Report of the Comptroller and Auditor General of India

for the year ended March 2018

Laid in Lok Sabha/Rajya Sabha on _____

Union Government (Railways)

(Compliance Audit)

No. 19 of 2019

Preface

The Report for the year ended March 2018 has been prepared for submission to the President under Article 151 of the Constitution of India.

The Report contains significant results of the compliance audit of the Ministry of Railways of the Union Government.

The instances mentioned in this Report are those, which came to notice in the course of test audit for the period 2017-18 as well as those which came to notice in earlier years, but could not be reported in the previous Audit Reports; instances relating to the period subsequent to 2017-18 have also been included, wherever necessary.

The audit has been conducted in conformity with the Auditing Standards issued by the Comptroller and Auditor General of India.

Contents

Abbreviations

Abbreviation	Full form
AFRES	Advanced Financial and Railway Expenditure Management System
AMC	Annual Maintenance Contract
ATVM	Automatic Ticket Vending Machine
ARS	Automatic Route Setting
ATM	Automated Teller Machine
ATN	Action Taken Note
AWS	Auxiliary Warning System
ASRS	Automatic Storage and Retrieving System
BOCW	Building and Other Construction Workers
BG	Broad Gauge
CC	Carrying Capacity
CCM	Chief Commercial Manager
CCTV	Close Circuit Television
CEE	Chief Electric Engineer
COFMOW	Central Organization for Modernization of Workshops
CPE	Chief Plant Engineer
CSTE	Chief Signaling and Telecommunication Engineer
CLW	Chittaranjan Locomotive works
CME	Chief Mechanical Engineer
COM	Chief Operations Manager
CONCOR	Container Corporation of India Limited
COS	Controller of Stores
CR	Central Railway
CRB	Chairman Railway Board
CRIS	Centre for Railway Information Systems
CRS	Commissioner of Railway Safety
CWE	Chief Workshop Engineer
DCT	Domestic Container Terminal
DJB	Delhi Jal Board

Abbreviation	Full form
DLW	Diesel Locomotive Works
DPR	Detailed Project Report
DSP	Durgapur Steel Plant
DRM	Divisional Railway Manager
ECOR	East Coast Railway
ECR	East Central Railway
ELS	Electric Loco Shed
EPC	Engineering Procurement and Construction
ESP	Engineering Scale Plan
EMU	Electric Multiple Unit
EIMWB	Electronic in-motion Weigh Bridge
ER	Eastern Railway
ETCS	European Train Control System
FA&CAO	Financial Advisor and Chief Accounts Officer
FCI	Food Corporation of India
FOB	Foot Over Bridge
GCC	General Conditions of Contract
GM	General Manager
GSR	General and Subsidiary Rules
HDN	High Density Network
ICF	Integral Coach Factory
ICMS	Integrated Coaching Management System
IPAS	Integrated Payroll and Accounting System
IR	Indian Railways
iMMIS	Integrated Material Management Information System
LC	Level Crossings
LEU	Line side Electronic Unit
LOA	Letter of Acceptance
LHB	Linke Hofmann Busch
LHS	Limited Height Subway
MIS	Management Information System
MoR	Ministry of Railways

Abbreviation	Full form
MEA	Ministry of External Affairs
MEMU	Mainline Electric Multiple Unit
MG	Meter Gauge
MR	Metro Railway
MMIS	Material Management Information System
MNRE	Ministry of New and Renewable Energy
M&P	Machinery and Plant
NCR	North Central Railway
NDMC	New Delhi Municipal Corporation
NEFR/NFR	Northeast Frontier Railway
NER	North Eastern Railway
NHS	Normal Height Subway
NOC	No Objection Certificate
NR	Northern Railway
NTES	National Train Enquiry System
NTKM	Net Tonne Kilometer
NWR	North Western Railway
NTR	Normal Tariff Rate
OEM	Original Equipment Manufacturer
OHE	Over Head Electric Equipment
PAC	Public Accounts Committee
PCE	Principal Chief Engineer
PFT	Private Freight Terminal
PGT	Performance Guarantee Test
PIS	Passenger Information System
POH	Periodic Overhaul
POL	Petroleum, Oils and Lubricants
PPA	Power Purchase Agreement
PRS	Passenger Reservation System
PTC	Proven Test Certificate
PPP	Public Private Partnership
RDSO	Research, Designs and Standards Organization

Abbreviation	Full form
REL	Railtel Enterprises Limited
RITES	Rail India Technical and Economic Services Limited
RKM	Route Kilometer
RLDA	Rail Land Development Authority
ROB	Road Over Bridge
RR	Railway Receipt
RRI	Route Relay Interlocking
RUB	Road Under Bridge
RWF	Rail Wheel Factory
RWP	Rail Wheel Plant
S&T	Signaling and Telecommunication
SCR	South Central Railway
SOP	Standard Operating Procedure
SPD	Solar Power Developer
SR	Southern Railway
Sr. DCM	Senior Divisional Commercial Manager
Sr. DOM	Senior Divisional Operations Manager
SWR	South Western Railway
TEU	Twenty Foot Equivalent Unit
TVU	Train Vehicle Unit
TMC	Terminal Management Company
TKM	Track Kilometre
TMS	Train Management System
TPWS	Train Protection and Warning System
TSS	Traction Substation
UTS	Unreserved Ticketing System
UMLC	Unmanned Level Crossings
WAP	Wheel and Axle Plant
WCR	West Central Railway
WCL	Western Coalfields Limited
WR	Western Railway

Overview

The Audit Report consists of audit findings relating to compliance issues in respect of the Ministry of Railways and its various field units. The Audit Report includes five pan India paragraphs and 40 individual Paragraphs. A brief overview of the important audit findings and conclusions is given below:

Para 2.1 Setting up of Private Freight Terminals in Indian Railways

The Private Freight Terminals (PFTs) policy was introduced to enhance Railways share in the overall transport chain through participation of private sector. Under the policy, private parties, known as Terminal Management Companies (TMCs), come forward to set up freight terminals. They are required to set up PFTs on their own land and develop terminal facilities from where any private customer can book his freight traffic. For this facility, they charge Terminal Access Charge. Railways are responsible to provide logistic facilities to TMCs e.g. connectivity to railway line, rakes, commercial staff. This review was undertaken with a view to assess whether the objectives for setting up of PFTs were achieved. Some of the salient audit findings are as follows:

- 121 applications were received for setting up of PFTs since the introduction of the policy in 2010. Of these, only 58 PFTs could be set up in 13 Zonal Railways. The remaining applications were pending as the process of approval was time consuming and there were delays in approval by the Railways. Another reason for delay was difficulties in land acquisition by TMC.
- Railways were not able to achieve substantial improvement in freight earnings. Only eight PFTs were able to generate business as projected in the Detailed Project Reports.
- Fifty-eight PFTs were commissioned in 26 Divisions. The share of traffic through these PFTs was only 1.82 *per cent* to the total traffic

generated and 1.33 *per cent* of the total traffic earnings of these 26 Divisions.

- The target for setting up of 100 Private Terminals and generation of 100 Million Tonnes traffic as envisaged under 'Mission Hundred' could not be achieved. Shortfall of 41 *per cent* in setting up of Private Terminal and 71 *per cent* in generation of freight was noticed against the target..
- Railways may analyse the reasons for less generation of traffic in PFTs, and also assess whether land and other infrastructure for provision of logistics facilities could be obtained and set up at a cost that would enable PFTs to offer terminal handling and other value added services at competitive prices. In other words, the financial viability of setting up a PFT, may be examined.
- The cost of commercial staff was being borne by TMC. This entailed additional expenditure on part of the TMCs.
- In a number of PFTs, weighbridges were either not installed/ commissioned or not found in working condition. This may cause overloading and damage to railway wagons and tracks.

Audit recommendations

1. ***Railway need to re-engineer the scheme with adequate financial incentives so that tariff charged by PFTs is competitive vis-a-vis that of railway goods sheds and sidings. Railway also need to simplify rules and regulations and create a single window clearance system for the entire zone.***
2. ***Railways may explore the feasibility to lease surplus railway land for setting up of PFTs, wherever there is difficulty in acquisition of land by TMCs.***

3. ***Railways may consider incentivising TMCs by bearing the cost for commercial staff deputed at PFTs themselves.***
4. ***Railways need to enforce the contractual obligation of commissioning of electronic in-motion weighbridges at all PFTs. Where these have not been provided by the TMCs, Railway should explore the feasibility to provide EIMWB on lease/rental basis.***
5. ***Railways should pro-actively interact with TMCs, periodically review the freight loading and earnings and address the constraints faced.***

Para 2.2 Working of Automatic Ticket Vending Machines (ATVMs) in Indian Railways

Automatic Ticket Vending Machines (ATVMs) were introduced by Indian Railways in October 2007 to reduce congestion of unreserved class passengers and long queuing at the ticket counters. ATVMs are touch screen-based ticketing kiosks operated using Smart Cards. Co-ATVMs are cash/smart card operated ticket vending machines. These machines can be used by passengers themselves to buy unreserved tickets through currency/coins as well as smart cards. Single journey tickets, platform tickets can be purchased and season tickets can be renewed through these vending machines.

As on 31 March 2018, 3851 ATVMs and 459 Co-ATVMs (Cash/ Smart Card operated ticket vending machines) had been installed over 14 Zonal Railways. In ECR and NEFR, no ATVMs/Co-ATVMs were installed. A sample of 271 stations, where 974 ATVMs and 199 Co-ATVMs were installed was selected for detailed study. The review covered the period from 2015-16 to 2017-18. Audit objective was to assess the extent to which these have been able to achieve the objectives for which they were installed. Some of the salient audit findings are as follows:

- No feasibility study was conducted by the Zonal Railways for assessing the requirement of ATVMs/Co-ATVMs at stations.
- The share of tickets sold through ATVMs/Co-ATVMs was only 16.90 per cent of the total sale of unreserved tickets at 271 selected stations. In selected non-suburban stations, 87 *per cent* tickets were still sold through window counters. At selected sub-urban stations, the sale of tickets through window counters was 82 *per cent* of the total tickets booked.
- The share of tickets sold through Co-ATVMs was negligible at all selected stations.
- ATVM scheme suffered from frequent failure of machines, lack of passenger awareness and other shortcomings. These shortcomings would automatically result in sub-optimal use of the machines.
- Zonal Railways did not effectively take up the matter of rectification/repair of ATVMs/Co-ATVMs with the firms.
- Facilitators (retired railway employees) were appointed to educate passengers to purchase tickets themselves. The number of tickets sold through facilitators showed an increasing trend. However, number of tickets purchased by passengers themselves decreased significantly during 2015-16 to 2017-18.
- Passenger survey conducted by Audit revealed that 32 per *cent* passengers were not aware of ATVMs. 87 *per cent* of passengers stated that no awareness program was conducted by Railways. 58 per *cent* of surveyed passengers stated that the facilitators did not educate passengers the method of utilizing the ATVMs.

Audit recommendations

1. ***Railways need to undertake surveys/ feasibility studies for identification of stations as well as locations for installation of ATVMs/Co-ATVMs.***
2. ***Facilitators appointed at ATVMs/Co-ATVMs may be effectively used to educate passengers regarding ease of purchasing tickets through***

ATVMs/Co-ATVMs. The incentive to facilitators may be linked to the number of tickets bought by the passengers themselves.

