may be expedited and strengthen supervision/monitoring mechanism for effective implementation of the policy to ensure improvement in the standard of cleanliness and hygiene while catering to rail users.
- IR to strengthen its monitoring mechanism to ensure strict compliance of its guidelines/instructions for ensuring provision of safe drinking water.

  IR needs to regularly review and monitor the fulfilment of the various commitments made in the Citizen's Charter as a Service Provider, ensure discharge of its responsibility by the appropriate design and implementation of norms, benchmarks, Quality Assurance and Quality Control.

(VIJAYA MOORTHY)

New Delhi **Deputy Comptroller and Auditor General**

Dated:

Countersigned

(VINOD RAI)

New Delhi **Comptroller and Auditor General of India**

Dated:

ANNEXURES

- ***Commercial Publicity in Indian Railways***
- ***Implementation of line capacity augmentation works on High Density Network (HDN) routes***
- ***Cleanliness and Sanitation in Indian Railways- A Follow Up Report***

Annexure I
(Para No.1.6.3)

Statement showing media wise earning during 2009-10 to 2011-12 (₹in lakh)

Railway	Year	Trains	Ticket/ Reservation Form/ Chart	Stations	Other Media viz. LC gates, approaches to Rly stations, websites, Time table etc.
1	*2*	*3*	*4*	*5*	*6*
	2009-10	522.79	14.39	2831.68	0.56
	2010-11	631.4	0.25	3059.59	1.04
CR	2011-12	532.59	56.76	3120.56	1.65
	2009-10	62.8	42	461.65	14.02
	2010-11	196.95	25.68	710.87	8.01
ER	2011-12	181.82	14.01	563.3	16.89
	2009-10	0.49	103.79	160.82	5.73
	2010-11	27.8	94.44	164.01	6.59
ECR	2011-12	2.39	33.37	265.96	11.93
	2009-10	47.98	0	271.27	0.61
	2010-11	45.5	0	301.37	2.55
ECOR	2011-12	52.59	0	264.1	2.05
	2009-10	305	226	3732	0
	2010-11	233	168	3929	49
NR	2011-12	73	106	4934	123
	2009-10	16.33	0	270.78	1.05
	2010-11	12.12	0	257.83	3.76
NCR	2011-12	26.32	12.25	300.66	5.13
	2009-10	39.22	0	107.61	16.53
	2010-11	45.58	0	143.81	25.42
NER	2011-12	11.22	0	205.95	28.42
	2009-10	The CCM of NFR had not assigned activity-wise target to the Divsions for earnings from Comm. Publicity.			
	2010-11				
NFR	2011-12				
	2009-10	0	3.13	292.61	136.62
	2010-11	0	2.34	442.98	15.1
NWR	2011-12	0	17.05	347.22	29.37
	2009-10	153.84	0.64	1838.37	41.17
	2010-11	314.71	26.29	2445.19	89.6
SR	2011-12	265.66	23.05	2592.88	69.16
	2009-10	97.66	79.57	475.55	38.59
	2010-11	210.09	63.1	736.37	26.31
SCR	2011-12	212.87	0.16	837.32	27.25
	2009-10	50.15	17.44	252.83	12.81
	2010-11	64.96	0	271.29	6.58
SER	2011-12	45.02	16.48	297.71	13.53
	2009-10	38.73	30.12	543.87	0.26
	2010-11	77.35	32.75	619.84	2.36
SWR	2011-12	115.41	3.73	876.33	0
	2009-10	617.26	38.01	2840.27	125.04
	2010-11	308.75	52.45	3217.98	143.11
WR	2011-12	302.35	74.86	4387.67	211.78
	2009-10	21.81	6	231.99	3.77
	2010-11	23.63	25.52	210.96	1.27
WCR	2011-12	28.38	2.42	254.16	1.25
	2009-10	13.74	5.36	58.03	21.5
	2010-11	22.42	1.56	137.67	16.92
SECR	2011-12	11.81	2.68	95.29	14.73
	2009-10	147.77	0	762.29	0
	2010-11	280	0	922.53	0
METRO	2011-12	60.24	0	1088.3	0
	2009-10	**2135.57**	**566.45**	**15131.62**	**418.26**
	2010-11	**2494.26**	**492.38**	**17571.29**	**397.62**
Total	**2011-12**	**1921.67**	**362.82**	**20431.41**	**556.14**
Grand Total		***6551.5***	***1421.65***	***53134.32***	***1372.02***
(₹ in crore)		***65.52***	***14.22***	***531.34***	***13.71***

Annexure II

(Para No.1.6.3.4)

Statement showing details of earnings from PRS/UTS tickets /Reservations Chart/ Reservation Forms during the year 2009-10 to 2011-12 (₹in lakhs)

Railway	Earnings from PRS Tickets	Earnings from UTS tickets	Total Earnings from PRS/ UTS Tickets (col. 3+ col. 4)	Earnings from Reservation Charts	Earnings from Reservation forms	Whether quarterly report on revenue generated is being furnished to RB	Whether quarterly report on mode of tender fialization is being furnished to RB	Remarks/ reasons for non-compliance, if any
1	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
CR	56.76	5.00	61.76	6.59	3.05	Yes	No	
ER	81.70		81.70			Yes	No	
ECR			0.00		4.38	Yes	No	
NR	460.00	40.00	500.00	0.00	0.00	Not made available to audit		
NCR	12.25		12.25			No	No	From 2011-12 NCR started to furnish quarterly reports to RB
NWR	16.80	1.09	17.89	0.94	3.70	Yes	No	
NFR	14.85		14.85			No	No	
SR	20.77	27.37	48.14		1.84	Yes	Yes	
SCR	100.50	42.60	143.10		0.16	No	No	Earning from PRS & UTS for 2009-10 includes earnings from reservation form & charts.
SER	33.93		33.93			Yes	Yes	
SWR	29.42	30.00	59.42	6.87	0.33	Yes	No	
WR	155.73	9.60	165.33	1.10		***Yes***	No	
WCR	33.94		33.94			No	No	
SECR	9.60		9.60			Yes	Yes	
	1026.25	**155.66**	**1181.91**	**15.50**	**13.46**			
₹ in crore	**10.27**	**1.56**	**11.83**	**0.15**	**0.13**			
Grand Total				**12.11**				

Annexure III

(Para No.1.6.4.3)

Statement showing delay in finalisation of Commercial Publicity tender within 45 days (effective till October 2011) /90 days (effective from November 2011)

Railways	Division(s)	No. of contract cases	Value of contract (₹ in crore)	Range of delays		Loss of revenue due to delays (₹ in crore)
				For time limit of 45 days	For time limit of 90 days	
1	*2*	*3*	*4*	*5*	*6*	*7*
CR	Mumbai	4	2.79	54 to 118		0.56
ER	Sealdah	2	1.00	41 to 71		0.04
ECR	Samastipur	1	1.10	50		0.00
ECoR	Khurda Road and Waltair	16	3.19	4 to 154		0.23
NR	Delhi and Lucknow	15	4.60	1 to 180		0.00
NCR	Jhansi and Allahabad	28	7.90	12 to 175		0.62
NWR	Jodhpur and Jaipur	6	2.71	15 to 93		0.17
NER	Izzatnagar and Lucknow	24	2.87	16 to 206	213	0.30
NFR	Lumding	8	0.44	27 to 148		0.09
SR	Trivendrum and Chennai	10	3.70	76 to 114	35	0.91
SCR	Secunderabad and Vijayawada	59	14.16	2 to 124		0.49
SER	Ranchi and Kharagpur	5	5.25	72 to 319	16 to 84	0.41
SWR	Mysore and Bangalore	18	4.41	11 to 84		0.45
WR	Mumbai Central and Ahmedabad	31	22.89	1 to 124	27	3.86
WCR	Bhopal, Jabalpur and Kota	22	6.56	20 to 201		0.29
SECR	Bilaspur	2	0.08	115 and 75		0.00
Metro		19	1.26	36 to 190		0.25
	Total	**270**	**84.91**			**8.67**

Annexure IV

(Para 2.5.1.2)

Statement showing details of works identified in the Blue Print sanctioned belatedly over selected HDN routes

HDN	Rly	Section	Name of the work	Year of proposal by the Zone	Investment Reqd as per Blue Print (₹ in crore)	Proposed Cost (₹ in crore)	Year of Sanction in Pink Book/ Orange Book/ LAW	Reasons for belated sanction
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
2	CR	Kalyan-Kasara	Kalyan-Kasara - 3rd line (67 Kms)	2009-10	167.00	252.13	2011-12	Not available
2	CR	JL-BSL	Grade Separator at Jalgaon	2007-08	75.00	NA	2011-12	The work was proposed with JL-BSL 3rd Line during 2007-08
5	NCR	MTJ-BTSR	Flyover at Bhuteshwar (BTSR) **	2007-08	75.00	146.85	2011-12	Delay in submitting to the Railway Board the Reconnaisance Engg. Cum Traffic survey. It was submitted in April 2010 only.
5	NCR	MTJ-BTSR	Junction arrangement at Mathura (MTJ)	2008-09	50.00		2011-12	
2	SER	Dongaposi-Rajkharswan	Dongaposi-Pendrasoli 3rd line	2007-08	252.00	271.76	2010-11	Not available
2	SER	Kharagpur-Panskura	Kharagpur-Panskura(45 Kms)-3rd line	2004-05	140.00	146.30	2008-09	Not available
5	SCR	BPQ - BPA	3rd Line (Patch) in BPQ-Raghavapuram Sec (65 KMs)	2006-07	170.00	210.40	2008-09	Not available
7A	SCR	GDR-RU	IBS-8 in Gudur-Renigunta Section (85 KMs)	2008-09	12.00	12.00	2009-10	The work proposed in 2008-09 by the Railway was sanctioned by the RB in 2009-10.
7A	SWR	HPT-VSG	HPT-VSG Doubling	2008-09	1840.00	1753.31	2010-11	Not available

*** Year of proposal by the zone not available on record. Hence year of inclusion in the Blue Print has been taken as the year of proposal*

Anneuxre V

(Para 2.5.1.2)

Statement showing details of works identified in the Blue Print but not yet sanctioned over selected HDN routes

Route	Rly	Section	Name of the work	Year of proposal by the Zone	Investment required as per Blue Print (₹ in crore)	Proposed Cost (₹ in crore)	Reasons for non proposal/ belated proposal by the Zone
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
2	CR	WR-NGP	Wardha-Nagpur- 3rd Line (78 Kms)	2009-10	234.00	223.80	not available on record.
5	CR	WR-BPQ	Doubling of Chitoda-Sewagram (4 Kms)	Not Proposed	75.00	-	not available on record.
5	CR	ET-AMF	Automatic Signelling Itarsi-Kiratgarh (10 Kms)	Not Proposed	4.00	-	not available on record.
2	CR	MMR-BSL	Manmad- Bhusawal-- 3rd Line (184 Kms)	2007-08	550.00	814.55	Since the work was not sanctioned up to 2010-11, Only part Section of BSL-JL (24.13 Kms) was proposed for 3rd line along with Grade separator at Jalgaon (PB No 15) at Rs 184.06 and the same was sanctioned.
3	NCR	PWL-MTJ	4th line between MTJ-PWL	Not Proposed	250.00	-	Delay in submitting Preliminar Engineering Cum Traffic Survey Report to Railway Board. by the zone
2	SER	Bondamunda-Manoharpur, Manoharpur-Goelkera & Goelkera-Rajkharswan	Goelkera-Rajkharsawan 3rd line not sanctioned (Part of Goelkera-Sini 3rd line identified in the Blue Print)	2010-11	76.00	457.09	not available on record.
2	SER	Dongaposi-Noamundi	Flyover at Noamundi	Not proposed	75.00	-	not available on record.