3. *Downtime for ATVMs/Co-ATVMs may be reduced by ensuring timely rectification of defects/problems.*
4. *Effective and extensive awareness drives may be undertaken for familiarizing and popularizing use of ATVMs/ Co-ATVMs amongst passengers.*
5. *Effective utilization of ATVMs requires behavioural changes amongst passengers. Railways may plan replacing the booking counters with ATVMs/Co-ATVMs in a phased manner on identified stations.*

Para 2.3 Implementation of Train Management System in Mumbai suburban system

Train Management System (TMS) was implemented in CR in 2008 to process and display information in real time. TMS was meant to regulate train movement though real-time monitoring and to provide timely information to the commuters through display boards/ announcements at all stations.

Audit observed that TMS was not implemented in all the sections of Mumbai Division. This restricted the availability of full benefits of the system for the entire Mumbai suburban system of Central Railway. The functions such as recording train movement in train register and feeding of train details in TMS were being done manually. Collection of information by the controller regarding actual departure and display of information also continued manually. Inadequate knowledge of Railway staff in operating the TMS led to non-compliance of basic input data and the system remained ineffective. The objectives envisaged were not achieved despite expenditure of ₹ 24.23 crore since December 2013.

Audit recommendations

1. *TMS needs to be implemented on all the suburban sections of suburban rail network in Mumbai Division of CR for deriving intended benefits.*

2. ***Complete information, on real time basis, about movement of suburban trains should be made available to commuters waiting for the trains on the platforms.***
3. ***Details of movement of all trains running should be captured to generate correct MIS reports.***
4. ***Punctuality figures should be calculated through TMS to avoid manual intervention and possible manipulation of punctuality figures.***
5. ***Annual Maintenance Contract should be entered into timely to maintain TMS in proper working condition.***

Para 2.4 Injudicious conversion of Domestic Container Terminal as Container Rail Terminal led to loss of revenue

SR Administration decided to convert CONCOR Domestic Container Terminal (DCT) at Salem Market into Container Rail Terminal (CRT) without ensuring the availability of container or cargo storage and stacking facility, which was critical for successful running of CRT. DCT was exclusively used by CONCOR, whereas CRT was meant to be used by all container train operators. SR, however, did not assess the demand for creating another CRT at Salem Market station, where already a railway CRT existed. After conversion of DCT as CRT, there was no outward loading during 2016-17 and 2017-18. As a result, SR Administration lost the opportunity to earn the revenue on account of haulage charges and license fee from CONCOR.

Para 2.5 Non-recovery of penal interest from the Nationalized Banks for delayed payment of license fee

Zonal Railways failed to incorporate suitable penalty clause in the agreement with Nationalized Banks for delayed payment of license fee. As a result, 12 Zonal Railway could not recover penal interest of ₹ 7.81 crore for the period from 2012-13 to 2017-18. Three Zonal Railways also failed to recover the license fee of ₹ 94 lakhs for installation of ATMs at different categories of railway stations.

Para 2.8 Non-levy/collection of shunting, demurrage and detention charges

Railway Board's order of July 2014 stipulated that shunting charges would be leviable if a railway locomotive is utilized for load adjustment. Further, at the time of load adjustment in case of overloading, demurrage and detention charges to be levied. However, East Central Railway (ECR)did not levy and realise shunting charges of ₹ 8.08 crore from three coal sidings for the period February 2014 to March 2018. ECR also did not recover demurrage and detention charges of ₹ 21.51 crore from these three siding owners.

2.11 Non-levy of siding charges from the siding owners

Railway Board prescribed (June 2010) criteria on which sidings were to be notified for charging freight on through distance basis (i.e. freight charge for distance from originating station to destination point in the siding). Bokaro Thermal Power Siding of ECR and Gateway Rail Freight Limited siding of NR did not qualify for charging of freight on through distance basis. However, ECR and Northern Railway (NR) did not levy siding charges on these two sidings for the period from July 2013 to March 2018. This resulted in loss of ₹ 19.74 crore.

Para 3.1 Construction and utilization of Limited Height Subway (LHS)

South East Central Railway (SECR) constructed 159 LHS at 159 locations in its three Divisions, Raipur, Bilaspur and Nagpur during 2011 to 2016.Audit reviewed the work of construction of Limited Height Subway (LHS) undertaken by SECR. Some of the salient audit findings are as follows:

- LHS were constructed without adhering to the prescribed norms, where density of train vehicle units (TVU) was very low. These were also constructed at locations very near to diversion Road Under Bridges/ Road Over Bridges (RUBs/ROBs), and thus were not used. As such,

Railways incurred an expenditure of ₹ 18.63 crore without any fruitful results.

- Drainage system was either not constructed or partially constructed in many LHS. Proper feasibility study was not conducted before constructing these LHS. This led to water logging and the LHS remained closed/ were not utilized.
- Railways assigned the responsibility for maintenance related works to respective State Governments. However, the same was not acknowledged by the State Governments and the issue remained unresolved.

Audit recommendations

1. ***SECR Administration may take steps to make these LHS usable, so that the amount invested by Railways is not wasted and safety of trains and those crossing the railway track is ensured.***
2. ***LHS which are under construction/ lying incomplete may be completed at the earliest and respective level crossings may be closed to avoid accidents.***
3. ***There is no agreement between State Government and the Railways to provide drainage facilities by State Government outside the Municipal areas. Railways may initiate action to take State Governments on board to commit these costs.***

Para 3.2 Payment of Workers Welfare Cess by the Railways in compliance of Building and Other Construction Workers Welfare Cess Act

Building and Other Construction Workers Welfare Cess Act and Building and Other Construction Workers Welfare Cess Rules were enacted and notified in August 1996 and March 1998 respectively. As an 'Employer' it was the responsibility of the Railways to ensure that the prescribed share (one *per cent*) of the cost of construction was set aside and deposited with the Worker's Welfare Boards. Review of works contracts in the Zonal Railways, the following was observed:

- Railways deducted and deposited only a part of this amount from the contractors in some cases.
- Cases were also seen where no recovery of Cess was made from the contractors.
- Cess recovered from the contractors was not deposited to the Workers Welfare Boards within the stipulated period in all the cases checked.
- ₹ 10.24 crore was short recovered from contractors, ₹ 2.28 crore recovered from contractors was not transferred to the Boards and ₹ 12.95 crore was outstanding for payment by Railways to the Boards.

Audit recommendations

1. ***Railways may modify the tender conditions to correctly reflect the provisions of the BOCW Act. They may also issue instructions to all field formations to recover the Cess in line with the BOCW Welfare Cess Act.***
2. ***Railways may ensure that the Railways fulfill their responsibility of remitting the Cess at the prescribed rate on the cost of construction to the Workers Welfare Boards. This should be done irrespective of the amount recovered from the contractors, as the responsibility to pay Cess entirely lies on the Employer.***
3. ***Railways may ensure that the Cess recovered from the contractors is remitted to the Workers Welfare Boards within the stipulated time period as per the BOCW Welfare Cess Act.***
4. ***Railways may ensure that the forms as required are submitted to the Workers Welfare Boards by the executives of all the concerned Departments.***

Para 3.3 Short deduction of Jharkhand VAT from the contractors on-account bill resulting in avoidable liability

With effect from 1 April 2012, Government of Jharkhand revised the rate of VAT from two to four *per cent*. The same was to be deducted in advance in respect of works contracts. Construction Organization, East Central Railway (ECR) did not deduct VAT at the revised rate in 26 works

contracts awarded between December 2012 and April 2017. In 346 running on-account bills processed for payment, an amount of ₹ 12.14 crore was short-recovered from the contractors. Railways now have the liability to pay the same to the State Government as and when demanded.

Para 3.4 Construction of sub-standard pit lines leading to delay in development of new coaching terminal at Mau

The work of washing pit line at Mau was delayed due to delay in providing drawings and permanent way material to the contractor. The contractor did not execute the work adhering to Research Designs and Standards Organization (RDSO) specifications and the work was foreclosed. The work was awarded to another contractor. However, the work was completed without addressing the issue of quality and adherence to RDSO specifications. The pillars in washing pit developed cracks, when the train was placed for maintenance. The expenditure of ₹ 13.32 crore, which was paid to the first contractor became infructuous. Haulage of coaches between Mau and Gorakhpur for primary maintenance led to avoidable expenditure of ₹ 3.80 crore, as the coaching terminal was not completed at Mau.

Para 3.7 Delays in completion of yard works and non-achievement of expected benefits

South Eastern Railway executed yard remodelling work in Tatanagar and Adityapur Yard to cope up with incremental traffic and to minimize detention. The detention in Adityapur Yard improved. However, in Tatanagar yard, the situation worsened as the space and other constraints were not addressed despite spending ₹ 21.66 crore. Similarly, in SECR, the works undertaken for remodelling of Bhilai Exchange Yard and construction of a new Exchange Yard at Maroda remained unfruitful. The work could not be completed due to encroachment at the site and poor planning. This resulted in blocking of capital of ₹ 31.15 crore.

Para 3.11 Injudicious decision taken in construction of third platform/line at Mahanayak Uttam Kumar Station of Metro Railway, Kolkata

Engineering department of Metro Railway/ Kolkata proposed to construct third platform/line at Mahanayak Uttam Kumar station. The objective was to originate/ terminate train services from/to this station. On examination of the proposal, Operating Department stated that the proposed 3rd platform had limited utility and would not facilitate truncated train services from/to Mahanayak Uttam Kumar station. However, the third platform/line was constructed without addressing the limitations pointed out by the Operating Department. As such, 3rd platform/ line could not be used for originating/terminating trains as planned and the expenditure of ₹ 11.27 crore was rendered unfruitful.

Para 3.12 Non-construction of chord lines leading to haulage of goods trains via longer route and recurring loss of revenue to Railways

Central Railway did not construct chord lines bypassing Panvel station for trains coming from Uran and Roha lines to cross over to Panvel-Karjat line, though the same was provided in the original detailed estimate. In the absence of a chord line, most of the freight traffic originating from Uran and Roha lines was being moved through a 55 kms longer route. The situation became worse, when these goods trains were further detained at Kalyan goods shed. This led to loss of ₹ 68.57 crore during April 2015 to March 2018.

Para 3.14 Execution of substandard bridge work by the contractor

The work for rebuilding of the bridge across the river Ghaghra on Chhapra-Aunrihar section of Varanasi Division in North Eastern Railway was approved in September 2011. During execution of substructure work two wells developed tilts in excess of the permissible limit. However, the work was neither declared sub-standard nor the defects rectified by the contractor. Open Web Bridge Girders fabricated for the super-structure

also remained unutilized, as the sub-structure work was yet to be completed. This led to blocking of capital amounting ₹ 67.54 crore.

Para 3.17 Non-realization of license fee for railway land licensed to private siding owners

In December 2010, Railway Board instructed General Manager/ Central Railway to launch a drive for signing of all pending License Agreements. However, Central Railway did not execute land license agreements in respect of 14 sidings and no siding charges were levied and collected. In other nine sidings, where agreement was executed, no bills were raised by CR. Audit assessed an amount at ₹ 127.15 crore of license fee outstanding for recovery from these 23 sidings till 31 March 2018.

Para 4.1 Status of Commissioning and Utilization of Major Machineries and Plants procured by COFMOW in Indian Railways

Central Organization for Modernization of Workshops (COFMOW) is responsible for modernization of Railway Workshops and Production Units. It prepares specification and procured Machinery and Plant for Zonal Railways/ Production Units. Audit examined the effective and timely installation and commissioning of M&Ps procured by COFMOW. Co-ordination mechanism between COFMOW and ZRs/PUs as well as utilization and performance of procured M&Ps were also analysed. Some of the salient audit findings are as follows:

- There were significant delays in receipt of machines by the users/consignee. Only 12.65 *per cent* (63 out of 498) machines could be received by the users within one year from the date of placing indents.
- Railways did not ensure availability of necessary site and infrastructure in many cases. As a result, machines could not be installed/ commissioned timely.

- Defects were noticed in a significant number of machines immediately after commissioning. In 17.07 *per cent* of the machines reviewed, defects developed within six months from the date of commissioning.
- There was lack of diligence on part of Railways to enforce the penal clause and the firms/ suppliers did not honor their responsibility of attending to the defects. A large number of machines were put to use after significant delays caused by the firm's/ supplier's inability to rectify the defects.
- COFMOW/ Zonal Railway also failed to timely reject the machines as a result of which the cost could not be recovered from the suppliers.
- A large number of machines could not be utilized optimally due to non-availability of adequate workload. There was shortfall in outturn of the newly installed machines with reference to the rated capacity.

Audit recommendations

1. ***The Centralized procurement agency, COFMOW, failed to procure/install/commission machines timely. Railways need to analyze whether the system of centralized procurement for major machineries and plants is working.***
2. ***Railways may decentralize the process of procurement of plant and machinery to some selected field offices on a pilot basis. Railways may compare costs to assess whether de-centralized procurement has price advantage vis-à-vis COFMOW.***

Para 4.2 Working of Rail Wheel Plant (RWP), Bela

Rail Wheel Plant (RWP), Bela was established to meet the growing demand of wheels for rolling stock in the Railway. The Plant was established with a capacity to manufacture 1,00,000 cast steel BOX'N wagon wheel discs per annum. RWP has no Axle Shop and Wheel Set Assembly Shop. Loose wheels were dispatched to Rail Wheel Factory, Yelehanka (RWF) for assembly of wheel sets.

Before setting up RWP, the requirement of Indian Railways for loose wheels were being fulfilled by the then existing production unit, RWF and Durgapur Steel Plant. RWF itself was capable of handling production of wheels for Indian Railway requirements as a whole. RWP, Bela was however set up without adequate justification. During the past three years, the quantity for production assigned by the Railway Board to RWP, was much less than its installed capacity.

L&T was awarded the work of setting up of the plant. RWP got the Performance Test done through third party instead of the original firm. The Plant was declared as Production Unit without issue of Final Acceptance Certificate. The plant was declared operational without ensuring required Plant and Machinery in proper working condition. As a result, by the time production of wheel was started in RWP from 2015-16, the warranty of all the machines had expired.

RWP produced 47,901 wheels during the 2015-16 to 2017-18, but consumed all major input material as well as electricity way above the prescribed norms. This indicated, inefficiencies in the systems and processes being followed by RWP. RWP also did not take adequate action to address air, water and land pollution and disposal of hazardous waste.

Audit recommendations

1. ***Optimal utilization of capacity of RWP need to be ensured keeping in view the expenditure incurred in setting up of the plant.***
2. ***RWP needs to analyse reasons for consuming excess quantities of input material (scrap steel, Graphite Mould Blanks, Liquid oxygen, LPG) and electricity for production of wheels. Corrective action to address the same need to be taken.***

3. ***RWP should take necessary action to address environmental pollution including disposal of hazardous waste as per prescribed norms.***

Para 4.3 Infructuous expenditure due to non-commissioning of cut to length machine

Rail Coach Factory (RCF) imported a cut-to-length machine through COFMOW in October 2012. The machine was installed in May 2013. Thereafter trials were conducted. However, the trials for commissioning were not successful as the machines was not capable to cut the coils to accuracy set out as per the bid and did not meet the standards set in the contract. In March 2014, RCF proposed to COFMOW to reject the machine. However, COFMOW chose to have protracted correspondence with the firm and did not follow the contractual provisions to reject the machine in a timely manner. They lost the opportunity to recover the cost of machine supplied by the firm. There is no legal remedy available with the Railways except for encashing the bank guarantee. The expenditure of ₹ 12.05 crore spent on purchase of the machine has thus become infructuous.

Para 4.4 Infructuous expenditure on purchase of special purpose machine for Bogie Bolster and Bogie Frame Welding

Special Purpose Machine for robotic welding of Bogie Bolster and Bogie Frames was received in Mechanical Workshop/ Amritsar (Northern Railway) in April 2013. The same was commissioned in March 2015. Audit noticed that the machine was utilized for only 211 working days (21.25 *per cent*) out of available 993 days. The machine was meant for robotic welding of the bogie side frame, body bolsters sub-assemblies. However, as the input material was not as per the required specification, most of the welding work was being performed manually. As a result, expenditure of ₹ 4.81 crore on procurement of the Special Purpose Machine was rendered infructuous.

Para 5 Implementation of Train Protection Warning System (TPWS) in Indian Railways

Railways have introduced a new technology, TPWS. The system is meant to provide automatic train protection to prevent accidents due to over speeding and passing signal at danger. TPWS aims to ensure safety of rolling stock, rail infrastructure and passengers .The system is based on European standards of European Train Control System (ETCS). The trials for implementation of TPWS on non-suburban and sub-urban sections were sanctioned by Railway Board between 1999 to 2005. Nineteen years from the sanction, the work on TPWS (ETCS level I) in Delhi – Agra section continues to be in trial stage. Railway Board revised the scope of the work a number of times. This resulted in increased cost and also shifted the timelines for the implementation of the system. Locomotives fitted with TPWS, were found in working condition only in 17.15 *per cent* of the total run of the trains during May 2016 to January 2018. The failure rate in track side equipment was also significantly high. However, in Chennai Central – Gummidipundi sub-urban section, the overall success rate was 70 *per cent.*

The trials were being going on for last 12 years in Delhi-Agra section. However, the technology/ product envisaged for train protection was yet to reach operationalization stage. The success of the trails was not assessed/ judged by Railways. However, Railway Board decided to implement TPWS in nine High Density Network and nine suburban sections in August 2016. Expenditure of ₹ 136.53 crore incurred on Delhi - Agra and Chennai Central - Gummidipundi sections, remained unfruitful. Audit further noted that in November 2017, Railway Board has decided to implement TPWS under ETCS level II. All the works under ETCS level I which were in progress have been put on hold since May 2018. The expenditure incurred has now become unfruitful.

Audit recommendations

1) ***Railway Board has decided to implement Automatic Train Protection ETCS Level II in Indian Railways. The lessons learnt from the trials for implementation of ETCS level I, need to be kept in mind during execution of works of TPWS ETCS level II.***
2) ***TPWS works relating to the new systems (ETCS Level II) should be undertaken on a complete section and not in piecemeal parts of section (as was done for ETCS level I). This would help in comprehensive implementation of the system and achieve intended benefit for providing train protection.***
3) ***Railways need to devise a Standard Operating Procedure (SOP), clearly defining step-by-step process for undertaking and documenting trials for induction of technologies.***

Para 6.1 Installation and commissioning of Solar Power Plants in Indian Railways

Indian Railways is the single largest consumer of electricity in India, consuming about 1.8 crore MWh per year. This is approximately two per cent of country's total power generation. Indian Railways planned to contribute to ecological sustainability. It has set for itself a target of meeting 10 *per cent* of its total energy demand through "Renewable" energy sources such as solar power and biomass by year 2020. As part of their Solar Mission, Railways have planned (2015-16) setting up of 1000 MW solar plants.

Audit noticed that Railways have been able to implement projects only to extent of 22.453 MW out of 295 MW planned till March 2018. No works of ground mounted solar plants were commissioned. Audit also noticed non-compliance of laid down instructions for setting up of solar plants.

Audit recommendation

Railways may revisit and fix the target of installation and commissioning of solar plants in the Zonal Railways and Production Units on a realistic basis.

Para 6.2 Non-mixing/ blending of bio-diesel into HSD oil by Zonal Railways and non-achievement of Environmental objectives

Railway Board's directives for blending/mixing bio-diesel to desired extent into HSD oil consumed by Diesel Locomotives was not complied by Zonal Railways. This led to avoidable extra expenditure of ₹ 103.67 crore during the period 2015-16 to 2017-18 on consumption of HSD oil. Besides, Railways also failed to contribute in efforts towards a cleaner and pollution free environment, which was objective of the Railway Board's decision.

Para 6.3 Procurement of readymade Traction Motors at higher rate

Chittranjan Locomotive Works (CLW) purchased Traction Motors from trade (market) at higher price as compared to the rates of in-house assembling of Traction Motors with readymade procured Rotor and Stators. CLW purchased 1647 Traction Motors during the year 2012-13 to 2018-19 (up to June 2018 except 2014-15) from market and incurred extra expenditure of ₹ 57.74 crore.

Para 6.5 Avoidable extra expenditure due to delay in completion of work of Traction Sub Station at Limkheda in Ratlam Division

Western Railway delayed completion of work at Traction Sub-station for receiving power supply from Madhya Gujarat Vij Company Limited (MGVCL). As a result, they had to pay ₹ 4.21 crore towards minimum guarantee charges and extension charges to MGVCL. Besides, capital amounting to ₹ 12.40 crore was blocked for a period of three years due to delay in completion of works.

Para 7.1 Extra expenditure due to procurement of stores at higher rates and non-levy of liquidated damages

Stores Department of South Eastern Railway purchased various store items during 2012 to 2017 at higher rates in comparison to the rate of similar items procured almost simultaneously by Eastern Railway. The information on rates of procurement by neighbouring Zonal Railways was readily available in iMMIS. However, while assessing the reasonableness

of quoted rates, the Tender Committee did not take into consideration these rates. As a result, South Eastern Railway incurred extra expenditure of ₹ 7.93 crore due to procurement of stores at higher rate. Further, in 51 Purchase Orders even though full contractual quantity of the material was not supplied by the supplier, South Eastern Railway issued fresh POs at higher rates. This entailed extra expenditure of ₹ 4.49 crore. Of these, in 23 Purchase Orders the orders were given to the same suppliers at higher rates. In addition, liquidated damages of ₹ 2.35 crore was also not imposed on the defaulting contractors.

Para 7.3 Management of Kumbh Mela, 2019 by Railways

The Kumbh Mela, 2019 was held between 15 January 2019 and 4 March 2019 for 49 days. Railways play an integral role in ensuring the smooth organisation of the event by actively coordinating with the State Government. This included

- running special trains for dispersal of pilgrims,
- taking care of sanitation and minimum essential amenities at the railway premises,
- arranging temporary holding in station premises,
- facilitation in Mela area for Booking & Passenger Information; and
- ensuring the safety and comfort of pilgrims during the event.

Railways intimated a figure of 73.66 lakh evacuation of passengers during Mela period in Sameeksha Sangosthi of March 2019 held in Railway Board. Railways again intimated (August 2019) a figure of 73.41 lakh passengers based on the special trains and regular trains run during the mela period. Railways carried these passengers through the special and regular trains.

However, as per the records of commercial department, 31.21 lakh tickets were sold from Allahabad area (stations of NCR, NR and NER) during the mela period. Even if it is accepted, for arguments sake, that the sale of tickets figure may not be total evacuation as there would be ticket sale from other stations also for outward journey from Allahabad, ticketless

travel during the mela period etc., the gap of over 40 lakh passengers seems difficult to explain.

Audit noted that issues such as running of special trains, works related to passenger amenities and safety, medical facilities to passengers, waste management at station premises were not adequately addressed by Railways. These caused inconvenience to passengers coming for the Kumbh Mela. Temporary fencing at vulnerable locations (track & station entry point) were not completed. This led to cases of free movement of cattle on tracks and passengers trespassing.