Route	Rly	Section	Name of the work	Year of proposal by the Zone	Investment required as per Blue Print (₹ in crore)	Proposed Cost (₹ in crore)	Reasons for non proposal/ belated proposal by the Zone
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
2	SECR	BIA-KMI-SZB	Bhilai-Urkura Automatic signalling	Not Proposed	11.00	-	not available on record.
2	SECR	BIA-KMI-SZB	Fly over at Sarona	Not Proposed	75.00	-	not available on record.
2A	SECR	BSP-APR	Regradation of Khongsara-Khodri	Not Proposed	46.00	-	Doubling work in the section is being executed by RVNL(SLKR-KGS and KOI-APR). On commissioning of the doubling, after assessment of the traffic flow, the modalities for re-grading would be considered and accordingly the proposal for inclusion of the work would be undertaken after survey as it involves suspension of one line for a long period.
2A	WCR	KTE - Bina	Grade separator at Katni	Not Proposed	75.00	-	The proposal of grade separator at Katni has been dropped and Chord line proposed and included in Pink Book 2011-12.
2A	WCR	RTA-KOTA	IBS-3 in RTA-KOTA section	Not Proposed	3.60		Railway is of the view that IBS is not to be provided as it is not techanically feasible as RTA-KOTA is single line section,
5	WCR	BINA-BPL	Grade separator at BINA	2010-11	50.00	not available	Railway Board decision/ sanction on survey report is awaited
5	WCR	BPL-ET	Automatic signalling ET-Khutwansa	Not Proposed	7.20	10.40	not available on record.
5	SCR	BPQ - BZA	3rd Line (remaining Portion) in BPQ-BZA (381 KMs)	2008-09	1145.00	BPQ-KZJ: ₹1207 Cr and BZA-KZJ: ₹1054 Cr.	not available on record.
5	WCR	BPL-ET	Conversion of 'C' class to 'B' class at Itayakalan.	Not Proposed	0.33	-	not available on record.

Annexure VI

(Para 2.5.1.2)

Statement showing details of works (other than Blue Print identified) proposed by the Zone but Not yet sanctioned over select HDN routes

Sl	HDN Route	Rly	Section	Name of the work	Year of proposal by the Zone	Proposed Cost (in crore)
1	*2*	*3*	*4*	*5*	*6*	*7*
1	5	CR	ET-NGP	Vaghali- standardisation of layout by providing loop line in down direction.	2008-09	3.07
2	2	CR	NGN-JL	Pachora- Shifting of goods shed from UP passanger loop to UP goods loop and developmen of full rake facility	2008-09	2.71
3	7	CR	DD-SUR	Poplaj- Conversion of siding station on to standard 3 line layout on single line section	2008-09	2.90
4	7	CR	DD-SUR	Hunshihadgil-Conversion of siding station on to standard 3 line layout on single line section	2008-09	2.93
5	7	CR	DD-SUR	Bablad- Conversion of siding station on to standard 3 line layout on single line section	2008-09	2.82
6	7	CR	DD-SUR	Tilati-Conversion of siding station on to standard 3 line layout on single line section	2008-09	3.01
7	2	CR	MMR-NGN	Kajgaon Shifting of Mumbai end cross over to remove Permenant speed restriction	2008-09	0.64
8	7	CR	HG-GR	Gaudgaon- Conversion of yard lay out in standard layout as of single line section	2008-09	2.16
9	7	CR	DD-SUR	Urli, Yevat and Kedgaon- providing of emergancy crossover	2008-09	1.10
10	5	CR	WR-BPQ	Wani- Remodelling of yard to accommodate 18 coah trin	2008-09	1.83
11	2	CR	IGP-MMR	IGP- removing of speed restriction by shifting of alignment between Kms 122-123Up NE ghat.	2008-09	1.71
12	2	CR	KYN-TLA	Vasind- Removing of Permenant Speed Restriction	2008-09	1.49
13	2	CR	KYN-TLA	Khadavli- Removing of Permenant Speed Restriction	2008-09	1.01
14	2	CR	BSL-BD	Malkapur Road: Conversion of C class station into standard 4 lines B class station.	2009-10	5.70
15	2	CR	BD-WR	Dipori- Conversion of C class station into standard 4 lines B class station.	2009-10	5.68
16	2	CR	BD-WR	Talni- Conversion of C class station into standard 4 lines B class station.	2009-10	5.73
17	5	NCR	AGC-BINA	Jhansi: Provision of 3 new "B" class station by converting existing IBH in between section AGC-BHA,BHA-JJ & JJ-MIA.	2007-08	19.30
18	5	NCR	AGC-BINA	JHS-AGC Provision of 3rd line between GWL-BLNR	2008-09	1.66
19	5	NCR	AGC-BINA	Remodeling of JHS Yard	2008-09	5.33
20	2	SER	Rajkharswan-Chakhadhrpur	Provision of 3rd line of Pendrasali-Rajkharswan bypass upto Chakradharpur(20Kms)	2007-08	60.82
21	2	SER	Panskur-Kharagpur	Panskura-Development of unloading platform	2008-09	97.32
22	2	SER	Panskura-Kharagpur	Panskura-Extention of common loop no.1 &2 by providing 2 crossing of Howrah end	2009-10	1.62
23	2	SER	Bondamunda-Rourkela	Bondamunda-Realingment of line no.7 and construction of new line no.7A	2009-10 / 2010-11	7.01

Sl	HDN Route	Rly	Section	Name of the work	Year of proposal by the Zone	Proposed Cost (in crore)
1	*2*	*3*	*4*	*5*	*6*	*7*
24	2	SER	Rajkharswan-Dongaposi	Rajkharswan-Dongaposi-Automatic signalling	2008-09	38.98
25	2	SER	Kharagpur-Tatanagar	Nimpura-Upgradation of BCN-ROH Depot	2007-08	1.44
26	2	SER	Santragachi-Panskura	Santragachi-Panskura 4th line	2004-05	243.88
27	2	SECR	BYT-URK	Provision of fly over at Urkura stn	2007-08	76.65
28	2	SECR	CPH-JSG	Provision of Addl. Up Loop at Shakti station	2008-09	2.94
29	2	SECR	CPH-JSG	Provision of addl. Down Loop at Jamga	2008-09	5.32
30	2	SECR	CPH-JSG	Provision of new crossing station between IB-JSG	2008-09	18.53
31	2	SECR	CPH-JSG	Provision of Addl. Loop cum UP reception line at Kotarlia station	2009-10	5.32
32	2	SECR	URK-SZB	Extensin of bay line at Raipur with secondary examination	2008-09	6.26
33	2	SECR	SDL-Katni	Removal of PSR between Shahdol - Badhwabara	2009-10	8.18
34	2	SECR	CPH-JSG	Yard remodelling at Raigarh station	2009-10	24.57
35	2	SECR	BSP-CPH	Provision of crossing station between Robertson and Bhupdeopur stations of Bilaspur Division	2009-10	13.72
36	2	SECR	KAV-NGP	Doubling between Kalumna-Koradih	2009-10	37.29
37	2	SECR	BSP-APR	Yard remodelling at APR station	2009-10	6.81
38	2	SECR		Conversion of IBH at Dhanoli into B class station with 4 lines	2009-10	6.39
39	2	SECR	SDL-Katni	Provision of additional UP & DN at Vilayatkalan station	2009-10	9.45
40	2	SECR	BSP-CPH, CPH-JSG	Simultaneous reception and dispatch facility on main line on CIC section at RIG. Kotarila, Naila, JRMG	2009-10	5.40
41	2	SECR	SDL-Katni	Conversion of DN loop into common loop at Umaria stn	2009-10	1.03
42	2	SECR	KAV-NGP	Provision of two addl. Up by Extending sorting line No. 1&2 at Itwari	2010-11	7.22
43	2	SECR	CPH-JSG	Provision of addl. Up loop at BUA station	2010-11	6.43
44	2	SECR	G-NGP	Remodelling of Gondia yard	2010-11	19.67
45	2	SECR	URK-SZB	Provision of IB signal between Raipur and Sarona	2011-12	1.72
46	2	SECR	BSP-APR	Yard remodelling with provision of full rake terminal facility at Anuppur station of Bilaspur	2010-11	10.45
47	7A	SWR	HPT-VSG	LD-VSG Sec: Strengthening of Iron Ore moving route by provision of addl 3 Xing Stns bet CLR &	2007-08	13.12
48	7A	SWR	HPT-VSG	UBL Divn: Opening of Addl Xing Stn, Dabolium (DBM) bet SKVL & VSG	2008-09	8.45
49	7A	SWR	HPT-VSG	UBL Divn: Opening of Addl Xing Stn bet CLR-TGT	2008-09	8.90
50	7A	SWR	HPT-VSG	UBL Divn: Opening of Addl Xing Stn bet Bannikoppa-Bhanapur	2008-09	9.07
51	7A	SWR	HPT-VSG	UBL Divn: Addl looplines at Shivathan, Kashanatti, Nagaragalli and Chandargoa	2009-10	12.06

Sl	HDN Route	Rly	Section	Name of the work	Year of proposal by the Zone	Proposed Cost (in crore)
1	*2*	*3*	*4*	*5*	*6*	*7*
52	7A	SWR	HPT-VSG	UBL Divn: Byepass Line bet KUS-AGL (14 KMs)	2009-10	104.18
53	7A	SWR	HPT-VSG	UBL Divn: Kudathini-Bye Pass line from BTPS Siding to Daroji Stn (1.5 KMs)	2009-10	11.05
54	7A	SWR	HPT-VSG	UBL Divn: Opening of Addl Xing Stn bet TGT-LD	2009-10	10.33
55	7A	SWR	HPT-VSG	UBL Divn: LWR-Extn and connecting of Rd 2 to AVA line to facilitate simultaneous R&D of trains	2010-11	1.13
56	7A	SWR	HPT-VSG	TNGL: Direct connection of Rd 7 / 8 to JVSL line	2011-12	7.73
57	7A	SWR	HPT-VSG	GDG-Prov of Byepass line bet Honbak & Binkadakatti section of about 2 KMs	2011-12	12.67
58	7A	SWR	HPT-VSG	UBL Divn: MAO Byepass line bet CNR-MAO Sec of SWR to MAO and Balli section of KRCL about 1	2011-12	11.27
59	2	WR	Udhna - Jalgaon	Providing new crossing station between Navapur-Kolde at 104.30 kms.	2007-08	7.59
60	5	SR	Chennai Beach-KOKG	Chennai Beach - Korukupet -3rd Line - 4.1 Kms	2003 - 04	53.60
61	5	SCR	GDR-BZA	Surrareddy palem-Provision of full negth shunting neck connecting to common loop at Gudur end	2008-09	1.78
62	5	SCR	BTTR-GDR	BTTR- Proposal for individual starters for road-1 to 4 at Tenali end for Road 7 to 10 towards Gudur end.	2008-09	1.11
63	5	SCR	KI-BZA	Automatic Block working (17.49 K.Ms)	2009-10	13.06
64	5	SCR	NLR-GDR	Automatic block working NLR-GDR Section 38.32 K.Ms	2009-10	28.89
65	5	SCR	TEL-CLX	Automatic block working between Tenali-chirala	2010-11	57.38
66	5	SCR	NLR-KVZ	Automatic block working between NLR-KVZ	2010-11	50.44
67	5	SCR	KZJ-DKJ	Provision for automatic signalling system between Kzj-pottkapally,KZJ-RGPM,& KZJ-K Samuddram	2010-11	35.45
68	5	SCR	KZJ-BPQ	Standard layout at Vempalli	2010-11	13.01
69	5	SCR	KZJ-BPQ	Standard layout at Repelle wada	2010-11	8.87
70	5	SCR	KZJ-BZA	Standard lay out at Tadalaposala palli	2010-11	8.46
71	5	SCR	BZA-GDR	Proposed replacement of power supply cable 2x25 Sq.mm at LC gates with 70 Sq.mm 2 core	2010-11	2.10
72	7	SCR	WD-GTL-RU	Provision of IBS at 4 locations(Mangapatnam-Muddanuru,& Gooty-Pathakotta cheruvu	2007-08	3.86
73	7	SCR	GTL-WD	Provision of IBS at8 locations	2008-09	10.40
74	7	SCR	GTL-RU-TPTY	Provision of IBS at 7 locations	2008-09	9.12
75	7	SCR	GTL-RU	Provision of Emergency Cross over facilaity with signals at Jakkalacheruvu and Pathakottacheruvu stations	2009-10	2.07
76	7	SCR	RU-GTL-GY	Provision of crossover to facilaitate common loop facility at Nakkannadoddy,Pathakottacheruvu and Jakkalacheruvu	2010-11	4.42
			Source: PWP		**Total**	**1316.77**

Annexure VII

(Para 2.5.1.3-i)

Details of Sections not identified for Automatic Block Signalling (ABS)

HDN Route No.	Railway	Details of sections not identified for ABS		
HDN-2 (including 2A and 2B)		**From**	**To**	**RKM**
	CR	TLA	NGP	733
		Kasara	Igatpuri	16
	SECR	KAV-ITR	NGP	6.3
		DUG	BIA	13.6
		BIA-KMI	SZB	17.3
		SZB	URK	9.4
		URK	BYT	58.2
		BYT	BSP	46.4
		BSP	CPH	52.5
		CPH	JSG	151.7
		BSP	Anupur	150.9
		Anupur	SDL	41
		SDL	Katni	125.3
	SER	JSG	Rajakharsawan	222.7
		Tata	Karagpur	134.1
	WCR	Katni	Kota	555.95
	WR	Udhana	JL	306.93
			Total	**2641.28**
HDN-5	WCR	Bina	BPL	138.3
		BPL	Budhani	65.06
	CR	ET	BPQ	508
	SCR	BPQ	Gudur	751.85
			Total	**1463.21**
HDN-7 (With 7A)	CR	Pune	Wadi	442.57
	SCR	Wadi	RU	536.61
	SR	RU	AJJ	64.86
	SCR	GTL	BAY	48.54
	SWR	BAY	HPT	407.03
			Total	**1499.61**

Annexure VIII

(Para 2.6.3.2)

₹ in crore

Statement showing Diversion of Funds on works covered in Sample Size

Sl	HDN Route	Rly	Section	Name of the work	Year of Sanction	Detailed Estimated/ Revised Estimated Cost	Diversion of Funds,	Diversion to HDN works/ Non HDN Works	
								HDN	Non HDN
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
1	2	SECR	NGP-ITR-KAV	Kalumna-Nagpur Doubling	2007-08	27.69 / 24.78 (Rev)	2.50	2.50	0.00
2	2	SECR	G-DUG	Durg - Rajnandgaon third line (31 Kms)	2010-11	152.99	3.25	0.76	2.49
3	2	SECR	CPH-JSG	Champa-Jharsuguda thrid line	2008-09	872.12	1.50	1.50	0.00
4	2	SECR	CPH-JSG	Champa Bye Pass line	2007-08	30.19 / 42.93(Rev)	2.63	2.63	0.00
5	2	SECR	CPH-JSG	Jharsuguda Bye Pass line	2003-04	24.39 / 44(Rev)	1.00	1.00	0.00
6	2	SECR	BSP-APR	Bilaspur-Salka Road Patch doubling	2004-05	144.18	1.00	1.00	0.00
7	2	SECR	NGP-ITR-KAV, KAV TMR and TMR-G	Gondia-Nagpur Automatic Signalling	2007-08	76.06	1.00	1.00	0.00
8	2	SECR	CPH-JSG	IB-Addl Down Loop	2007-08	7.44	0.01	0.01	0.00
9	2	SECR	BYT-BSP	Bilaspur Division -Intermediate block signalling (8locations)	2008-09	6.00	0.30	0.30	0.00
10	2	SECR	CPH-JSG	Jharridih Addl. Loop	2005-06	7.80	0.25	0.00	0.25
11	2	SECR	CPH-JSG	Himgiri - Addl. Up Loop	2007-08	6.18	0.56	0.06	0.50
12	2	SECR	G-DUG	Parmalkasa conversion into B class station	2005-06	6.84	0.01	0.01	0.00
13	2	SECR	CPH-JSG	Himgiri - Addl. Down Loop	2009-10	5.48	0.04	0.04	0.00
14	2B	WR	Udhna - Jalgaon	Udhna - Jalgaon with Electrification (306.93 Kms)	2008-09	1389.00	53.91	0.00	53.91
15	5	SR	MSB-KOKG	Chennai Beach - Korukkupet (Third Line)	2003-04	85.70	4.50	0.00	4.50
16	5	SR	MSB-AIP	Chennai Beach - Attipattu 4th line	2003-04	96.14	4.50	0.00	4.50
17	3	NR	TKD-PWL	Tughlakabad Jn. Cabin - Palwal - 4th line	2006-07	DE Rs. 124 crore (RE amounting to Rs. 287.48 crore sanctioned bt RB in May 2012	39.44	0.00	39.44
		Source: Appropriation A/cs of Respective Years				Total	**116.40**	**10.81**	**105.59**

Annexure IX

(Para 2.7.1)

Statement showing details of works not started as on 31.03.2012

Sl	HDN	Rly	Section	Name of the work	Estimated Cost (₹ in crore)	Brief reasons for non commencement of works
1	*2*	*3*	*4*	*5*	*6*	*7*
1	2	SER	Nalpur-PKU	Nalpur, Fuleswar, Uluberia, Birshibpur & Panskura-Extention of main/loop line for N-Box/43 BCN locos with multi consist	9.43	not available
2	2	SER	Sankrail	Sankrai - Frieght terminal	not sanctioned	Work sanctioned in the year 2011-12 and Detailed Estimate (Rs 147.35 crore) submitted to Board for sanction on 04.04.2012
3	2	SER	SRC-TKPR	Santragachi-Development of circulating area and essential passenger amenities and road connectivityto Kona express way	not sanctioned	Work sanctioned in the year 2011-12 and Detailed Estimate under preparation
4	2	SER	Sankrail-SRC	Sankrai-Santragach Link line via flyover from down side to up side	not sanctioned	Work sanctioned in the year 2011-12 and Detailed Estimate of Rs.236.93 crore submitted to Board for sanction on 04.04.2012
5	2	SER	SRC-TKPR	Santragachi-Island platform between 1st loop & R-3 by dismantling R-1 & R-2 with common loop signalling facility	11.56	Work sanctioned in the year 2011-12. Tender under finalization
6	2	SER	Goelkera-Manoharpur	Goelkera-Rajkharsawan & Bondamunda-Manoharpur 3rd Line	not sanctioned	not available
7	2	SER	Noamundi	Flyover at Noamundi	not sanctioned	not available
8	2	SECR	Sarvona	Fly over at sarvona	not sanctioned	Works not proposed by SECR
9	2	SECR	BIA-KMI- SZB	Bhilai-Urkura Auto sigtnalling	not sanctioned	Works not proposed by SECR
10	2	SECR	BSP-APR	Kongasara-khordi regradation	not sanctioned	The work is yet to be proposed by SECR
11	2	SECR	BSP-APR	BSP-Bye pass line	not sanctioned	Works not sanctioned
12	2	SECR	G-DUG	Bakal conversion of C class station into B class with 4 lines	not sanctioned	work sanctioned in 2011-12 and Detailed Estimate sent tp Railway Board on 30/1/2012 and sanction awaited
13	2	SECR	CPH-JSG	IB Fly over	not sanctioned	Work sanctioned in the year 2011-12 and contract awarded for final location survey on 03/5/2012
14	7A	SWR	HPT-VSG	Doubling of Hospet-Vasco Sec (352.28 KMs)	2127.00	This project is entrusted to RVNL for execution. The execution of MoU between SWR and RVNL was delayed, the land acquisition process was initiated after 12 months from the date of sanction by RVNL resulting in non commencement of the work. Further, the Detailed Estimate has been sanctioned in March 2010 by RVNL for part of the section ie., HPT-UBL-TGT (245 KMs) only. The work was in the initial stages of land acquisition and tenders were under finalization

Sl	HDN	Rly	Section	Name of the work	Estimated Cost (₹ in crore)	Brief reasons for non commencement of works
1	*2*	*3*	*4*	*5*	*6*	*7*
15	7A	SWR	HPT-VSG	Yard Remodelling at HPT	12.98	Non finalisation of plans. The decision to entrust the work to RVNL was yet to be taken
16	2A	WCR	Bina-Kota	Bina-Kota Doubling	1125.07	Work is to be executed by RVNL and final location survey was in progress.
17	3	NCR	PWL-MTJ	4th line between PWL-MTJ	not sanctioned	not available
18	5	NCR	PWL-AGC	MTJ-Yard remodeling & fly over at Bhuteshwar	146.85	This work has been sanctioned in 2011-12 and the tender is under progress.
19	5	NCR	PWL-AGC	Fly over at BTSR (Clubbed with the above)	included in above work	This work has been sanctioned in 2011-12 and the tender is under progress.
20	5	NCR	JHS-AGC	Datia Karari JHS and Jakhalaun,Dhaura B class Stn. By conversion of IBH (03)	26.19	not available
21	7	SCR	WD-GTL	Pune - GTL Electrification (SCR section:WD-GTL-229 Kms)	800.97	Work is to be exeucted by RVNL and not commenced.
22	2A	WCR	KTE-SGRL	Niwas Raod and Bargawan upgration of Traffic facilities	19.73	not available
23	2A	WCR	KTE-SGRL	Kahana Bunjari-Beohari- Proposed panal Inter locking with std III additional loop & isolation	13.32 (Orig.) 12.47 (Revised)	not available
24	2A	WCR	KTE-SGRL	Sursurai ghat- jhara-Conversion of D class station to B class	not sanctioned	Detailed Estimate is under preparation
25	7	SR	MAS-RU	Tiruvallur- Arakkonam-4rth line-26.83Kms	78.92	requirement of land between Tiruvallur and Thiruvallangadu has only been furnished to State Government so far.
26	7	SR	MAS-RU	Arakkonam- strengthening of roads 1 & 2 and extension of platform 1 , 2, &3 to 24 bogies	8.80	Work could not progress due to inadequate budget outlay
27	5	SR	MAS-GDR	Chennai Beach-Korukkupet Third Line (ML)	85.70	Modified detailed estimate sent to Railway Board.
28	5	SR	MAS-GDR	Chennai Beach-Attipattu 4th Line (ML)	96.14	Land acquisition to be got from port/State Government
29	5	SR	MAS-GDR	Korukkupet goods - additional terminal facilities	11.50	Contract awarded. Work progress depends on budget outlay
30	5	SCR	DKJ-BZA	Cheruvumadhavaram-Std. lay out	8.68	---
31	2	CR	KYN-KSRA	3rd Line between KYN-KSRA (67 Kms)	279.70	Estimate was not prepared till 31/03/2012 . The project has been approved and part estimate for Final Location Survey sanctioned (Rs 5.55 crore) on 23/11/2011.

Sl	HDN	Rly	Section	Name of the work	Estimated Cost (₹ in crore)	Brief reasons for non commencement of works
1	*2*	*3*	*4*	*5*	*6*	*7*
32	2	CR	MMR - BSL	3rd Line Between MMR - BSL (184 KMs)	711.54	Estimate was not prepared till 31/03/2012 . Part work of 3rd line of Jalgaon Bhusawal (924.13 Kms) has been sanctioned during 2011-12 along with Grade saperator at Jalgaon at a cost of Rs 184.06 Cr.
33	2	CR	JL-BSL	Grade Separator at JL	included in above	same as in respect of above work
34	2	CR	WR-NGP	3rd Line Between WR - NGP (78 KMs)	not sanctioned	work appeared in the Pink Book of 2012-13 only
35	2	CR	CSTM-CLA	CSTM – KYN- 5th & 6th Line Sanctioned (CSTM – CLA)	not sanctioned	Detailed feasibility survey is in progress. M/s RITES have submitted part estimate and plans/ drawings were being discussed.
36	7	CR	LNL – PA	PA - WD, PA-GTL DL & RE Sanctioned wherever it is single line.	800.97	Doubling of Section i.e. Mohol-Pakni and Pakni-Solapur has been completed by RVNL and contract has been awarded on 4th May 2012 for two section viz. (i) Bhigwan-Mohol (127.14 Kms) and (ii) Hotgi-gulberga (98 Kms). Tenders for Pune-Bhigwan, Gulberga-Wadi, Wadi-Raichur and Raichur-
37	2	CR	WR-NGP	Doubling of Godhani(CR)- Kalumna chord (SECR) line (13.7 Kms)	59.13	Final Location Surrvey and Soil investigation has been completed andTender schedule for Civil works are under preparation.
38	2	CR	KSR-IGP	Kasara- extension of receipt and dispatch lines (3 nos each in up and down yards)	not sanctioned	not available
39	7	CR	KJT-LNL	Karjat-Extension of R&D lines additional lines connecting UP yard to Karjat-PNVL line & 4th line between KJT-Palasdari (Rs	not sanctioned	not available
40	2	CR	JL-BSL	Jalgaon- yard remodeling (Rs 26.27 Cr)	not sanctioned	not available
41	2	CR	WR-BPQ	Doubling of Chitoda - Sewagram (4 KMs)	not sanctioned	not available
42	5	CR	ET-EMF	ET-Kiratgarh ABS (10 KMs)	not sanctioned	not available
43	5	WCR	ET- BPL	Budhni-barkheda 3rd line	287.35	Nil
44	5	WCR	ET- BPL	ET-Grade separator	80	Nil
45	5	WCR	Katni-Bina	Katni-grade separator	75	Nil

Source: Justification alongwith ROR furnished in PWP, Works Progress Reports

Annexure X
(Para 2.7.1)
Statement showing Work in progress (as on 31.03.2012) over select HDN Routes