Not addressing the above issues adequately may pose risk for the next mega event such as Magh Mela 2020 and Maha Kumbh Mela 2025. It is likely that in future the footfall and accumulation of crowd at Allahabad would only increase. Therefore, Railways need to address the above issues before the Magh Mela 2020.

Chapter 1 – Introduction

1.1 Audited Entity profile

Indian Railways is a multi-gauge, multi-traction system with a total route length of 68,442 kms (as on 31 March 2018). Some important statistics[1] regarding route/track length in Indian Railways are given below:

Table 1.1

	Broad Gauge (1,676 mm)	Meter Gauge (1,000 mm)	Narrow Gauge (762/610 mm)	Total
Route Kilometers[2]	63,491	3,200	1,751	**68,442**
Total Track kms (TKM)[3]	1,17,560	3,775	1,901	**1,23,236**
Electrified Route kms (RKM)				**29,376**

Indian Railways runs 13,452 passenger trains and 9,141 goods trains every day[4]. During 2017-18, it carried 22.54 million passengers and 3.19 million tonnes freight each day. As on 31 March 2018, Indian Railways had 12.71 lakh work force and maintained the following infrastructural assets and rolling stock:

Table 1.2

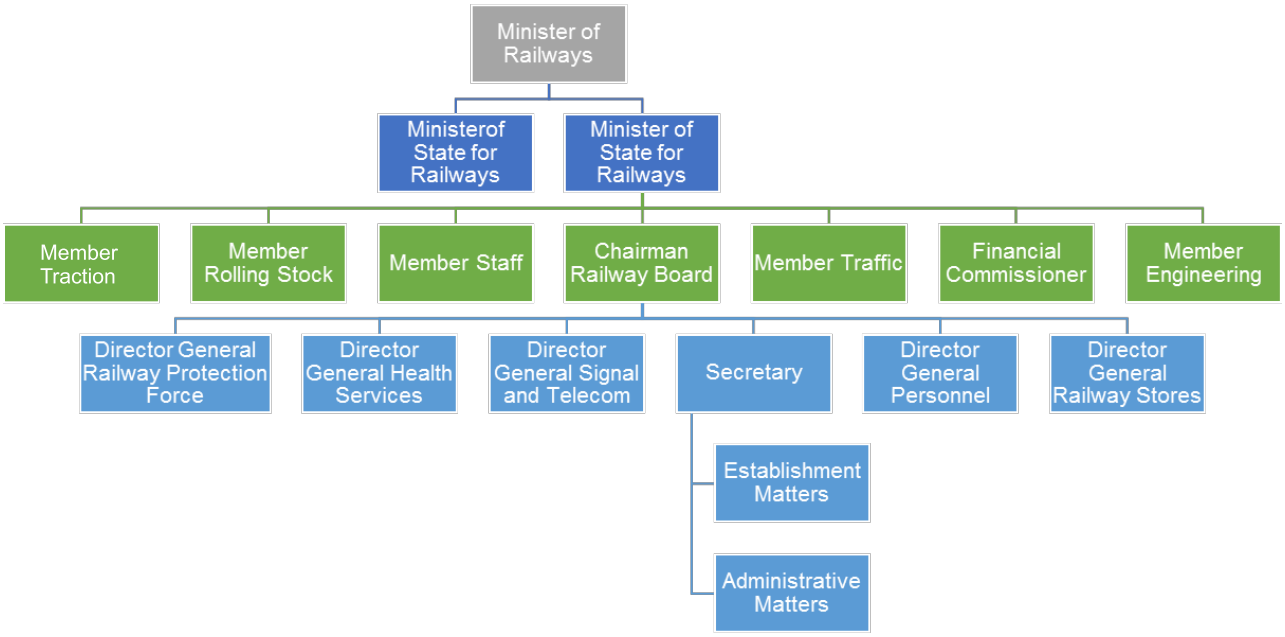
Infrastructural assets/ Rolling stock	Numbers
Locomotives	11,764
Coaching Vehicles	71,825
Freight Wagons	2,79,308
Stations	7,319

The Ministry of Railways, is headed by a Union Minister of Railways (a Cabinet Minister) and has two Ministers of State for Railways. Railway Board which is the apex body of Indian Railways, reports to the Minister for Railways. The Board is headed by Chairman Railway Board (CRB) and has six members viz. Member (Traffic), Member (Engineering), Member (Traction), Member (Rolling Stock), Member (Staff) and Financial Commissioner (Railways). Director General (S&T) and Director General (Railway Stores) have been re-designated as Member (S&T) and Member (Material Management) in April 2019. The Board lays down policies on

[1] Source – Indian Railways Year Book 2017-18
[2] Distance of each gauge owned by a railway including its worked lines treated as a single line
[3] Distance of each gauge owned by a railway including its worked lines treated as a single line and the extra distance due to double, treble etc. tracks as also the length of the sidings
[4] Source – Indian Railways Year Book 2017-18

operation and maintenance of train services, acquisition, construction and maintenance of assets. It monitors implementation of policies and instructions across Zonal Railways. Railway Board also regulates pricing of both passenger fares and freight tariffs. The Functional Directorates under each Member assist and aid in decision-making and monitoring of railway operations.

The organizational structure of Indian Railways as on 31 March 2018 was as follows:



At the field level, there are 17 Zonal Railways. In addition, there are specialized organisations viz.

- Research Designs and Standards Organization (RDSO) Lucknow for research and standardization;
- Central Organization for Modernization of Workshops (COFMOW) for procurement of specialized machinery;

- Locomotive manufacturing units, Diesel Locomotive Works at Varanasi, Chittaranjan Locomotive Works at Chittaranjan and Diesel Modernization Works at Patiala;
- Coach factories at Kapurthala, Rae Bareli and Perambur and Wheel and Axle Plants at Yelahanka and Bela.

The details of Zonal Railways with their Headquarters and total route kilometers (RKMs) as on 31 March 2018 were as follows:

Table 1.3

Zonal Railways	Headquarters	RKMs
Central	Mumbai	4,115
Eastern	Kolkata	2,723
East Central	Hajipur	4,107
East Coast	Bhubaneshwar	2,757
Northern	New Delhi	7,301
North Central	Allahabad	3,523
North Eastern	Gorakhpur	4,947
Northeast Frontier	Maligaon (Guwahati)	4,136
North Western	Jaipur	5,586
Southern	Chennai	5,081
South Central	Secunderabad	6,229
South Eastern	Kolkata	2,740
South East Central	Bilaspur	2,177
South Western	Hubli	3,524
Western	Mumbai	6,465
West Central	Jabalpur	3,004
Metro Railway	Kolkata	27
	Total	**68,442**

Each Zonal Railway is headed by a General Manager who is assisted by Principal Heads of Departments. These include Operating, Commercial, Engineering, Electrical, Mechanical, Stores, Accounts, Signal & Telecommunication, Personnel, Safety, Medical etc. departments. Besides the above, there are 38 Public Sector Units and two Autonomous Bodies (Rail Land Development Authority and Centre for Railway Information Systems) under control of Ministry of Railways.

A fully integrated financial advice and control system exists at Railway Board headed by the Financial Commissioner (Railways). At Zonal level finance functions are looked after by Financial Advisers and Chief Accounts Officers

(FA&CAOs). They are responsible for rendering advice and scrutinizing all proposals involving expenditure from the pubic exchequer.

1.2 Authority for audit

The authority for our audit is derived from Articles 149 and 151 of the Constitution of India and the Comptroller and Auditor General's (Duties, Powers and Conditions of Service) (DPC) Act, 1971. Audit of expenditure and receipts of Ministry of Railways and its Autonomous Bodies is conducted under Section 13, Section 16 and Section 20 (1) of the CAG's (DPC) Act respectively. Principles and methodology of compliance audit are prescribed in the 'Regulations of Audit and Accounts, 2007'.

1.3 Audit Planning

Selection of the units for audit of the Railways is planned on the basis of a risk assessment. The risk is assessed based on the level of budgets planned, resources allocated and deployed, extent of compliance with internal controls, scope of delegation of powers, sensitivity and criticality of function/ activity, external environment factors, etc. Previous audit findings, Public Accounts Committee (PAC)'s recommendations, media reports, where relevant, are also considered. Based on such risk assessment, test audit of 4,661 entities/ units of the Railways was conducted during 2017-18.

The Audit Plan focused on selected issues of significant nature in terms of policy and its implementation. These included freight traffic, earnings, infrastructure development, passenger amenities, asset management, material management and safety works. Each study brings out important audit findings and conclusions followed by audit recommendations to help improve systems and strengthen internal control mechanism in railways.

1.4 Reporting

Audits of selected topics were conducted across the Zonal Railways. Relevant records and documents of the field units as well as that of Railway Board were reviewed. Appropriate samples from the population were selected so as to adequately cover the issues under study. The audit findings were issued to the respective Zonal Managements for their

response. Audit findings were either settled or further action for compliance was advised depending upon action taken. Important audit observations, not having been complied with, were followed up through Draft Paragraphs addressed to the General Managers of Zonal Railways. Copies of Draft Paragraphs were endorsed to the FA&CAOs and Heads of the Departments for reply within the prescribed period. Selected issues were taken up as Provisional Paragraphs and issued to the Ministry of Railways (Railway Board) for eliciting their reply before inclusion in Audit Report.

1.5 Structure of the Report

This Audit Report comprises results of scrutiny of transactions relating to expenditure receipts, assets and liabilities of the units under the control of Ministry of Railways. This includes examination of the adequacy, legality, transparency and effectiveness of the relevant rules to maintain and ensure control mechanism over public expenditure. The effectiveness of the rules to safeguard against misuse, waste and losses was also examined.

The Report contains seven Chapters. Chapter 1 is introductory in nature and covers issues of cross-cutting nature. The other six Chapters contain audit findings related to important areas of functioning and operations of Indian Railways viz., Traffic, Engineering, Rolling Stock, Signalling and Telecommunication, Traction and others. The Report presents audit findings of significant materiality which are intended to aid the executive in taking corrective actions for better performance and financial management. Detailed findings pertaining to all Zonal Railways on the following subjects are presented in this Report:

1. Setting up of Private Freight Terminals in Indian Railways
2. Working of Automatic Ticket Vending Machines in Indian Railways
3. Status of commissioning and utilization of major Plant and Machineries procured by Central organisation for Modernization of Workshops in Indian Railways
4. Implementation of Train Protection Warning System (TPWS) in Indian Railways

5. Installation and commissioning of Solar Power Plants in Indian Railways

In addition, 40 individual paragraphs covering audit findings of respective Zonal Railways are presented in Chapters 2 to 7 of this Report.

1.6 Response of the Ministry/ Department to Provisional Paragraphs

A total of 47 Provisional paragraphs were issued to the Railway Board[5] between July 2018 and May 2019 and a time of four to six weeks was given for furnishing a response to the same. 45 Provisional Paragraphs have been included in this Report. As on 30 September 2019, Railway Board's replies have been received in respect of 30 Provisional Paragraphs. Replies received have been suitably incorporated in the Audit Report. Over the past two years, responses of Railway Board to 25 to 63 *per cent* Provisional paragraphs issued were received before finalization of Audit Reports. The response of the Ministry thus, could not be incorporated in all the paragraphs of the Audit Reports.