SL NO	HDN Route	Rly	Section	Name of the work	Rate of Return Projected in %	Target fixed for completion of work	Physical Progress in %	Delay in months w.r.t. target as on 31.03.2012 in respect of completed works & WIP	Brief reasons for non commencement of works/ delay in exeuction/ delay in completion
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
1	3	NR	NDLS-TKJ	NDLS - Tilak Bridge 5th & 6th line	16.85	March 2004	80.00	96	1. Non shifting of S&T cables; 2. Non removal of Jugghies; 3. Hindrance by RPF & COFMOW staff; and 4. Non availability of traffic block from Delhi Traffic Police at RUB Shivaji bridge & 5. Delay in handing over site to the contractor.
2	**3**	NR	TKD-PWL	TKD Jn Cabin - PWL - 4th line	22.08	Not Fixed	73.00	**	1. Initially, the work was allocated to RVNL for execution, but RVNL did not make any progress except sanction of DE for Rs.124 crore in June 2007. Then work was transferred to NR-CN Org (April 2008). Thus nearly 2 years lost; 2. The work from Faridabad New Town to Ballabhgarh is yet to start on account of non removal of Juggies; and 3. Abnormal time of upto 849 days taken to finalize tenders
3	5	SR	MAS-GDR	Attippattu-Korukkupet Third Line (RVNL) - (ML)	19.18	August 2011	83.00	7	ENR-AIP(6 Kms) section earthwork and bridges completed. Remaining works are in progress. CRS inspection planned by July 2012.
4	3	NCR	PWL-MTJ	PWL-Bhuteswar 3rd line (81 Km) (being executed by RVNL)	Not projected	NAV	70.00	0	Work is being done by RVNL in patches
5	5	NCR	AGC-Bina	Birlanagar up loop line	Not projected	Not Fixed	70.00	0	Nil
6	5	NCR	JHS-BINA	JHS-BINA C class stn to B class stn with Up and Dn emergency cross over	Not projected	Not Fixed	83.00	0	Nil
7	7	SCR	GY-RU	GY-RU Patch doubling (RVNL)	Not projected	March 2008	98.00	48	Work is being executed by RVNL
8	5	SCR	BPQ-KZJ	RGPM-MMZ Triple line	17.18	March 2012	25.00	0	Less allotment of funds
9	5	SCR	BPQ-KZJ	MCI-PPZ Triple Line	14.74	March 2013	3.00	0	---
10	7	SCR	WD-GTL	RC-GTL (81.1 Kms)	Not projected	March 2009	87.00	36	Work is being executed by RVNL
11	7	SCR	RU-GTL	RU-GTL Electrification (RVNL)	NAV	March 2010	48.00	24	Work is beiing executed by RVNL in pathces.
12	5	SCR	KZJ-BZA	BZA - Modification of yard to enable relinquishment of land	Not projected	March 2006	61.00	72	---

SL NO	HDN Route	Rly	Section	Name of the work	Rate of Return Projected in %	Target fixed for completion of work	Physical Progress in %	Delay in months w.r.t. target as on 31.03.2012 in respect of completed works & WIP	Brief reasons for non commencement of works/ delay in exeuction/ delay in completion
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
13	5	SCR	BTTR-GDR	Vetapalem, Uppugunduru, Sri venkateswarapalem & Vedayyapalem - Common Loop facilities	Not projected	March 2010	90.00	24	---
14	5	SCR	BPQ-KZJ	RDM Yard - Bye pass line traction distribution for direct entry and exit from KZJ end	22.82	March 2012	60.00	0	---
15	2	SER	RKSN-SNY	Rajkharswan-Sini 3rd line	47.75	March 2010	35.00	24	Delay in finalization of station yard plan, approval of drawing of bridges, etc.
16	2	SER	DPS-Pendrasali	Dongaposi-Pendrasali extended upto Rajkharswan 3rd line	32.11	March 2014	5.00	0	Work is in progress
17	2	SER	Banspani-Jaruli	Banspani-Jaruli Doubling	34.81	March 2010	95.00	24	Non-supply of required quantity of Pway materials in time by Administration, Non-availability of required traffic/ power block for blasting works
18	2	SER	KGP-PKU	Kharagpur-Panskura3rd line	22.74	June 2011	85.00	9	Work is being executed by RVNL & in progress.
19	2	SER	MOU-GOL	Manoharpur-Goelkera 3rd line	29.97	March 2011	48.00	12	The section mostly traverses through extremist infested area. The work is affected frequently due local disturbances.
20	2	SER	SRC-TKPR	Santragach-Tikiapara 4th line	--	December 2008	78.00	39	Originally there were 850 encroachments. Out of these most of the encroachments were removed.However, remaining encroachments are hampering earthwork progress. Hence, 4 contractors were terminated
21	2	SER	Dumitra-Champajharan	Dumitra-Champajharan Doubling	29.97	March 2009	90.00	36	Discharge of tenders, delayed finalization of bridge drawings, slow progress of work, etc
22	2	SER	Champajharan -Bimalgarh	Champajharan -Bimalgarh Doubling	40.65	March 2014	10.00	0	Work is in progress
23	2	SER	RNC-MURI	Muri-North outer cabin/Muri doubling of section with provision of 2nd bridge over subernarekha	48.48	September 2010	40.00	18	Slow progress of work.
24	2	SER	TATA-ADTP	Tatanagar & Adityapur -Yard remodelling	26.89	December 2012	96.00	0	Adityapur yard commissioned on 19.08.2009 & handed to OL. Tatanagar yard plan under modification. Delay in shifting of cables, settlement of non-shedule work,etc.

SL NO	HDN Route	Rly	Section	Name of the work	Rate of Return Projected in %	Target fixed for completion of work	Physical Progress in %	Delay in months w.r.t. target as on 31.03.2012 in respect of completed works & WIP	Brief reasons for non commencement of works/ delay in exeuction/ delay in completion
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
25	2	SER	ROU-JSG	Jharsuguda-Development of goods shed as frieght terminal	--	August 2013	2.00	0	The work is sanctioned in the year 2008-09 but tender is awarded on 14.02.2012 only
26	2	SER	SNY-ADTP	Sini-Adityapur 3rd line	42.51	December 2013	15.00	0	Work sanctioned in the year 2010-11. Tender awarded in August 2011 & in progress
27	2	SER	TATA-ADTP	Tatanagar Goods departure yard-Development of frieght terminal	--	March 2013	20.00	0	Delay in receipt of approved drawing & approved change drawing, trffic block,required rails,etc
28	2	SER	HTE-RNC	Ranchi-Construction of platform no.4& 5	--	September 2010	90.00	18	Delayed approval of drawing, Non suply of rails in time,etc.
29	2	SECR	NGP-ITR-KAV	KAV-NGP Doubling	30.03	March 2010	25.00	24	Due to non removal of 469 encroachments at the approach of Nagpur
30	2	SECR	G-DUG	Durg - Rajnandgaon third line	Not projected	2014-15	10.50	0	New work. Work started in September / October 2010
31	2	SCR		G-BPQ RE	24.6	2013-14	1%	0	NAP
32	2	SECR	CPH-JSG	G-NGP ABS	16.67	March 2011	25%	12	For want of pending policy decision, field activities held up for one year
33	2	SECR		CPH-Byepassline towards korba	17.96	August 2010	65%	19	Land Issues
34	2	SECR	URK-BYT	Bhatapara - Urkura third line(Phase II) executed by RVNL	16.54	2004-05	86.00	84	Work is being executed by RVNL. Due to slow progress of work
35	2	SECR	CPH-JSG	CPH-Jharsuguda thrid line	24.20	Not Fixed	10.00	0	Detailed estimate sanctioned in March 2012. Tender for Earth work, Minor bridges & Major Bridges awarded; works in progress
36	2	SECR	CPH-JSG	IB Addl. Up Loop	Not projected	December 2011	15.00	3	S&T contract awarded on 15/2/2012. Engg. Tender opened on 30/5/2012
37	2	SECR	BSP-APR	Salka Road-Khongsara Patch dobling	Not projected	Not Fixed	39.30	0	The work is under execution by RVNL. Delay in land acquisition, clearance of MOEF awaited for diversion of forest land and cutting trees, delay in approval of drawings and under performance of contractor
38	2	SECR	BSP-APR	Khodri - Anuppur doubling with Fly over at Bilaspur	Not projected	Not Fixed	47.00	0	The work under execution by RVNL. Delay in land acquisition, clearance of MOEF awaited for diversion of forest land and cutting trees
39	2	SECR	SDL-Katni	Anuppur-Katni IBS (8 block section)	Not projected	March 2009	70.00	36	Dealyed on account of discharge of contract due to high rate, slow progress by contractor, non availability of fund, sanction of CRS & circuit alteration

SL NO	HDN Route	Rly	Section	Name of the work	Rate of Return Projected in %	Target fixed for completion of work	Physical Progress in %	Delay in months w.r.t. target as on 31.03.2012 in respect of completed works & WIP	Brief reasons for non commencement of works/ delay in exeuction/ delay in completion
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
40	7A	SWR	HPT-VSG	Strengthening of Iron Ore Routes by addl loops & extn of running lines/ sidings over UBL Divn (RDG, YTG, RMGD, VSG, SVM, CSM & QLM)	Not projected	March 2009	50.00	36	Due to land acquisition issues
41	2A	WCR	KTE-SGRL	Marwasgram - upgradation with P.I. & addition loops & sand humps- 07 station	68.00	September 2012	16.00	0	Nil
42	2A	WCR	KTE-SGRL	KTE-SGRL 3 line crossing station	25.72	May 2009	60.00	34	Non availibility of fund & non availibililty of clear site (Rly land encroached by SG Reserved forest)
43	2A	WCR	BIN-GUN	Piparaigaon -Orr new crossing station	16.62	April 2012	70.00	0	Nil
44	2A	WCR	BIN-GUN	Ashoknagar -Orr new crossing station	16.62	April 2012	95.00	0	Nil
45	2A	WCR	GUN-RTA	Guna-RTA Doubling	18.00	March 2014	2.00	0	Nil
46	2A	WCR	RTA-KTT	New crossing station 2 nos. KTT-RTA section.	29.30	2 years	75.00	25	CRKR work held up due to non acquisition of land from state Govt
47	2A	WCR	RTA-KTT	New crossing station 3 nos. KTT-RTA section.	17.53	2 years	55.00	16	Non co-operation between departments & change in layout plans and items etc.
48	5	WCR	BPL-ET	Automatic signalling Budni-ET	Not projected	August 2009	85.00	31	1. The work delayed due to panel diagram cable core & IP approval. 2 The work delayed due to approval of circuit diagram, required verification, NS items and finally IP in PRKD-Budin. The work delayed due to materials not provided by the railway
49	2	WR	Udhna-Jalgaon	Doubling of Udhna - JL section with RE	15	2013-14	19.00	0	Nil
50	2	CR	TNA-DW	CSTM – KYN- 5th & 6th Line Sanctioned (TNA – DW)	NAV	March 2014	15.00	0	Work being executed by MRVC(PSU) under MUTP II. Work is in progress.
51	7	CR	KJT-LNL	Karjat – Lonavla- AC Conversion work	Not projected	Not Fixed	65.00	0	the work is being carried out in phases.
52	7	CR	LNL – PA	Lonavla–PA ABS	Not projected	August 2008	40.00	43	Work for removal of slip siding beyond Talegaon towards Pune is held up for want of CRS sanction since August 2008.
53	5	WCR		Bina-BPL 3rd line	NAV	June 2013	45.00	0	Work is being executed by RVNL in patches

Annexure XI

(Para 2.7.1)

Statement showing list of works completed with delay over select HDN Routes

SL NO	HDN	Rly	Section	Name of the work	Estimated Cost (Rs in crore)	Target fixed for completion of work	Physical Progress in %	Delay in months w.r.t. target as on 31.03.2012 in respect of completed works & WIP	Brief reasons for non commencement of works/ delay in exeuction/ delay in completion
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
1	2	SER	HTE-RNC	Hatia-Yard remodelling& coach maintenance	9.67	June 2007	100.00	8	Work completed & commissioned in February 2008
2	2	SER	DGP-CKP	Dongaposi bypass line for connection of KGP-NGP avoiding Rajkharswan	15.13	June 2007	100.00	9	Miscreants were frquently disturbing the site which creates hindrance of progress of works.Work completed & the track was given fit for traffic on 31.03.2008
3	2	SER	Padapahar-Banspani	Padapahar-Banspani doubling	129.74	March 2010	100.00	24	Non-supply of required quantity of rails & sleepers in due time.
4	2	SECR	G-DUG	Parmalkasa conversion into B class station	6.84	December 2007	100.00	20	Work completed and commissioned in Sept'09
5	2	SECR	KAV-TMR	Salwa conversion into B class station	7.54	June 2008	100.00	17	Work completed and commissioned in Nov'09
6	2	SECR	DUG-BIA	Bhilai-Durg third line	49.96	October 2008	100.00	8	Work completed and commissioned in June'09
7	2	SECR	CPH-JSG	Jharridih Addl. Loop	7.80	December 2007	100.00	30	Work completed and commissioned inJuly'10
8	2	SECR	CPH-JSG	Kirondimalnagar Addl. Loop line	5.77	December 2007	100.00	36	Work completed and commissioned in Dec'10
9	2	SECR	CPH-JSG	Himgiri - Addl. Up Loop	6.18	March 2009	100.00	24	Work completed and commissioned
10	2	SECR	CPH-JSG	IB-Addl. Down Loop	7.44	June 2008	100.00	14	Work completed and commissioned
11	2	SECR	CPH-JSG	Bhupdeopur-KDTR, JDI-SKT & RIG-KRL IBS	5.69	December 2008	100.00	19	Work completed and commissioned
12	2	SECR	CPH-JSG	CPH-JSG IBS (3.5 Block stations)	6.93	December 2008	100.00	6	Work completed and commissioned in June'09
13	2	SECR	BSP-APR	Bilaspur-Salka Road Patch doubling	144.18	November 2008	100.00	14	Work completed and commissioned in May'09
14	2	SECR	BSP-APR	Anuppur Bye pass line	21.01	December 2008	100.00	17	Work completed and commissioned in May'10
15	2	SECR	BYT-BSP	Bilaspur Division - Intermediate block signalling (8locations)	6.00	March 2011	100.00	12	Work completed and commissioned in March'12

SL NO	HDN	Rly	Section	Name of the work	Estimated Cost (Rs in crore)	Target fixed for completion of work	Physical Progress in %	Delay in months w.r.t. target as on 31.03.2012 in respect of completed works & WIP	Brief reasons for non commencement of works/ delay in exeuction/ delay in completion
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
16	7	SR	MAS-RU	Tiruvallore-Arakkonam 3rd line (RVNL)	71.94	completed	100.00	33	Land acqu;isition and delay in getting plan approval
17	7A	SWR	HPT-VSG	DWR-KBI Doubling	96.76	March 2009	Phase I (15.88 KMs): 100% completed & commissioned-June 2010; Phase II (15.00 KMs): 100%	Phase I : 14 Months Phase II: 36 Months	Delay in land acquisition, Delay in finalisation of GAD, Non availability of PWAY materials, etc
18	7A	SWR	HPT-VSG	UBL-HEB Doubling	56.99	February 2009	Completed & Commissioned in January 2010	10	Though work was physically completed within the target date, commissioning was delayed due to non availability of requisite manpower for maintenance
19	2A	WCR	KTE-BINA	ABS Baghora -Bina	5.09	November 2009	100.00	15	due to non availibility of fund and non supply"Auto reset unit"
20	2A	WCR	KTE-BINA	IBS-10 Katni -Bina	14.06	march 2011	100.00	12	approval pending for drawing in Rly Admn
21	5	WCR	Bina-ET	IBS-3 Bina-ET	1.52	January 2009	100.00	6	Due to delay in receipt of material.
22	2	WR	Udhna - Jalgaon	Padse - Bhortex - Chwalkhede - Addl. loop lines	5.95	May 2007	100.00	14	Delay in sanction of detailed estimate, approval of drawing and design,
23	2	WR	Udhna - Jalgaon	Timbarva - Lotarva - Hol -Conversion of D class station to B class crossing station	11.18	May 2007	100.00	29	Delay in sanction of detailed estimate, approval of drawing and design, delay in grant of Traffic Work Order.
24	5	NCR	JHS-AGC	Dholpur-JHS provision of IBH (12 Nos)	18.00	March 2009	100.00	26	Delay due to non-completion of work by Engg.Deptt. at Sikroda
25	5	NCR	JHS-Bina	JHS-Bina provision of IBH (10 Nos.)	15.43	December 2008	100.00	23	Delay due to SIP for outdoor and sanction for variation in quantities were not available.

SL NO	HDN	Rly	Section	Name of the work	Estimated Cost (Rs in crore)	Target fixed for completion of work	Physical Progress in %	Delay in months w.r.t. target as on 31.03.2012 in respect of completed works & WIP	Brief reasons for non commencement of works/ delay in exeuction/ delay in completion
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
26	2	CR	CLA-TNA	CSTM – KYN- 5th & 6th Line Sanctioned (CLA – TNA) (Phase I)	136.45	December 2009	99.00	15	NA
27	2	CR	CLA-TNA	CSTM – KYN- 5th & 6th Line Sanctioned (CLA – TNA) (Phase II)	89.18	December 2009	99.00	15	NA
28	2	CR	IGP – JL	IGP – MMR- IBS-6 + NGN-JL- IBS-8 = 14	18.80	December 2008	92.00	32	1) C A No CR/S&T/BB/117/07 dated 18/01/2008 (LOA dt.20/12/2007) =Change of scope of work, Non availability of 6 quad cables, Delay in Payment of dues to the contractor, Difficulty in trenching in rocky soil 2) C A No CR/S&T/BB/126/08 dated 11/06
29	2	CR	BSL-BD	BSL-BD- IBS-6	7.20	December 2008	100.00	32	same as above
30	5	CR	ET- AMF	ET- AMF- IBS-4	4.19	December 2008	100.00	22	1) C A No CR/S&T/BB/118/07 dated 18/01/2008 (LOA dt. 28/01/2009)= Non deputation of requisite labour and skilled staff to complete IBS work , Non availability of material, Non availability of cable to be supplied by the Railways, Delay in inspection of MS
31	5	CR	AMF-NGP	AMF-NGP- IBS-10	12.65	December 2008	100.00	36	same as above
32	5	CR	GR-WD	Wadi yard- extension of 6 receipt and dispatch lines to 686m CSR .	5.14	May 2005	100.00	15	NA
33	7	CR	BUD-KJT	Badlapur-Karjat- Automatic block signaling on suburban section.	17.21	February 2006	100.00	58	Earthing arrangement which was essential for charging of AC electrification and provision of uninterupted power supply in Badlapur-Karjat section was provided on 26/12/2010.

Annexure XII

(Para 2.7.1)

Statement showing details of Non Accrual of Anticipated Savings / Benefits due to delay in completion of works

Sl	HDN	Rly	Section	Name of the work	Estimated Cost (Rs in crore)	Rate of Return Projected in %	Target fixed for completion of work	Physical Progress in %	Delay in months w.r.t. target as on 31.03.2012 in respect of completed works & WIP	Amount of non accrual of anticipated Savings/ Benefits due to delay	Brief reasons for non commencement of works/ delay in exeuction/ delay in completion
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*
1	3	NR	NDLS-TKJ	NDLS - Tilak Bridge 5th & 6th line	53.15	16.85	March 2004	80.00	96	71.65	1. Non shifting of S&T cables; 2. Non removal of Jugghies; 3. Hindrance by RPF & COFMOW staff; and 4. Non availability of traffic block from Delhi Traffic Police at RUB Shivaji bridge & 5. Delay in handing over site to the contractor.
2	5	SR	MAS-GDR	Attippattu-Korukkupet Third Line (RVNL) - (ML)	70.50	19.18	August 2011	83.00	7	7.89	Slow Progress of work in Contract
3	2	SER	RKSN-SNY	Rajkharswan-Sini 3rd line	91.61	47.75	March 2010	35.00	24	87.49	Delay in finalization of station yard plan, approval of drawing of bridges, etc.
4	2	SER	Banspani-Jaruli	Banspani-Jaruli Doubling	90.89	34.81	March 2010	95.00	24	63.28	Non-supply of required quantity of Pway materials in time by Administration, Non-availability of required traffic/ power block for blasting works
5	2	SER	KGP-PKU	Kharagpur-Panskura3rd line	252.54	22.74	June 2011	85.00	9	43.07	Slow Progress of work by RVNL
6	2	SER	MOU-GOL	Manoharpur-Goelkera 3rd line	261.69	29.97	March 2011	48.00	12	78.43	The section mostly traverses through extremist infested area. The work is affected frequently due local disturbances.
7	2	SER	Dumitra-Champajharan	Dumitra-Champajharan Doubling	99.00	29.97	March 2009	90.00	36	89.01	Discharge of tenders, delayed finalization of bridge drawings, slow progress of work, etc
8	2	SER	RNC-MURI	Muri-North outer cabin/Muri doubling of section with provision of 2nd bridge over subernarekha	17.22	48.48	September 2010	40.00	18	12.52	Slow progress of work due to non-supply of rails and sleepers in time
9	2	SER	Padapahar-Banspani	Padapahar-Banspani doubling	129.74	26.60	March 2010	100.00	24	69.02	Non-supply of required quantity of rails & sleepers in due time.
10	2	SECR	NGP-ITR-KAV	KAV-NGP Doubling	27.69	30.03	March 2010	25.00	24	16.63	Due to non removal of 469 encroachments at the approach of Nagpur
11	2	SECR	CPH-JSG	G-NGP ABS	76.06	16.67	March 2011	25.00	12	12.68	The field activities held up for want of pending policy decision in regards to dropping the work or otherwise

Sl	HDN	Rly	Section	Name of the work	Estimated Cost (Rs in crore)	Rate of Return Projected in %	Target fixed for completion of work	Physical Progress in %	Delay in months w.r.t. target as on 31.03.2012 in respect of completed works & WIP	Amount of non accrual of anticipated Savings/ Benefits due to delay	Brief reasons for non commencement of works/ delay in exeuction/ delay in completion
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*
12	2	SECR		CPH-Byepassline towards korba	42.93	17.96	August 2010	65.00	19	12.21	Land Issues such as villagers were were not accepting the award and obstructing the execution of work demanding higher compensation and employment
13	2	SECR	URK-BYT	Bhatapara - Urkura third line(Phase II) executed by RVNL	113.85	16.54	2004-05	92.00	84	131.82	Slow progress of work. This Work is being executed to RVNL..
14	2A	WCR	KTE-SGRL	KTE-SGRL 3 line crossing station	20.57	25.72	May 2009	60.00	34	14.99	Non availibility of funds. Also there was a delay due to non availibililty of clear site as Railway land had been encroached by SG Reserved forest.
15	2A	WCR	RTA-KTT	New crossing station 2 nos. KTT-RTA section.	13.95	29.30	2 years	75.00	25	8.52	CRKR work held up due to non acquisition of land from state Govt
16	2A	WCR	RTA-KTT	New crossing station 3 nos. KTT-RTA section.	28.76	17.53	2 years	55.00	16	6.72	Non co-operation between departments & change in layout plans and items etc.
17	2	SER	DGP-CKP	Dongaposi bypass line for connection of KGP-NGP avoiding Rajkharswan	15.13	24.96	June 2007	100.00	9	2.83	Miscreants were frquently disturbing the site that created hindrance in progress of work.
18	2	SECR	KAV-TMR	Salwa conversion into B class station	7.54	17.44	June 2008	100.00	17	1.86	Delay in finalization of estimates
19	2	SECR	DUG-BIA	Bhilai-Durg third line	49.96	29.72	October 2008	100.00	8	9.90	Delay in clearence of site
20	2	SECR	CPH-JSG	Jharridih Addl. Loop	7.80	15.84	December 2007	100.00	30	3.09	Delay in finalisation of contracts
21	2	SECR	CPH-JSG	Kirondimalnagar Addl. Loop line	5.77	17.40	December 2007	100.00	36	3.01	Delay in clearence of site
22	2	SECR	CPH-JSG	Himgiri - Addl. Up Loop	6.18	18.57	March 2009	100.00	24	2.30	Delay in clearence of site
23	2	SECR	CPH-JSG	IB-Addl. Down Loop	7.44	16.81	June 2008	100.00	14	1.46	Delay in finalisation of tenders due to discharge of tenders
24	2	SECR	BSP-APR	Anuppur Bye pass line	21.01	22.66	December 2008	100.00	17	6.74	Delay in Land acquisition.
25	7	SR	MAS-RU	Tiruvallore- Arakkonam 3rd line (RVNL)	71.94	19.57	completed	100.00	33	38.72	delay in getting the plan approved and in acquiring the land.