1.7 Recoveries at the instance of Audit

Audit has pointed out the cases of undercharges/overpayments of ₹ 193.13 crore in the various Zonal Railways during the year 2017-18. This included undercharges in realization of freight and other earnings, over payments to staff and other agencies, non-recovery of dues of the Railways etc. During the past six years, ₹ 743.41 crore has been recovered by the Railways at the instance of Audit, as detailed below:

Table 1.4 – Amount recovered at the instance of Audit during 2012-13 to 2017-18

Year	Amount Recovered/ accepted for recovery (₹ in crore)
2012-13	98.14
2013-14	107.70
2014-15	101.26
2015-16	80.27
2016-17	162.91
2017-18	193.13
Total	**743.41**

During 2017-18, an amount of ₹ 193.13 crore was accepted for recovery by various Zonal Railways and other field units. Of this, ₹ 132.38 crore was

[5] Chairman Railway Board, Members concerned and the Financial Commissioner

recovered and ₹ 60.75 crore was agreed to be recovered by the railways. Six Zonal Railways accounted for recoveries exceeding ₹ 10 crore each[6]. Out of ₹ 193.13 crore, ₹ 89.58 crore pertained to transactions already checked by Accounts Department of concerned Railways. ₹ 102 crore pertained to other than those checked by Accounts Department. As a result, of further review carried out by Accounts Department, another ₹ 1.55 crore was recovered/ agreed to be recovered by the Railways.

1.8 Remedial action on Audit Paragraphs included in the Audit Reports

As per the PAC recommendations[7], Ministry/ Departments of the Government of India should furnish corrective/ remedial Action Taken Note (ATN) on all paragraphs raised in the Audit Reports within four months after laying of the Report in the Parliament.

On audit paragraphs selected by PAC, discussions/ oral evidence is taken by PAC. After the oral evidence, PAC issue Reports containing their observations/ recommendations on which action is to be taken by the Ministry. The Action Taken Reports (ATRs) on the PAC Reports are submitted by the Ministry to the PAC after audit vetting.

The status of pending ATNs and ATRs as on 30 September 2019 was given in **Annexure 1.1**.

Some of the important cases, where Ministry of Railways had made appropriate changes and issued instructions during 2017-18 for streamlining their internal process are illustrated below:

Table 1.5

Para No./ Report No.	Audit Observations /Recommendations	Action taken by Railways
Para 2.4 of Report no.5 of 2018 – Incorrect entry of train timing of	Incorrect entry of arrival timing of terminating trains at Allahabad station led to compromise in data integrity. This also resulted	Ministry of Railways has taken (December 2018) remedial action in this regard. To address the issue

[6] NFR (₹ 38.54 crore), SECR (₹ 34.01 crore), ECR (₹ 30.20 crore), NCR (₹ 23.73 crore), ER (₹ 20.03 crore) and NR (₹ 15.85 crore).
[7] Ninth Report (Eleventh Lok Sabha) presented to the Parliament on 22 April 1997

Table 1.5

Para No./ Report No.	Audit Observations /Recommendations	Action taken by Railways
terminating trains in ICMS led to compromise in data integrity	in providing wrong information to the passengers through National Train Enquiry System.	of wrong data feeding and consequent discrepancy in NTES *vis-à-vis* actual train timing, Railways have decided to install data loggers at selected locations. So far, these have been installed at 162 locations.
Para 2.2 of Report No. 24 of 2015 - Review on 'Liberalized Active Retirement Scheme for Guaranteed Employment for Safety Staff (LARSGESS)'	Irregular appointment of employees was made through the LARSGESS Scheme. Recruitment under were done in violation of conditions prescribed by railways themselves. In 80 *per cent* cases appointment was made diluting one or more laid down conditions. Neither approval of Cabinet was taken nor DOPT was consulted before implementation of the Scheme. Central Administrative Tribunals (CATs) in their Judgments had declared the whole Scheme (LARSGESS) as unconstitutional, backdoor entry for Government job and illegal. Even after decisions of the Tribunals. Railway Board added new features of the Scheme.	In wake of judgements of Punjab and Haryana High Court and Supreme Court of India, Ministry of Railways revisited the scheme and further consulted Ministry of Law and Justice. In March 2019, Ministry of Railways decided to terminate the LARSGESS Scheme w.e.f 27 October 2017.
Para 4.3 of Report No. 14 of 2017 - Detention of periodic hauled wagons at Jhansi Workshop/NCR by using them for storage of scrap instead of carrying freight	NCR was using periodic overhauled wagons for storage of scrap wheels/axles instead of sending them to open line for carrying freight traffic. This led to detention of periodic overhauled wagons and consequent loss of earning capacity of Railways.	Railway Board vide it letter no. 2006/RS(S)/709/1 pt dated 3 February 2017 has given permission of sale through e-auction for 2000 MT of WTA scrap at the site itself. Earlier NCR was sending it to RWF/Bangalore in wagons. Also, for remaining material, contract has been entered into for sending the material through road. In future, all the WTA items will be sent through

Table 1.5

Para No./ Report No.	Audit Observations /Recommendations	Action taken by Railways
		road to avoid the situation of wagon detention.
Para 2.14 of Report No. 5 of 2018 - Non weighment of loaded rakes of Food Corporation of India (FCI)	ECoR did not ensure weighment of rakes at sidings of FCI in Sambalpur Division before loading. There were instructions of Railway Board to keep a check on overloading. The weighbridges at four locations (Hirakud, Bargarh Road, Khariar Road and Mahasamund) had become non-functional during 2015-17 and the rakes were not being weighed. Non-weighment not only encourages overloading malpractices but also loss of revenue and damage to the rolling stock/ track.	ECoR has commissioned three new weighbridges at Lapanga (8-01-2018), Kerjanga (14-02-2018) and Kandel Road (4-7-2018) to cover loading points of Sambalpur Division. Railway Board issued instructions (March 2017 and August 2018) to Zonal Railways to follow the guidelines regarding functioning of weighbridges and weighment of wagons/rakes scrupulously.
Para 2.3 of Report No. 13 of 2016 - Irregular award of contract	ECR had awarded five contracts of a section to one firm as the firm was lowest bidder in all the five tenders. The firm had used the same financial credential for all the five tenders. ECR had not evaluated the credential of the firm in terms of the Railway Board's directives of 12 April 2001. The credential of the firm needed to be evaluated clubbing all the contracts of the section. Violation of Railway Boards' directives resulted in non-completion of contracts on time and undue benefit to the contractor through award of all split contracts to him.	Railway Board issued orders (17 April 2018) that Railways, while sub-sectioning the work into different tenders to expedite work, should adhere to the provisions of Railway Board's instructions of 12 April 2001.

Chapter 2 - Traffic

The Traffic Department comprises four streams viz., Commercial, Traffic, Coaching and Catering & Tourism. The activities related to these streams are performed by the respective Directorates headed by Additional Members/ Executive Director in Railway Board under the overall direction of Member Traffic. The main responsibilities of these Directorates are as follows:

- *Commercial Directorate* - marketing, traffic development, quality of services provided to customers, regulation of passenger/ coaching/ freight tariffs, monitoring of collection, accountal and remittance of revenues etc.
- *Traffic Directorate* - Long-term and short-term planning of transportation services, management of train operations, time tabling, ensuring availability of rolling stock and safe running of trains.
- *Coaching Directorate* - Management of passenger and parcel services
- *Catering & Tourism Directorate* - Activities related to catering and tourism.

At the Zonal level, the Traffic Department has two departments, viz., Operating and Commercial. These are headed by Chief Operations Manager (COM) and Chief Commercial Manager (CCM) respectively, who work under the overall supervision of General Manager of the Zonal Railway. 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) respectively, who report to Divisional Railway Manager (DRM) of the concerned Division.

The total traffic operating expenses during the year 2017-18 was ₹ 25,189.23 crore[8]. Total gross traffic receipt during the year was

[8] Sub Major Head 3002-3003 (07) - Operating Expenses – Traffic for 2017-18

₹ 1,78,725.31 crore[9]. During 2017-18, the annual growth rate of passenger originating improved by 2.09 *per cent*[10] over the previous year. Passenger earnings in 2017-18 were increased by 5.11 *per cent*[11]. In 2017-18, freight loading increased by 4.75 *per cent*[12]. The freight earnings increased by 12.19 *per cent* as compared to the previous year.

During the year, apart from regular audit of vouchers, tenders etc., 982 offices of the department were audited. This chapter include pan-India audit findings on two topics viz., 'Private Freight Terminal' and 'Automatic Ticket Vending Machines'. In addition, the chapter also includes ten individual paragraphs. These paragraphs highlight issues such as implementation of Train Management System in Mumbai (Central Railway); non-recovery of penal interest from Nationalised Banks; non-recovery/short recovery of various dues/charges including, service tax, empty haulage charges, demurrage charges and siding charges.

[9] Includes Passenger Earnings ₹ 48,643.14 crore, Freight Earnings ₹ 1,17,055.40 crore, Other Coaching Earnings ₹ 4314.43 crore and Sundry Earnings ₹ 8688.18 crore
[10] As against the projected passenger originating of 8,198 million, Indian Railways carried 8285.77 million passengers
[11] ₹ 46,280.46 crore in 2016-17 and ₹ 48,643.14 crore in 2017-18
[12] 1106.15 million tonne in 2016-17 to 1158.71 million tonne in 2017-18

2.1 All Zonal Railways: Setting up of Private Freight Terminals in Indian Railways

2.1.1 Introduction

Ministry of Railways has taken initiatives and adopted multipronged strategies to enhance freight share of Indian Railways in the transport sector in the recent times. In May 2010, Ministry of Railways introduced a policy on setting up of 'Private Freight Terminals' (PFTs). The objective of this policy was development of network of freight handling terminals in participation with private sector. The policy aimed at

- diverting high rated finished traffic, so far predominantly moved by road, to rail,
- attain increased rail freight volumes by offering integrated, efficient and cost effective logistics and warehousing solutions to users, and
- to enhance Railways', share in the overall transport chain.

Under the policy, private parties known as Terminal Management Companies (TMCs) come forward to set up freight terminals. They were required to set up PFTs on their own land either newly acquired (greenfield projects) or on existing private sidings (brownfield projects). They were required to develop terminal facilities from where any private customer can book his freight traffic. The commodities which could be carried were decided by the TMCs and informed to the railways. The whole investment on developing the infrastructure was done by the TMC. Railways were to provide connectivity to the freight terminal and make arrangements for movement of the rakes booked.

Minister of Railways in his Budget speech 2016-17 announced ***"Mission Hundred".*** This mission aimed commissioning of at least 100 sidings (freight terminals) to generate 100 Million Tonnes (MTs) of freight traffic

during 2016 to 2018. This was to be achieved through setting up of PFTs[13] as well as private sidings[14].

Railway Board further revised the PFT policy a number of times (April 2012, January 2015, April 2015 and May 2015) to make the scheme more attractive for TMCs. Some of the measures undertaken included:

- Reduction in application fee from ₹ 1 crore to ₹10 lakh (April 2015).
- Reduction in Security Deposit from ₹1 crore to ₹10 lakh. The same was to be deposited by the TMC within one month of granting approval by Railways for setting up of PFT (April 2015).
- TMCs were given rights to change their list of authorized users and change the list of commodities permitted to be handled at its PFT. They were also given the right to fix charges independently for the services it offers to rail users (April 2015).
- Some incentives were given for iron ore or iron ore pellet traffic as well as coal traffic originating from PFTs (April 2015).
- Withdrawal of revenue sharing by TMCs (May 2015).

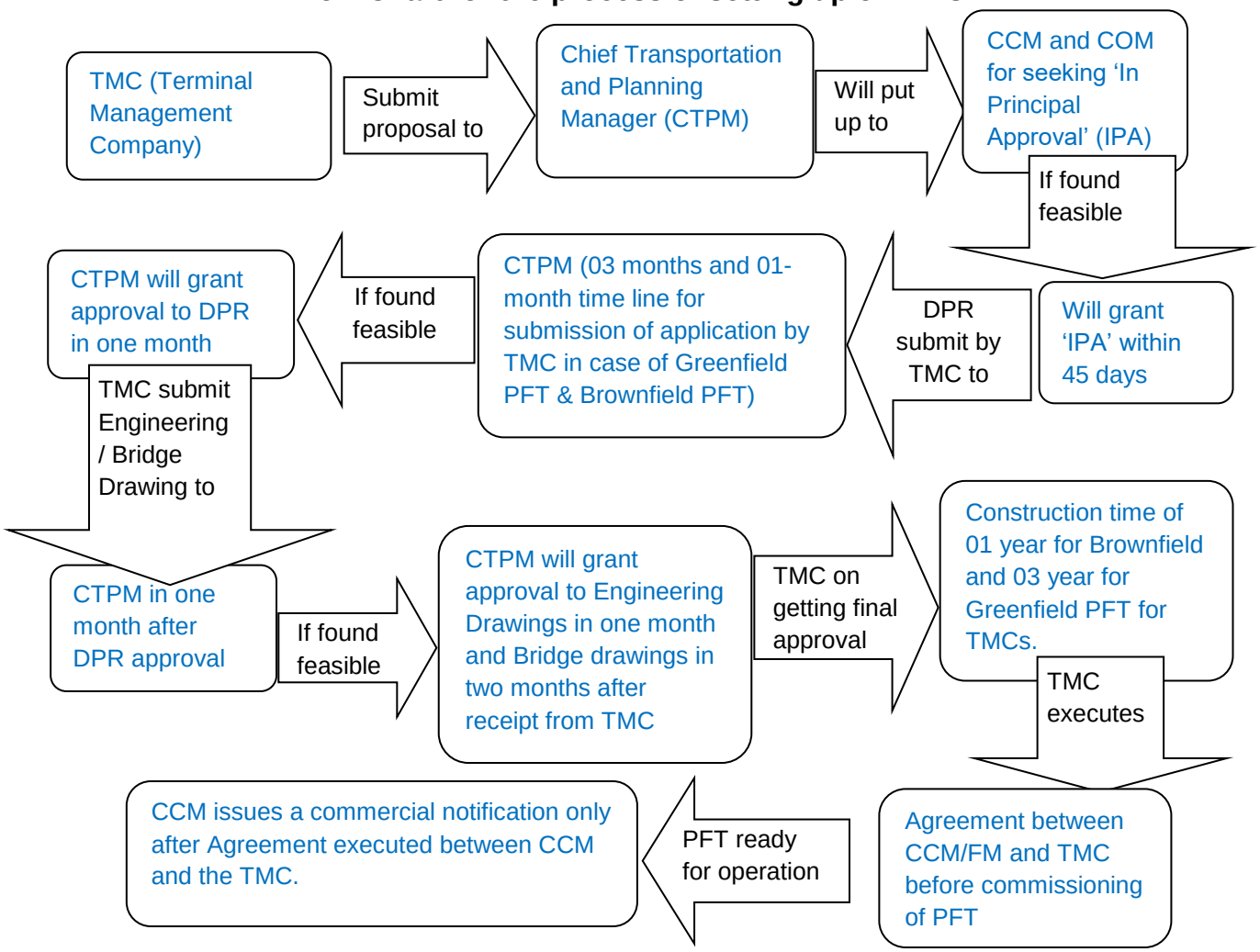
In addition, recently in December 2018, TMCs have been allowed an incentive @ ₹ 20 per tonne for all commodities (excluding container traffic) loaded/unloaded by them, which railways would pass on to them for the freight earned.

2.1.2 Procedures for setting up of Private Freight Terminals

With effect from 10 April 2015, Chief Transportation Planning Manager (CTPM) is the approving authority for setting up of PFTs. The procedure for setting up PFT is depicted in the flow chart as follows:

[13] Private Freight Terminal is a terminal setup/ notified under PFT policy to deal with rail based cargo including containers. PFT under this policy would be permitted to book and handle all traffic excluding coal and coke under 'C' priority.
[14] Private siding is a privately owned freight terminal setup/ notified for single Rail end users.

Flow Chart for the process of setting up of PFTs



The TMC is required to approach Railways to seek approvals at least thrice during the process of setting up of PFT.

The role of Terminal Management Companies (TMC) includes

- Developing privately owned freight terminals on the land of PFT owner.
- Developing adequate facilities for handling the anticipated volume of traffic at his PFT without causing undue detention.
- Providing in-motion electronic weigh bridge at a suitable location for weighment of incoming and outgoing rakes.
- Providing rest rooms and staff canteen facilities for crew and guards.

The role of Railways includes

- Providing connectivity to railway line with the PFT line through railway land on payment of license fee.
- Providing connectivity with a station on railway network, such station will be termed as serving station for the PFT.
- Providing rakes and locomotives as and when indented by the TMC.
- Posting of Railway commercial staff at PFT to carry out commercial functions relating to booking and delivery of cargo. The cost of commercial staff would be recovered from the TMC.

2.1.3 Audit objectives

This review was undertaken with a view to assess whether the objectives for setting up of PFTs were achieved. Audit also assessed whether Railways have fulfilled their responsibilities/ obligations to facilitate timely setting up of PFTs and are monitoring the operations of PFTs effectively.

2.1.4 Audit scope and methodology

The review covered a period of three years from 2015-16 to 2017-18. Audit examined records at Railway Board to review the PFT policy. Audit also examined records at Zonal and Divisional level to check compliance to laid down procedure by Zonal Railways. Inspection Notes of Railway officials and other relevant records pertaining to PFTs were also reviewed. Audit teams also carried out field visits and joint inspections of PFTs.

As of March 2018, 58 PFTs (29 Brownfield[15] and 29 Greenfield[16]) have been notified on 13[17] Zonal Railways. All PFTs were selected for detailed examination.

[15] Brownfield PFTs: CR-6, ER-1, ECR-1, ECoR-2, NR-6, NCR-2, NWR-1, SCR-2, SER-1, SECR-5, WR-2
[16] Greenfield PFTs: CR-1, ER-1, ECR-1, ECoR-2, NR-6, NER-2, NWR-2, SCR-4, SER-2, SECR-1, WR-5, WCR-2
[17] CR-7, ER-2, ECR-2, ECoR-4, NR-12, NCR-2, NER - 2, NWR - 3, SCR - 6, SER - 3, SECR - 6, WR - 7 and WCR - 2

Entry and Exit Conferences were held in all concerned Zonal Railways. Exit Conference was also held at Railway Board. They also responded to the audit recommendations on the subject. Their responses have been suitably incorporated in the Report.

2.1.5 Audit Criteria

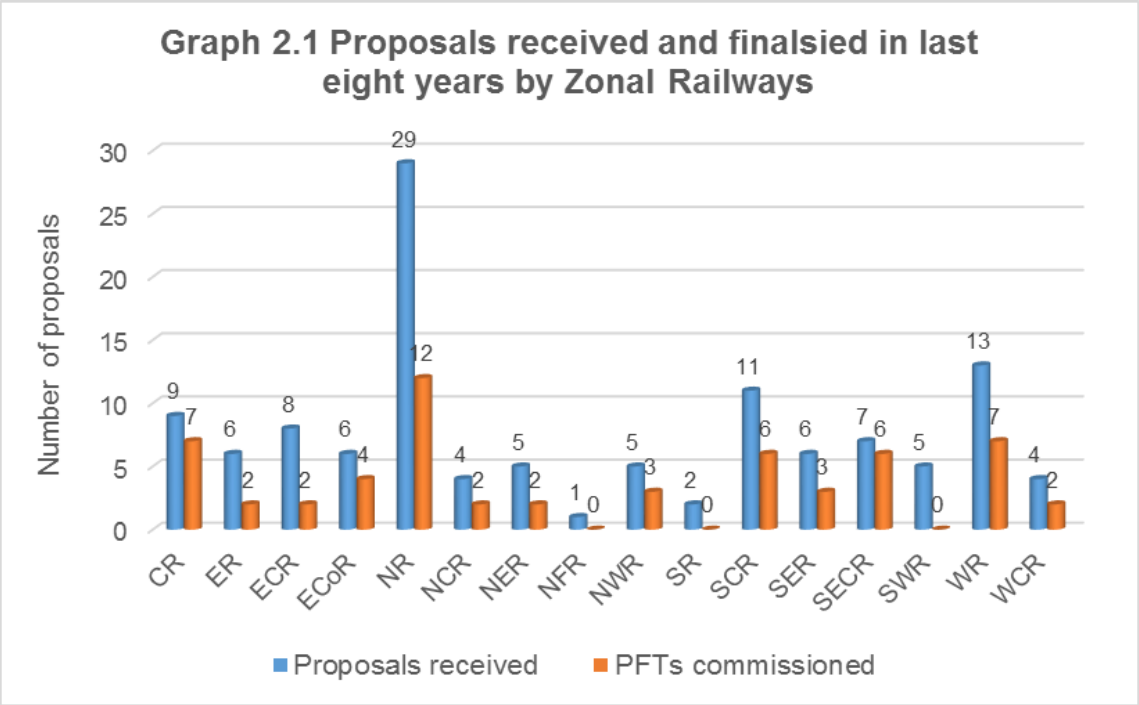
Main sources for audit criteria were policy guidelines issued by Railway Board from time to time. Relevant provisions of various codes and manuals of Indian Railways were also referred to.

Audit findings

2.1.6 Setting up of Private Freight Terminals

As per the laid down policy, the eligible TMCs are required to submit an application along with prescribed fee for setting up of Greenfield/ Brownfield PFT. The application should be submitted along with the feasibility report of the proposed PFT, projections of anticipated business and the list of authorized users of the PFT. Railway Administration checks the operational feasibility of the proposal for setting up a Greenfield/ Brownfield PFT. Railways grant 'In-Principle Approval' within 45 days of submission of the application. Thereafter, Zonal Railway and the TMC should abide by the time schedules fixed for grant of final approval by CTPM. Completion time of one year is allowed for Brownfield PFTs and three years for Greenfield PFTs, which starts after final approval is granted by the CTPM.

As of March 2018, 58 PFTs were set up over 13 Zonal Railways as against 121 proposals received by 16 Zonal Railways. Zonal Railway wise proposals received and PFTs commissioned as on 31 March 2018 can be seen from the ***Graph 2.1*** below:



Audit noticed that

- In NFR, SR and SWR, not a single PFT was commissioned despite the receipt of eight applications.
- Of 63 proposals pending, 29 proposals were received prior to 2014-15, more than three years back.
- Three[18] Zones could not finalize more than 50 *per cent* proposals.
- Only four[19] Greenfield PFTs and two[20] Brownfield PFTs were set up within the prescribed time frames set for construction of terminals after final approval by the railways.
- In respect of 52 PFTs commissioned (25 Greenfield and 27 Brownfield PFTs), there was delays up to 1221 days in grant of approvals. The average delay in granting approvals by the Railways was 242 days in these 52 cases.
- In 23 Greenfield PFTs and 10 Brownfield PFTs, the delay was more than 100 days in grant of final approvals. Of these, in 12 Greenfield

[18] ECoR-2, NWR-2 and SECR-1 PFT
[19] ER-M/s Palogix Infrastructure Pvt. Ltd/ Durgapur, ECoR- M/sContainer Corporation of India Ltd & M/s Paradip International Cargo Terminal Pvt. Ltd., SCR-M/s Anaparthi Warehousing Complex Pvt. Ltd./Anaparthi PFT
[20] ECR-M/s Khalari Cement Ltd. (KCL) PFT and ECoR- M/s Jindal Stainless Ltd. PFT

PFTs[21] and three Brownfield[22] PFTs, the delay was more than one year.