Sl	HDN	Rly	Section	Name of the work	Estimated Cost (Rs in crore)	Rate of Return Projected in %	Target fixed for completion of work	Physical Progress in %	Delay in months w.r.t. target as on 31.03.2012 in respect of completed works & WIP	Amount of non accrual of anticipated Savings/ Benefits due to delay	Brief reasons for non commencement of works/ delay in exeuction/ delay in completion
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*
26	7A	SWR	HPT-VSG	DWR-KBI Doubling	96.76	29.12	March 2009	Phase I (15.88 KMs): 100% completed & commissioned-June 2010; Phase II (15.00 KMs): 100% Completed but yet to be commissioned (CN/BNC PCDO-March 2012)	Phase I : 14 Months Phase II: 36 Months	52.42	Delay in land acquisition, in finalisation of GAD and non availability of PWAY materials, etc
27	7A	SWR	HPT-VSG	UBL-HBS Doubling	56.99	27.07	February 2009	Completed & Commissioned in January 2010	10	12.86	commissioning was delayed due to non availability of requisite manpower for maintenance.
28	2	CR	CLA-TNA	CSTM – KYN- 5th & 6th Line Sanctioned (CLA – TNA) (Phase I)	136.45	20	December 2009	99.00	15	34.11	Residual works were in progress .
29	2	CR	CLA-TNA	CSTM – KYN- 5th & 6th Line Sanctioned (CLA – TNA) (Phase II)	89.18	20	December 2009	99.00	15	22.30	Residual works were in progress .
30	2	CR	DW-KYN	CSTM – KYN- 5th & 6th Line Sanctioned (DW – KYN)	69.75	15.15	January 2008	100.00	1	0.88	Residual works were in progress .
31	5	SR	MAS-GDR	Kaverapettai Goods shed Facilities	6.63	18.67	December 2009	0.00	27	2.79	Work that was initially with openline was transferred to Construction
										921.17	
			Source:	Justification alongwith ROR furnished in PWP, Works Progress Reports							

Annexure XIII

(Para 2.7.1)

Statement showing the details of Cost Over Run in respect of works over selected HDN routes

HDN Route	Rly	No.of works	No.of works suffered cost over run	Amount (Rs in crore)	Reasons
1	*2*	*3*	*4*	*5*	*6*
3 & 5	NCR	10	1	1.77	Due to escalation
2	SER	24	10	98.87	Escalation of the cost of labour and materials due to delay in execution of works
2	SECR	35	10	365.67	Due to time overrun resulting in price escalation
2	CR	15	3	148.71	Due to Time Over Run
5	CR	6	0	0	not applicable
7	CR	6	1	645.40	Due to Time Over Run
7A	SWR	10	2	84.38	Cost over run due to escalation
2, 2A & 5	WCR	24	**1**	27.30	material modification and cost over run
2B	WR	4	2	1.70	Time over run mainly due to delay in sanctin of detailed estimate, approval of drawings and design,
5 & 7	SR	8	6	86.49	Time over-run
5, 7 & 7A	SCR	18	18	482.14	Data from RVNL awaited
3	NR	2	2	43.31	Due to Time Over Run
		162	56	1985.74	

Annexure XIV
(Para 2.8)
Comparison of rates for similar works being executed on same /different Zones and sanctioned during the same period

(Fingure in crore of ₹)

Rly	Name of the work	Month & Year of sanction of Detailed Estimate	Unit in RKMs/ Nos being executed	Rate per unit	Month & Year of sanction of Detailed Estimate. (Zonal Rly/ Name of the similar work)	Rate per unit of similar work as per sanctioned estimate (after increasing by 25% for site conditions)	Difference in rate per unit	Extra Liability
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
SER	Sini-Adityapur 3rd line(Route-A) HDN-2	NOV'2010	22.5	6.36	OCT'2010/SECR/ Durg - Rajnandgaon third line (31 Kms)(Route-A) HDN-2	6.21	0.15	3.38
SR	AIP - KOK proposed third line(Route-A)HDN-5	1999-00	18	3.92	1999-00/NCR/ Mathura - Bhuteshwar 3rd line (3.48 Km)(Route-A)HDN-5	1.52	2.39	43.02
SCR	MCI - PPZ (Triple Line)*(Route-A)HDN-5	AUG'2010	4.37	7.11	OCT'2010/ SECR/ Durg - Rajnandgaon third line (31 Kms)(Route-A) HDN-2	6.21	0.9	3.94
CR	Badlapur-KJT ABS Work. HDN-7	Mar'2004	32	0.54	May'2004/CR/ Pune-Lonavala ABS Work.HDN-7	0.46	0.08	2.56
NCR	Hetampur-Morena-'B' Class station by conversion of IBH (01 No.)HDN-5	Mar'2008	1	13.26	July'2008/NCR/ Datia-Karari-Jhansi & Jakhlaun-Dhaura 'B' Class station by conversion of IBH(03No.)HDN-5	8.04	5.22	5.22
SCR	Nancherla - Guntakal West-Byepass line(Route-B)HDN-7	2007-08	1	20.2	2007-08/SCR/ Yedlapur - Bye pass line for traffic from RC to RC Thermal Power stn(Route-B)HDN-7	12	8.2	8.2
CR	Igatpur Jalgaon IBS-14.HDN-2	July'2007	14	1.26	August'2007/WCR/ IBS -03 nos. Bina-ET. HDN-5	0.63	0.63	8.82
CR	Bhusawal-Badnera IBS-6 HDN-2	July'2007	6	1.36	August'2007/WCR/ IBS -03 nos. Bina-ET. HDN-5	0.63	0.73	4.38
CR	Amla -Nagpur IBS 10	July'2007	10	1.27	August August'2007/WCR/ IBS -03 nos. Bina-ET. HDN-5	0.63	0.63	6.3
CR	Itarasi Amla IBS 4 HDN-5	July'2007	4	1.02	August'2007/WCR/ IBS -03 nos. Bina-ET. HDN-5	0.63	0.39	1.56
							TOTAL	**87.38**

Annexure XV
(Para 2.8)

Comparison of rates for identical works sanctioned on a Railway and sanctioned on the adjacent sections of same or other zone during subsequent period

(Fingure in crore of ₹)

Rly	Name of the work	Month & Year of sanction of Detailed Estimate	Unit in RKMs	Rate per unit	Month & Year of sanction of Detailed Estimate. (Zonal Rly/ Name of the similar work)	Rate per unit of similar work as per sanctioned estimate	Difference in rate per unit	Extra Liability
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
CR	Kurla-Thane 5 th & 6th Line Phase II (7 Kms) (Route-C) HDN-2	1997-98	14	4.06	SEP'2000/CR/Diwa-Kalyan 5 th & 6th Line (11 Kms) (Route-C) HDN-2	2.18	1.87	26.18
SECR	Gondia-Nagpur Automatic Signalling. HDN-2	MAR'2008	130	0.59	SEP'2008/WCR/Automatic signaling Budni-ET.HDN-5	0.41	0.18	23.4
SECR	Durg-Gondia Automatic signalling.HDN-2	Mar'2008	135	0.56	SEP'2008/WCR/Automatic signaling Budni-ET.HDN-5	0.41	0.15	20.25
SECR	Bilaspur Division - Intermediate block signalling (8locations) Estimate	2008	4	1.5	SEP'2009/WCR/ IBS - 10nos. on this section.(10 Bina-KTE 3 KTE-MKP). HDN-2A	1.08	0.42	1.68
							TOTAL	71.51

Annexure XVI
(Para 2.9)
Statement showing the comparison of rates of Stores Items included in the Works contract with that of Stores Contracts on Selected HDN Routes

SL N	HDN NO	Rly	Section	Agt No/ Date	Name of the Stores Item	Qty	Rate (₹) per unit	Value (₹)	Ref to P.O No and Date	Corresponding Rate per unit in Stores Contract (₹)	Quantity of stores item included in the purchase order	Value of the stores item at Stores contract Rate (₹)	Difference (₹)
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	2	SER	Adityapur SINI	CE/CON/GRC/56/2011 dt. 28.09.2011	ERC-mark-III/J clips	88000	61.75	5434000	2011/005/10036 dt. 31.01.2012	49.69	165240	4372720	1061280
2	2	SER	Adityapur SINI	CE/CON/GRC/56/2011 dt. 28.09.2011	G.F.N liner as per RDSO Drg.No. T/3706	88000	14.25	1254000	2009/039/A/10002 dt. 04.07.2011	7.30	204000	642400	611600
3	2	SER	Adityapur SINI	CE/CON/GRC/57/2011 dt. 28-09-2011	ERC-mark-III/J clips	80000	61.75	4940000	2011/005/10036 dt. 31.01.2012	49.69	165240	3975200	964800
4	2	SER	Adityapur SINI	CE/CON/GRC/57/2011 dt. 28-09-2011	G.F.N liner as per RDSO Drg.No. T/3706	80000	14.25	1140000	2009/039/A/10002 dt. 04.07.2011	7.30	204000	584000	556000
5	2	SER	Dumetra-Champajharan	CE/CON/GRC/55/2009 dt. 19-08-2009	Grooved Rubber Sole Plate for 60 KG Rail to RDSO's Drg.No.: T-3711 , Spectication: IRS-T-47-2006	80000	23.76	1900800	2009/014/B/10029 dt. 26.10.2009	17.37	400000	1389600	511200
6	2	SER	Dumetra-Champajharan	CE/CON/GRC/55/2009 dt. 19-08-2009	Elastic Rail Clips Mark-III/J-Clip conforming to Specification: IRS-T-3192	170000	84.24	14320800	CE/TP/2009/012/A/10026 dt. 28.10.2009	44.35	916674	7539500	6781300
7	2	SER	Rajkharswan-SINI	CE/CON/GRC/29/2011 dt. 30.03.2011	Insulating G.F.N liner as per RDSO Drg.No. T/3706	116000	14.00	1624000	2009/039/B/10001 dt. 04.07.2011	7.64	1156000	886240	737760
8	2	SECR	NGP-ITR-KAV	15/CEE/CON/SECR/BSP/2009 dated 16/9/2009	Catenary wire	5.973	587815.30	3511021	P.O. No. 04091193106397 dated 15/7/2009	359256.97	4.00	2145842	1365179
9	2	SECR	CPH-JSG	28/CEE/CON/SECR/BSP/2009 dated 17/8/2009	Catenary wire	4.659	541976.49	2525036	P.O. No. 04091193106397 dated 15/7/2009	359256.97	4.00	1673757	851279
10	2	SECR	G-DUG	17/CEE/CON/SECR/BSP/2008 dated 18/6/2008	Contact wire	3.6526	513633.10	1876076	P.O. No. 04065049746405 dated 24/12/2008	367188.13	67.17	1341177	534899
11	2	SECR	DUG-BIA	ST/Con/Tender/ 3rd Line BIA/BIA-DUG/274 dated 09/5/2008	Relay Non AC QN1-24V DC 8F.8B	1150	2940.08	3381092	P.O No. 05077168142091 dated 3/6/2008	2046.45	165	2353418	1027675
12	2	CR	IGP-JL	CR/S&T/BB/117/07 DATED 18-01-2008	12 Core Cable	90.00	138500	12465000	COS PO No 15.06.8054.1.01168 dated 11/01/2008	117160	100	10544400	1920600
													16923572

Annexure XIV
(Para 2.8)
Comparison of rates for similar works being executed on same /different Zones and sanctioned during the same period

(Fingure in crore of ₹)

Rly	Name of the work	Month & Year of sanction of Detailed Estimate	Unit in RKMs/ Nos being executed	Rate per unit	Month & Year of sanction of Detailed Estimate. (Zonal Rly/ Name of the similar work)	Rate per unit of similar work as per sanctioned estimate (after increasing by 25% for site conditions)	Difference in rate per unit	Extra Liability
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
SER	Sini-Adityapur 3rd line(Route-A) HDN-2	NOV'2010	22.5	6.36	OCT'2010/SECR/ Durg - Rajnandgaon third line (31 Kms)(Route-A) HDN-2	6.21	0.15	3.38
SR	AIP - KOK proposed third line(Route-A)HDN-5	1999-00	18	3.92	1999-00/NCR/ Mathura - Bhuteshwar 3rd line (3.48 Km)(Route-A)HDN-5	1.52	2.39	43.02
SCR	MCI - PPZ (Triple Line)*(Route-A)HDN-5	AUG'2010	4.37	7.11	OCT'2010/ SECR/ Durg - Rajnandgaon third line (31 Kms)(Route-A) HDN-2	6.21	0.9	3.94
CR	Badlapur-KJT ABS Work. HDN-7	Mar'2004	32	0.54	May'2004/CR/ Pune-Lonavala ABS Work.HDN-7	0.46	0.08	2.56
NCR	Hetampur-Morena-'B' Class station by conversion of IBH (01 No.)HDN-5	Mar'2008	1	13.26	July'2008/NCR/ Datia-Karari-Jhansi & Jakhlaun-Dhaura 'B' Class station by conversion of IBH(03No.)HDN-5	8.04	5.22	5.22
SCR	Nancherla - Guntakal West-Byepass line(Route-B)HDN-7	2007-08	1	20.2	2007-08/SCR/ Yedlapur - Bye pass line for traffic from RC to RC Thermal Power stn(Route-B)HDN-7	12	8.2	8.2
CR	Igatpur Jalgaon IBS-14.HDN-2	July'2007	14	1.26	August'2007/WCR/ IBS -03 nos. Bina-ET. HDN-5	0.63	0.63	8.82
CR	Bhusawal-Badnera IBS-6 HDN-2	July'2007	6	1.36	August'2007/WCR/ IBS -03 nos. Bina-ET. HDN-5	0.63	0.73	4.38
CR	Amla -Nagpur IBS 10	July'2007	10	1.27	August August'2007/WCR/ IBS -03 nos. Bina-ET. HDN-5	0.63	0.63	6.3
CR	Itarasi Amla IBS 4 HDN-5	July'2007	4	1.02	August'2007/WCR/ IBS -03 nos. Bina-ET. HDN-5	0.63	0.39	1.56
							TOTAL	**87.38**

Annexure XV
(Para 2.8)

Comparison of rates for identical works sanctioned on a Railway and sanctioned on the adjacent sections of same or other zone during subsequent period

(Fingure in crore of ₹)

Rly	Name of the work	Month & Year of sanction of Detailed Estimate	Unit in RKMs	Rate per unit	Month & Year of sanction of Detailed Estimate. (Zonal Rly/ Name of the similar work)	Rate per unit of similar work as per sanctioned estimate	Difference in rate per unit	Extra Liability
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
CR	Kurla-Thane 5 th & 6th Line Phase II (7 Kms) (Route-C) HDN-2	1997-98	14	4.06	SEP'2000/CR/Diwa-Kalyan 5 th & 6th Line (11 Kms) (Route-C) HDN-2	2.18	1.87	26.18
SECR	Gondia-Nagpur Automatic Signalling. HDN-2	MAR'2008	130	0.59	SEP'2008/WCR/Automatic signaling Budni-ET.HDN-5	0.41	0.18	23.4
SECR	Durg-Gondia Automatic signalling.HDN-2	Mar'2008	135	0.56	SEP'2008/WCR/Automatic signaling Budni-ET.HDN-5	0.41	0.15	20.25
SECR	Bilaspur Division - Intermediate block signalling (8locations) Estimate	2008	4	1.5	SEP'2009/WCR/ IBS - 10nos. on this section.(10 Bina-KTE 3 KTE-MKP). HDN-2A	1.08	0.42	1.68
							TOTAL	71.51

Annexure XIV
(Para 2.8)
Comparison of rates for similar works being executed on same /different Zones and sanctioned during the same period

(Fingure in crore of ₹)

Rly	Name of the work	Month & Year of sanction of Detailed Estimate	Unit in RKMs/ Nos being executed	Rate per unit	Month & Year of sanction of Detailed Estimate. (Zonal Rly/ Name of the similar work)	Rate per unit of similar work as per sanctioned estimate (after increasing by 25% for site conditions)	Difference in rate per unit	Extra Liability
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
SER	Sini-Adityapur 3rd line(Route-A) HDN-2	NOV'2010	22.5	6.36	OCT'2010/SECR/ Durg - Rajnandgaon third line (31 Kms)(Route-A) HDN-2	6.21	0.15	3.38
SR	AIP - KOK proposed third line(Route-A)HDN-5	1999-00	18	3.92	1999-00/NCR/ Mathura - Bhuteshwar 3rd line (3.48 Km)(Route-A)HDN-5	1.52	2.39	43.02
SCR	MCI - PPZ (Triple Line)*(Route-A)HDN-5	AUG'2010	4.37	7.11	OCT'2010/ SECR/ Durg - Rajnandgaon third line (31 Kms)(Route-A) HDN-2	6.21	0.9	3.94
CR	Badlapur-KJT ABS Work. HDN-7	Mar'2004	32	0.54	May'2004/CR/ Pune-Lonavala ABS Work.HDN-7	0.46	0.08	2.56
NCR	Hetampur-Morena-'B' Class station by conversion of IBH (01 No.)HDN-5	Mar'2008	1	13.26	July'2008/NCR/ Datia-Karari-Jhansi & Jakhlaun-Dhaura 'B' Class station by conversion of IBH(03No.)HDN-5	8.04	5.22	5.22
SCR	Nancherla - Guntakal West-Byepass line(Route-B)HDN-7	2007-08	1	20.2	2007-08/SCR/ Yedlapur - Bye pass line for traffic from RC to RC Thermal Power stn(Route-B)HDN-7	12	8.2	8.2
CR	Igatpur Jalgaon IBS-14.HDN-2	July'2007	14	1.26	August'2007/WCR/ IBS -03 nos. Bina-ET. HDN-5	0.63	0.63	8.82
CR	Bhusawal-Badnera IBS-6 HDN-2	July'2007	6	1.36	August'2007/WCR/ IBS -03 nos. Bina-ET. HDN-5	0.63	0.73	4.38
CR	Amla -Nagpur IBS 10	July'2007	10	1.27	August August'2007/WCR/ IBS -03 nos. Bina-ET. HDN-5	0.63	0.63	6.3
CR	Itarasi Amla IBS 4 HDN-5	July'2007	4	1.02	August'2007/WCR/ IBS -03 nos. Bina-ET. HDN-5	0.63	0.39	1.56
							TOTAL	**87.38**

Annexure XV
(Para 2.8)

Comparison of rates for identical works sanctioned on a Railway and sanctioned on the adjacent sections of same or other zone during subsequent period

(Fingure in crore of ₹)

Rly	Name of the work	Month & Year of sanction of Detailed Estimate	Unit in RKMs	Rate per unit	Month & Year of sanction of Detailed Estimate. (Zonal Rly/ Name of the similar work)	Rate per unit of similar work as per sanctioned estimate	Difference in rate per unit	Extra Liability
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
CR	Kurla-Thane 5 th & 6th Line Phase II (7 Kms) (Route-C) HDN-2	1997-98	14	4.06	SEP'2000/CR/Diwa-Kalyan 5 th & 6th Line (11 Kms) (Route-C) HDN-2	2.18	1.87	26.18
SECR	Gondia-Nagpur Automatic Signalling. HDN-2	MAR'2008	130	0.59	SEP'2008/WCR/Automatic signaling Budni-ET.HDN-5	0.41	0.18	23.4
SECR	Durg-Gondia Automatic signalling.HDN-2	Mar'2008	135	0.56	SEP'2008/WCR/Automatic signaling Budni-ET.HDN-5	0.41	0.15	20.25
SECR	Bilaspur Division - Intermediate block signalling (8locations) Estimate	2008	4	1.5	SEP'2009/WCR/ IBS - 10nos. on this section.(10 Bina-KTE 3 KTE-MKP). HDN-2A	1.08	0.42	1.68
							TOTAL	71.51

Annexure XVI
(Para 2.9)
Statement showing the comparison of rates of Stores Items included in the Works contract with that of Stores Contracts on Selected HDN Routes

SL N	HDN NO	Rly	Section	Agt No/ Date	Name of the Stores Item	Qty	Rate (₹) per unit	Value (₹)	Ref to P.O No and Date	Corresponding Rate per unit in Stores Contract (₹)	Quantity of stores item included in the purchase order	Value of the stores item at Stores contract Rate (₹)	Difference (₹)
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	2	SER	Adityapur SINI	CE/CON/GRC/56/2011 dt. 28.09.2011	ERC-mark-III/J clips	88000	61.75	5434000	2011/005/10036 dt. 31.01.2012	49.69	165240	4372720	1061280
2	2	SER	Adityapur SINI	CE/CON/GRC/56/2011 dt. 28.09.2011	G.F.N liner as per RDSO Drg.No. T/3706	88000	14.25	1254000	2009/039/A/10002 dt. 04.07.2011	7.30	204000	642400	611600
3	2	SER	Adityapur SINI	CE/CON/GRC/57/2011 dt. 28-09-2011	ERC-mark-III/J clips	80000	61.75	4940000	2011/005/10036 dt. 31.01.2012	49.69	165240	3975200	964800
4	2	SER	Adityapur SINI	CE/CON/GRC/57/2011 dt. 28-09-2011	G.F.N liner as per RDSO Drg.No. T/3706	80000	14.25	1140000	2009/039/A/10002 dt. 04.07.2011	7.30	204000	584000	556000
5	2	SER	Dumetra-Champajharan	CE/CON/GRC/55/2009 dt. 19-08-2009	Grooved Rubber Sole Plate for 60 KG Rail to RDSO's Drg.No.: T-3711 , Spectication: IRS-T-47-2006	80000	23.76	1900800	2009/014/B/10029 dt. 26.10.2009	17.37	400000	1389600	511200
6	2	SER	Dumetra-Champajharan	CE/CON/GRC/55/2009 dt. 19-08-2009	Elastic Rail Clips Mark-III/J-Clip conforming to Specification: IRS-T-3192	170000	84.24	14320800	CE/TP/2009/012/A/10026 dt. 28.10.2009	44.35	916674	7539500	6781300
7	2	SER	Rajkharswan-SINI	CE/CON/GRC/29/2011 dt. 30.03.2011	Insulating G.F.N liner as per RDSO Drg.No. T/3706	116000	14.00	1624000	2009/039/B/10001 dt. 04.07.2011	7.64	1156000	886240	737760
8	2	SECR	NGP-ITR-KAV	15/CEE/CON/SECR/BSP/2009 dated 16/9/2009	Catenary wire	5.973	587815.30	3511021	P.O. No. 04091193106397 dated 15/7/2009	359256.97	4.00	2145842	1365179
9	2	SECR	CPH-JSG	28/CEE/CON/SECR/BSP/2009 dated 17/8/2009	Catenary wire	4.659	541976.49	2525036	P.O. No. 04091193106397 dated 15/7/2009	359256.97	4.00	1673757	851279
10	2	SECR	G-DUG	17/CEE/CON/SECR/BSP/2008 dated 18/6/2008	Contact wire	3.6526	513633.10	1876076	P.O. No. 04065049746405 dated 24/12/2008	367188.13	67.17	1341177	534899
11	2	SECR	DUG-BIA	ST/Con/Tender/ 3rd Line BIA/BIA-DUG/274 dated 09/5/2008	Relay Non AC QN1-24V DC 8F.8B	1150	2940.08	3381092	P.O No. 05077168142091 dated 3/6/2008	2046.45	165	2353418	1027675
12	2	CR	IGP-JL	CR/S&T/BB/117/07 DATED 18-01-2008	12 Core Cable	90.00	138500	12465000	COS PO No 15.06.8054.1.01168 dated 11/01/2008	117160	100	10544400	1920600
													16923572

Annexure XVII
(Para 2.10)
Statement of land availability for line capacity augmentation works on select HDN Routes

Land in Hectares

					Land Utilisation				Land acquisition initiation process			Acqusition			Delay
HDN Route	**Rly**	**Section**	**Name of the work**	**Year of sanction in Pink Book**	**Total requirement of Land**	**Quantum of Rly Land available along the track**	**Land Proposed to be acquired**	**Reasons for non utilisation of Rly Land**	**Date of Commencement of Land acquisition process**	**Time taken to commence land acquisition (Months)**	**Reasons for delay in initiation of land acquisition process**	**Land actually acquired**	**Shortfall**	**Reasons for the shortfall**	**Time taken for acquisition from commence-ment to actual acquisition (in months)**
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*
2	SECR	G-DURG	Durg - Rajnandgaon third line (31 Kms)	2010-11	40.64	71.73	1.67	Additional land was required in a patch of 0.95 km length only.	24/6/2011	9 months from sanction of detailed estimate (1/10/2010)	Delay in Joint survey with revenue officials to identify the ownership of the proposed land and preparation of tracing sheets of revenue map etc	Nil	1.67	State Government sought clarifications for employment to the land loosers	Not applicable
2	SECR	BSP-CPH	Champa Bye Pass line	2007-08	18.876	11.8	13.376	No railway land available in bye pass portion	29/10/2007	No delay	Not applicable	13.376	Nil	Not applicable	55 month
2	SECR	BSP-APR	Anuppur Bye pass line	2007-08	Not assessed	Not assessed	6.7	No railway land was available in bye pass portion	Not available	Not available	Not available	6.7	Nil	Not applicable	Not available
2	SECR	BSP-APR	ii) Salka Road-Khongsara Patch dobling executed by RVNL	2005-06	Not assessed	Not assessed	24	Not applicable	08.3.2007	No delay	Not applicable	Nil	24	Land belongs to four villages. During the distribution of Cheques for land compensation in	Not applicable
2	SECR	BSP-APR	iii) Khodri - Anuppur doubling with Fly over at Bilaspur executed by RVNL	2006-07	Not assessed	Not assessed	26.891	Not available	11.7.2009	18 (from the sancion of detailed estimate Dec'07)	After seizer of contractor's machineries RVNL noticed that in 3 block sections land is required to be diverted. After that the process was initiated	Nil	26.891	RVNL initiated a proposal in July 2009 for the diversion of protected forest land..Presently the proposal is pending with CCF/MOEF/Bhopal	Not applicable
2	CR	CLA-TNA	CSTM – KYN- 5th & 6th Line (CLA – TNA) Phase I	1995-96	1.71	Not assessed	2 Hectares and 265.50 M2	Not available	13-07-1998	27 months	Not available	1 Hectares and 9145.30 M2	0.11202 Hactors	Not available	56 months
2	CR	TNA-DW	CSTM – KYN- 5th & 6th Line (TNA – DW)	2008-09	1.2	Not assessed	1.2	Not available	2009	No delay	Not applicable	1.2	NIL	Not applicable	Not applicable
2	CR	DW-KYN	CSTM – KYN- 5th & 6th Line (DW – KYN)	1999-00	0.42	Not assessed	0.28	Not available	Not available	Not available	Not available	0.28	Not applicable	Not applicable	Not applicable
7	CR	LNL– PA	PA - WD - PA-GTL DL & RE Sanctioned wherever it is single line.	Not available	Not assessed	Not assessed	Not available	Not available	Not available	Not available	Not available	Not available	Not available	Not available	Not available