Audit also reviewed 63 pending proposals and analyzed the reasons for their non-finalization. Audit observed that

- TMCs are required to approach Railways three times for getting in-principal approval, approval of DPR, and approval for ESP.
- There were delays in granting approval of Detailed Project Report (DPR), Engineering Scale Plan (ESP) and also final approval by various Zonal Railways.
- Delays in finalization of applicable land license fee by Railways also contributed to the delays in many cases. The process was also delayed due to delayed submission of DPR (in 14 PFTs) and ESP (in 11 PFTs) by TMCs after getting in-principal approval from the Railways in some cases.
- In three PFTs, failure of TMCs to acquire land for construction of PFTs was the main reason for delay.

Thus, the pace of setting up of PFT was very slow. Railways need to ensure timely approval of proposals submitted by the TMCs. In case, where there are problems in acquisition of land by TMCs, Railways may explore the feasibility to lease surplus railway land to TMCs for setting up PFTs on license fee payment basis.

Annexure 2.1

Railway Board in their reply stated (26 March 2019) that continuous efforts have been made to ensure timely approval for construction of PFTs. Four interactive sessions have been conducted with stakeholders at Railway Board to discuss the problems faced by them during December 2017 to August 2018. Reasons for delays in approval and construction of PFTs were also ascertained during the interaction.

[21] CR-1, ECR-1, NR-3, NER-2, SCR-1, SER-2, SECR-1 & WR-1
[22] CR-1, NR-1 and WR-1

Further, a committee including representative from PFT operators was formed to go into the gamut of policy and implementation issues of PFTs. The revised policy for simplifying procedures and single window clearance system was in the final stages.

As regards leasing surplus railway land for setting up of PFTs, Railway Board stated that restriction was imposed (March 2011) by Cabinet Secretariat on transfer, alienation or leasing of Government land to private parties. Audit observed that the instructions of Cabinet Secretariat did not restrict transfer, alienation or leasing of Government land to private parties, but required approval before doing so.

After the Exit Conference (30 April 2019), Railway Board stated (May 2019) that railway land can be given to private parties on license basis for the activities in connection with railway working. These activities related to commercial plots, steel yards, siding, city booking agencies[23]. They further stated that if a need arises where leasing of railway land to private party is inescapable for activities connected with Railways' core working, the same can be explored. Approval of competent authority for the same would be sought with proper justifiable reasons.

2.1.7 Achievement *vis-à-vis* projected business

As per the PFT policy[24], TMCs are required to submit projection of anticipated business volumes along with details after commissioning of the PFTs.

Audit reviewed the records of 58 commissioned PFTs to analyse the actual business against projection made by the respective TMCs. Against 75,800 rakes (loading and unloading), only 48,157 rakes were handled by these 58 PFTs, leaving a shortfall of 36 *per cent*. Audit noticed that in only four[25] Zonal Railways, the overall projected business was achieved. In

[23] Railway Board' policy no.2005/LML/18/8 dated 10-02-2005
[24] Railway Board's Master circular No.2011/TC (FM)/14/14 dated 02/01/2015
[25] ECR, NR, NCR and NWR

nine[26] Zonal Railways there was shortfall in overall projected business ranging from 20 *per cent* to 94 *per cent*. Of these, in nine PFTs[27] of four Zonal Railways the shortfall against the projected business was more than 75 *per cent*.

Annexure 2.2

(i) Non-achievement of targets set under *'Mission Hundred'*

Hon'ble Minister of Railways in his Budget speech 2016-17 had announced '*Mission Hundred*'. He stated that there were more than 400 proposals under various stages of approvals. It was targeted that in the next two years (2016-18) at least 100 sidings (Private Terminals) would be commissioned to generate 100 Million Tonnes (MTs) of freight traffic. It was stated that the momentum for development of more terminals will continue and all assistance shall continue to be provided to the terminal developers for this purpose[28]. The goal was to have 100 Private Terminals on Indian Railways by the end of 2017-18.

Railway Board directed[29] Zonal Railways to ensure completion/ commissioning of PFTs/ Private sidings identified by them for targeted completion, within the stipulated timeline (March 2018). Audit observed that Zonal Railways could achieve setting up of 67 private terminals only. Further, as against the target generation of 100 Million Tonnes (MTs) of freight traffic, only 29.40 *per cent* (29.393 Million Tonnes) was achieved during this period. Audit noticed that

- Against 113 Private Terminals (78 Private Sidings and 35 PFTs) identified, 67 Private Terminals (42 Private Sidings and 25 PFTs) were commissioned.
- No private terminal was commissioned by ER and WCR though one and two were identified respectively.

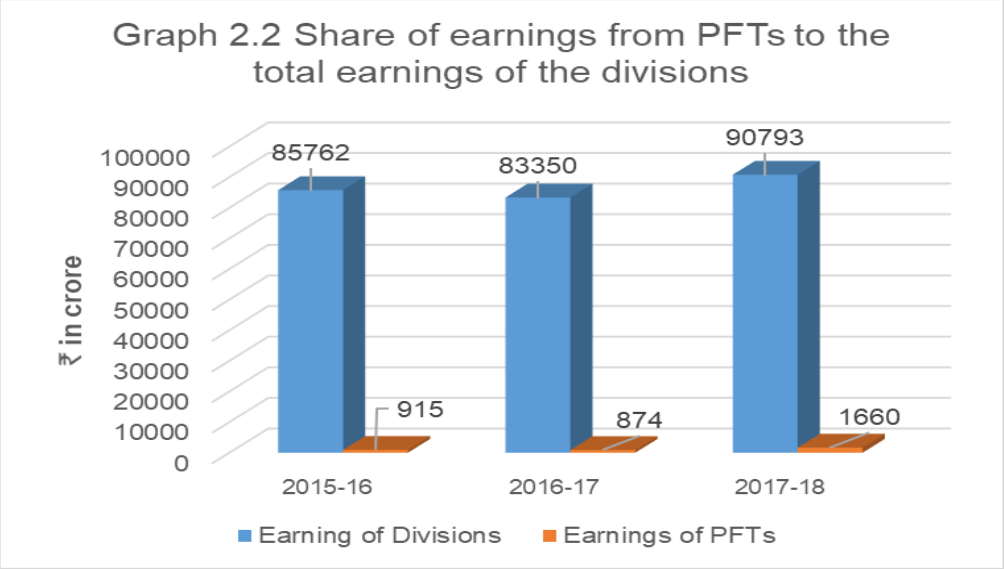
[26] CR, ER, ECoR, NER, SER, SCR, SECR, WR and WCR
[27] ECoR-2 (MAIL & CCJS), SER-2 (GFCJ & GFMK), SECR-3 (MIVB, MVIS & MMBD) and WCR-2 (KIHC & KPFP) PFTs.
[28] Business Plan 2017-18
[29] May 2016 and July 2016

- SCR (6) and SECR (11) commissioned all the identified private terminals.

Annexure 2.3

(ii) Share of freight loading and earnings through PFTs

The share of freight loading and earnings through 58 PFTs commissioned in 26 Divisions with reference to the total freight earnings of those Divisions can be seen in the graph below:



As can be seen, loading/ earnings from PFTs commissioned has increased over the past three years (2015-16 to 2017-18)[30]. However, share of loading through 58 PFTs commissioned was only 1.82 *per cent* to the total traffic generated by the 26 divisions, where PFTs have been commissioned. Similarly, earnings share through these 58 PFTs were only 1.33 *per cent* to the total traffic earnings of 26 Divisions. On the other hand, contribution of PFTs to the gross earnings of concerned Divisions was significant on two Zonal Railways. These were NWR and NER at 43 *per cent* and 22 *per cent* respectively during the review period. These PFTs mainly carried container traffic and other goods such as automobiles.

[30] earnings from 33 PFTs notified till March 2016 - ₹ 915 crore on 23 Divisions increased to ₹ 1660 crore from 58 PFTs notified till March 2018 on 26 Divisions

Thus, overall increase in freight loading and earnings therefrom did not materialize. In six[31] Zonal Railways, where six to 12 PFTs had been commissioned till March 2018, the earnings from PFTs were significantly low. It ranged between 0.46 *per cent* and 4.50 *per cent* of the gross freight earnings of the respective Divisions.

Annexures 2.4 and 2.5

During test check, audit noted that in five Zonal Railways (NER, ECoR, CR, SER and ER) covering nine PFTs, booking made through PFTs was less than that of nearby goods sheds. These goods sheds and PFTs handle commodities like container traffic, coal, fertilizer, cement, food grains etc. Goods sheds are located near railway stations.

In spite of proximity to railway stations and close access to rail network, which should have enabled the PFTs to garner more traffic, customers opted for goods sheds in comparison to PFTs.

Railways may analyse the reasons for less generation of traffic in PFTs, and also assess whether land and other infrastructure for provision of logistics facilities could be obtained and set up at a cost that would enable PFTs to offer terminal handling and other value added services at competitive prices. In other words, the financial viability of setting up a PFT, may be examined.

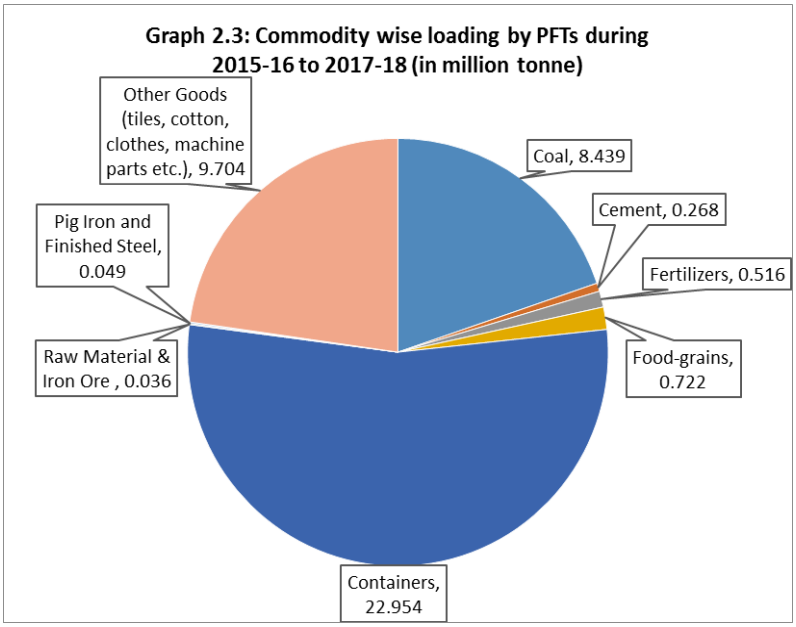
Railways may also explore the possibility to lease surplus railway land for setting up of PFTs wherever there is difficulty in acquisition of land by Terminal Management Companies.

Thus, Railway Administration was not able to ensure substantial improvement in freight as many TMCs could not achieve the projected volume of traffic. The share of traffic generated as well as earnings through PFTs remained insignificant as compared to the total freight earnings of the respective divisions.