					Land Utilisation				Land acquisition initiation process			Acqusition			Delay
HDN Route	**Rly**	**Section**	**Name of the work**	**Year of sanction in Pink Book**	**Total requirement of Land**	**Quantum of Rly Land available along the track**	**Land Proposed to be acquired**	**Reasons for non utilisation of Rly Land**	**Date of Commencement of Land acquisition process**	**Time taken to commence land acquisition (Months)**	**Reasons for delay in initiation of land acquisition process**	**Land actually acquired**	**Shortfall**	**Reasons for the shortfall**	**Time taken for acquisition from commence-ment to actual acquisition (in months)**
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*
2	CR	WR-NGP	Doubling of Godhani(CR)-Kalumna chord (SECR) line (13.7 Kms)	2010-11	Not assessed	Not assessed	2 Hectares	Not applicable	Not yet started	Not applicable	Not available	Not applicable	Not applicable	Not applicable	Not applicable
7A	SWR	HPT-VSG	Doubling of Hospet-Vasco Sec (352.28 KMs)	2010-11	Not Assessed	Not assessed	14.59 Hectares	Not available	29.03.2011	12	Not available	NIL	14.59 Hectares	Not available	Not applicable
7A	SWR	HPT-VSG	UBL-HBS Doubling	2006-07	Not Assessed	Not assessed	22.78 Hectares	Not available	05.10.2007	6	Not available	22.78 Hectares	NIL	Not available	12
7A	SWR	HPT-VSG	DWR-KBI Doubling	2006-07	Not Assessed	Not assessed	55.55 Hectares	Not available	12.11.2007	10	Not available	55.55 Hectares	NIL	Not available	13-23
7A	SWR	HPT-VSG	KBL-GIN Addl Xing Stn	2008-09	Not Assessed	Not assessed	9.01 Hectares	Not available	18.03.2010	12	Not available	Nil	9.01 Hectares	Not available	Not applicable
7A	SWR	HPT-VSG	Binkadakatti Addl Xing Stn	2008-09	Not Assessed	Not assessed	3.83 Hectares	Not available	12.07.2008	nil	Not available	3.83 Hectares	NIL	Not available	No delay
7A	SWR	HPT-VSG	Strengthening of Iron Ore Routes by addl loops & extn of running lines/ sidings	2007-08	Not Assessed	Not assessed	1.69 Hectares	Not available	01.07.2008	3	Not available	0.50 Hectares	1.19 Hectares	Not available	acquisition not complet
2A	WCR	BINA-RTA	Gun-RTA Doubling (20.5 Kms.)	2009-10	25.71 Hctrs.	Not assessed	25.71 Hctrs	Not available	24.05.2010	No delay	Nil	NIL	25.711	Not available	22
2A	WCR	RTA-KOTA	New crossing station 3 Nos (Sundlak, Chourakhedi & Kesholi)	2008-09	4.02	23.84 Hctrs.	2.4429		10.04.2009	No delay	NIL	0.53 Hctrs.	1.913 Hctrs.	Delay on account of revenue department(of State Government	24
5	SR	MAS - GDR	Chennai Beach - Korukkupet - 3rd Line	2003-04	6.1743 Hec	Not assessed	6.1743 hec	Not available	Railway Board approved the exchange of land between CPT and	36	Not available	Nil	6.1743	Not available	Not applicable
5	SR	MAS - GDR	Chennai Beach - Attipattu - 4th line	2003-04											
7	SR	MAS-AJJ-RU	4th line between Tiruvallur-Arakkonam	2002-03	23.77Hec	Not assessed	23.77Hec	Not available	Mar-11	9	Not available	Nil	23.77	Not available	Not applicable
5	SCR	BPQ-KZJ	Raghavapuram-MMZ (24.47 Kms) Patch trippling	2008-09	22.001 Ha	Not assessed	22.001 Ha	Not available	24.3.2009	No delay	Not applicble.	8.79 Ha	13.211 Ha	Although land pertaining to revenue department had been acquired, acquisition of forest land was in	Not applicable

Source: Land records

Annexure XIX
(Para 4.7)
Sample Selection

Zone	Stations						Trains	
	A-I	A	B	C	D	E	T.No.	Name
SCR	Secunderabad	Nanded	Kurnool Town	NIL	Hi-Tech City	Akkannapet	12285/86	Duoronto Exp.
	Vijayawada	Kacheguda	Machilipatnam		Miryaloaguda	Rangapuram	12715/16	Sachkhand Exp.
		Guntur	Dornakal Jn.				12759/60	Charminar Exp.
		Guntakal	Nagarsole				17607/08	Tungabhadra Exp.
							347	Pass.
RPU	no caterization					NO	NO	
NER	Lucknow Junction	Kathgodam	Bhatni	Badshahnagar	Tanakpur	Gauri Bazaar	15035	KGM-DLI
	Gorakhpur	Basti	Kasganj	Lucknow City	Nautanwa	Maghar	12511	GKP-TVC
		Deoria	Manakpur				55189	GD-BE
							11016	GKP-LTT
							15007	MUH-LJN
SECR	Bilaspur	Raigarh	Dongargarh	NIL	Pendra Raod	Jairamnagar	18239/40	Nagpur Exp.
	Raipur	Durg			Akaltara	Belha	12855/56	Intercity Exp.
		Gondia					8236/35	Pass.
							18234/33	Narmoda Exp.
							2851/52	Superfast Exp.
							2849/50	Superfast Exp.
							2069/70	Jan Shatabdi
							405/06	Pass.
							401/02	Pass.
							1ABAM/2	Pass.
							336/5	Pass.
							8241/42	Pass.
							12853/54	Amarkantak Exp.
SER	Tatanagar	Kharagpur	Chakradharpur	Santragachi	Muri	Salboni	12841	Coromondal Exp
		Rourkela		Panskura	Bishnupur	Madpur	12021	Jan Shatabdi
		Chakradharpur					58021	Pass.
		Bokaro Steel City					12871	Ispat Exp
		Adra					18001	Kandari Exp.
		Ranchi						
NR	New Delhi	Delhi Shahadara	Kurushhetra	NIL	Ganaur	Garhi Harsaru	12236	Rajdhani
	Lucknow	Firozpur Cant	Faridkot		Dhandari Kalan	Goraya	12011	Kalka Shatabdi
	Varanasi	Barabanki	Abohar				12925	Pashchim Exp
		Moradabad					19105	ADI mail
		Rajpura					305	Pass.
CR	Mumbai CST	Bhusawal	Pandharpur	Ambernath	Igatpuri	Ankai	12105/06	Vidarbha Exp
	Pune	Ballarshah	Sewagram	Shivajinagar	Roha	Hotgi	12071/72	Jan Shatabdi
							11327/28	Pass.
							12123/24	Deccan Queen
							12139/40	Nagpur Sevagram Exp.
NCR	CNB	FTP	PHD	NIL	BDL	TBT	11124	Chhapra Exp.
	Jhansi	LAR	Babina		KSV	Bad	12033	Shatabdi
		AGC					361/51901	Pass.
							12625	Kerala Exp
							14215	pass.
NWR	Jaipur	Ajmer	Nagour	NIL	Devpura	Rana Pratap Nagar	19708	Exp.
	Jodhpur	Bikaner	Hanumangarh		Karjoda	Jalore	12988	Exp.
		Alwer					14854/64	Exp.
		Jaisalmer					12240	Exp.
							15610	Exp.
WCR	Jabalpur	Katni	Gangapur City	NIL	Ashoknagar	Niwar	12061	Exp.
	Bhopal	Itarsi			Hindan City	Bundi	12189	Exp.
		Kota					11466	Exp.
							12181	Exp.
							11705	Exp.
NFR	Guwahati	Rangiya	BPRD	NIL	KYQ	CGS	12067/68	Jan Shatabdi
	New Jalpaiguri	New Coch Bihar	SGUJ		AUB	Jhaua	12505/06	NE Exp.
		Tinsukia					12509/10	Ghy-Banga Exp
		KIR					12501/02	Sampark Kranti
		DMV					55617/18	Ghy-NBQ pass.

Zone	Stations						Trains	
	A-I	A	B	C	D	E	T.No.	Name
ER	Howrah	Naihati	Bandel	Barrackpure	Sainthia	Khanna	12314	Sealdah Raj
	Sealdah	Bardhawan		Shrirampur	Andal	Pandavaswar	12304	Purva Exp.
		Malda Town					12023	Jan Shatabdi
		Assansol					13008	Tofan Exp
							53178	Lalgola pas.
SR	Chennai Central	Erode	Rameswaram	Tiruvallikeni	Ariyalur	Coimbatore North	12615/16	Grand Trank Exp
	Coimbatore jn.	Mangalore Central	Guruvayoor	Chennai Beach	Sivakasi	Chidambaram	12007/08	Shatabdi
		Ernakulam Town					12671/72	Nilgiri Exp.
		Tiruchchirappalli					12635/36	Vaigai Exp.
							66021/22	Pass.
ECOR	Vishakhapatnam	BZM	RGDA	NIL	Chhatterpur	Barang	12421/22	Rajdhani
	Bhubaneawar	KUR			Bobbili	Skota	12073/4	Jan Shatabdi
		Sambalpur					209/210	puri-Talsher
							8010/12	puri-oakha exp.
							18411/12	Intercity Exp.
SWR	Bangalore City	Mysore Jn.	Bijapur	NIL	Tiptur	Marikuppam	12627	NDLS-Bangalore Exp
	Jaswant Pur	Vascodigama	Husan Jn.		Ranibennur	Alnavar	12028	SBC-MAS Exp
							56229	Mysore - SBC pass.
							12779	VSDto NZM
							12295	SBC-PNBE Exp
WR	Bandra Terminus	Valsad	Billimora Jn.	Borivali	Umbergaon	Atul	12953	Rajdhani
	Ratlam	Bharuch	Dahod	Dahanu road	Maninagar	Sabarmati	12009	Shatabdi
							12933	Karnavati Exp.
							12925	Pashchim Exp
							19131	Kutch Exp
ECR	Patna Jn.	Dhanbad	Patna Sahib	NIL	Chandrapur	Khusurupur	2309/10	Rajdhani
	Muzaffarpur	Mikama	BKP		Semapur	Gauchari	2355/56	RJPB
	Darbhanga	Mughal sarai	Naugachia		Jahanabad	Purnea Cour	2401/02	Magadh Exp
		Samastipur	Mansi		Rafiganj	Sindri	2391/92	Shramjivi Exp.
		KGG	Gomoh				2553/54	Vaishali Exp
			Sagauli					

Abbreviations used in the Report

IR	Indian Railways
CR	Central Railway
ER	Eastern Railway
ECR	East Central Railway
ECoR/E. Coast	East Coast Railway
NR	Northern Railway
NCR	North Central Railway
NER	North Eastern Railway
NFR	Northeast Frontier Railway
NWR	North Western Railway
SR	Southern Railway
SCR	South Central Railway
SER	South Eastern Railway
SECR	South East Central Railway
SWR	South Western Railway
WR	Western Railway
WCR	West Central Railway
RPU	Railway Production Units
DLW	Diesel Locomotive Works
CLW	Chittaranjan Locomotive Works
ICF	Integral Coach Factory
RCF	Rail Coach Factory
DMW	Diesel Modernization Works
PAC	Public Accounts Committee
FA&CAO	Financial Advisor and Chief Accounts Officer