[31] CR, NR, SCR, SECR, WCR and WR

(iii) Commodity wise freight loading by PFTs

Audit reviewed the traffic loaded of various commodities by the 58 PFTs commissioned in 13 Zonal Railways. Details of commodities loaded by these PFTs during the period 2015-16 to 2017-18 are depicted in ***Graph 2.3.***



Audit observed that 22.954 Million tonnes (54 *per cent*) out of 42.688 Million tonnes of loading by these 58 PFTs was container traffic.

Audit reviewed the loading of various commodities through PFTs. Loading through PFTs increased by almost 67 *per cent* during 2017-18 as compared to the loading during 2015-16 except for coal (where loading was decreased by 61 *per cent*). However, the share of traffic through PFTs was still significantly low. Audit also noticed that traffic generated by Goods sheds nearby the PFTs remained unaffected after starting of

operation of the PFTs. This indicated that incremental traffic generated by PFTs was mainly diverted from road.

The objective of Railways to generate incremental traffic through private participation was thus, achieved to a limited extent. However, the PFTs have been able to attract new traffic, which was being carried by road so far and the scheme has a potential to further attract road traffic.

During Exit conference (29 November 2018), NR stated that goods traffic presently dealt with by Railways goods sheds have not shifted to the PFTs. Only new commodities such as cement, clinker and clothes etc. are being booked through PFTs.

During Exit conference (14 January 2019), NCR stated that this policy should be examined with the caveat that this is a case of zero investment only and any return received is beneficial to Railways. They agreed that in order to make such policy a success and improving Railways share in the freight sector, re-engineering of business processes within railways is critically required to incentivize an entrepreneur to establish PFT/ Sidings. This can be done through simplifying rules and regulations and creation of a single window clearance system for the entire zone.

2.1.8 Installation of electronic in-motion weighbridges in the PFTs

As per laid down guidelines[32], TMC is required to provide an Electronic in-motion Weigh Bridge (EIMWB) at a suitable location in such a manner that all incoming and outgoing rakes can be weighed. Weighbridge can also be provided at the serving station or any other operationally convenient location at the cost of the TMC, if it is not feasible to install within the PFT for technical reasons.

Absence of weighing facility at the PFTs increase the risk of overloading which may cause damage to Rolling stock and Railway assets (rails, sleepers etc.). The provision, commissioning and working of EIMWB at 58

[32] Para 25 of the policy guidelines of January 2015

PFTs was reviewed. Audit noted that EIMWB were either not installed/commissioned or not found in working condition in a number of PFTs.

- In eight[33] PFTs of six Zonal Railways, EIMWB have not been provided.
- In five[34] PFTs of two Zonal Railways, though EIMWBs were provided these were yet to be commissioned (March 2018).
- In 12[35] PFTs of nine Zonal Railways, frequent breakdowns and non-functioning of EIMWBs were observed.

Non-availability or non-fucntioning of EIMWBs results in failure to exercise control over overloading of commodities. Overloading may also cause damage to wagons and tracks. Railway Board in their reply stated (26 March 2019) that as per the policy, it is the responsibility of TMCs to privde in-motion weighbridges wherever required.

Audit is of the view that it is in the interest of the railways to ensure that overloaded wagons are not hauled on their tracks. For this, Railway need to enforce the contractual obligation to commission EIMWB at all PFTs and monitor their working. Railway should explore the feasibility to provide EIMWB on lease/ rental basis, if it was not provided by the TMCs.

2.1.9 Non-recovery of various charges from TMCs

As per provisions, various charges such as land license fee departmental, repair & maintenance, shunting, stabling charges etc. are required to be recovered from TMC. The rate and procedure for levy and recovery of these charges are prescribed from time to time. In this regard, Audit observed that a total amount of ₹ 33.60 crore was outstanding on account of these charges and still to be recovered from the TMCs.

To carry out commercial functions relating to booking and delivery of consignments and collection of freight and other charges, Railways

[33] CR-2, ER-1, ECR-1, NR-3, NCR-1
[34] ECoR-2 and NR-3
[35] NR-1, ER-1, NCR-1, NER-1, NWR-1, SCR-2, SECR-3, WCR-1 and WR-1

deploys commercial staff at PFTs. The cost of these commercial staff is to be borne by the TMC. Audit observed that an amount of ₹ 13.20 crore on account of cost of commercial staff deployed in 29 PFTs on 13[36] Zonal Railways was outstanding as on 31st March 2018.

The commercial staff deployed at PFTs is engaged in various commercial activities similar to those of goods sheds of Railways. These activities are necessary for the Railway to manage their freight bookings and bearing of this cost by TMCs is an additional burden to them. Railways may consider incentivising TMCs by bearing the cost for commercial staff deputed at PFTs themselves.

Railway Board accepted the recommendations and stated (26 March 2019) that bearing the cost of commercial staff by TMC is proposed to be relaxed in the revised policy guidelines.

2.1.10 Monitoring by the Railway officials

As per Railway Board instructions[37] Railway officials need to inspect and monitor proper functioning of weighbridges, track maintenance as well as commercial activities. Further, the agreement with TMCs mandates joint inspection of handling systems with Railway officials every six months.

Audit noticed that prescribed periodical inspections had not been carried out by Railway officials of concerned Departments[38] during 2015-16 to 2017-18. Òfficials of various levels did not undertake 2393 out of 3588 (67 *per cent*) inspections prescribed during this period. Audit noticed shortfall in inspection by various departments[39].

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[36] CR-4 (₹ 1.30 crore), ER-2 (₹ 2.46 crore), ECR-1 (₹ 0.21 crore), ECoR-3 (₹ 0.65 crore), NR-1 (0.36 crore), NCR-1 (₹ 0.16 crore), NER-1 (₹ 0.21 crore), NWR-3 (₹ 1.12 crore), SCR-5 (₹ 2.12 crore), SER-3 (₹ 0.73 crore), SECR-1 (₹ 0.69 crore), WR-3 (₹ 0.50 crore) and WCR-1 PFT (₹ 0.39 crore)

[37] Para 5 of Railway Board's letter No. TCI/2004/109/4 dated 2/11/2004, Advance Correction Slip No. 132 to the Indian Railways Permanent Way Manual vide Railway Board's letter dated 08/04/2013 and Chapter XXIX of Indian Railway Commercial Manual Vol. II.

[38] Civil Engineering, Mechanical, Commercial and Operating Department

[39] 67 *per cent* by officials of Civil Engineering Department, 79 *per cent* by officials of Mechanical Department, 76 *per cent* by officials of Commercial Department and 41 *per cent* by officials of Operating Department

Due to shortfall in inspections, Railways could not ensure proper functioning of weighbridges, track maintenance and other commercial activities.

2.1.11 Adherence to rules and provisions regarding environmental clearances

For setting up of PFT, TMC is responsible to fulfil all statutory requirements and get necessary clearances from Government departments/ statutory bodies[40]. Audit observed that

- 28[41] PFTs on 12 Zonal Railways had not obtained consent for operation of PFT from concerned State Pollution Control Boards.
- In 16 PFTs, Green Belt of at least one row of trees had not been developed along the boundary wall.
- In 22 PFTs, planting of trees along the connecting road to prevent dust due to movement of dumpers/ trucks had not been done.
- Dust suppression arrangement and fire preventive measures had not been provided in 15 and eight PFTs respectively.

Railway need to monitor the compliance of statutory requirements related to environment issues.

2.1.12 Conclusion

The policy on setting up of 'Private Freight Terminals (PFTs)' was issued (May 2010) by the Ministry of Railways. The primary objective of this policy was to enhance Railways share of freight through participation of private sector. Out of 121 applications received for setting up of PFTs, only 58 PFTs could be set up during 2010-18. Proposals of 63 PFTs were pending/under process at various stages. The main reasons for pending cases were time consuming approval process and lack of pro-active approach on part of Railways in dealing with proposals. Difficulties in land acquisition was an important reason for non-commissioning of PFTs.

[40] Para 15.2 of General Conditions of the PFT policy and FM Circular No. 05 of 2012
[41] CR-4, ER-1, ECR-1, ECoR-1, NR-5, NCR-1, NER-1, NWR-3, SCR-5, SECR-3, WR-2 and WCR-1 PFT

Railways may explore the feasibility to lease surplus railway land for setting up of PFTs, wherever there is difficulty in acquisition of land by TMCs.

Railways were not able to achieve substantial improvement in freight earnings due to non-achievement of the projected traffic volume by the PFTs. Of 58 PFTs, only eight PFTs were able to generate business as projected in DPRs. One of the reasons for less traffic was provision of inadequate rakes and engines by railways to TMC on time. The target for setting up of 100 Private Terminals and generation of 100 Million Tonnes traffic under '*Mission Hundred*' could not be achieved.

Railways have considered PFTs as a means for additional earnings without any investment on their part. However, Railways have not pro-actively analysed the reasons for shortfall in traffic generated by PFTs as compared to projections. By doing so, the controllable constraints could be addressed and help in achieving increase in freight earnings from the PFTs.

During Exit Conference (30 April 2019), Railway Board stated that policy on PFTs was in the process of being made user-friendly. From December 2018 onwards, TMCs would be paid terminal charges commensurate with traffic handled. This would make the scheme more attractive to the TMCs. A revised policy as expected to be issued shortly.

2.1.13 Recommendations

1. ***Railway need to re-engineer the scheme with adequate financial incentives so that tariff charged by PFTs is competitive vis-a-vis that of railway goods sheds and sidings. Railway also need to simplify rules and regulations and create a single window clearance system for the entire zone.***
2. ***Railways may explore the feasibility to lease surplus railway land for setting up of PFTs, wherever there is difficulty in acquisition of land by TMCs.***

3. ***Railways may consider incentivising TMCs by bearing the cost for commercial staff deputed at PFTs themselves.***

4. ***Railways need to enforce the contractual obligation of commissioning of electronic in-motion weighbridegs at all PFTs. Where these have not been provided by the TMCs, Railway should explore the feasibility to provide EIMWB on lease/rental basis.***

5. ***Railways should pro-actively interact with TMCs, periodically review the freight loading and earnings and address the constraints faced.***

2.2 All Zonal Railways: Working of Automatic Ticket Vending Machines (ATVMs) in Indian Railways

2.2.1 Introduction

Automatic Ticket Vending Machines (ATVMs) were first introduced by

Figure 2.1: ATVM and Co-ATVM

Indian Railways in October 2007 in Western Railway (WR). The main objective was to reduce congestion of unreserved class passengers and long queuing at the ticket counters. ATVMs are touch screen-based ticketing kiosks operated using Smart Cards. The Smart Cards can be purchased and recharged at the regular ticket counters. The card has to be placed on a slot in the ATVM and user has to select the route and destination using the touch screen. After confirming the details, the ticket is printed and delivered. Once the ticket is issued, charge is debited from the smart card. The facility of checking balance on the card is also available. Co-ATVMs are cash/smart card operated ticket vending machines. These machines can be used by passengers themselves to buy unreserved tickets through currency/coins as well as smart cards. Single journey tickets, platform tickets etc. can be purchased through ATVMs. Renewal of season tickets can also be done through ATVMs.

Railway Board appointed a Sub-Group in August 2007, to plan and execute the installation of ATVMs on Indian Railways. As per the report of the Sub-Group, on an average Indian Railways sell 16.5 million tickets per day of which, vast majority are for unreserved passengers. As per the report, with the installation of Unreserved Ticketing System (UTS), the sale of such tickets has been greatly streamlined. However, the problem of long queues persisted at the counters at several stations. This often results in potential passengers not buying tickets especially on busy suburban stations.

Honorable Railway Minister in the Railway Budget for 2015-16 announced introduction of ***'Operation Five Minutes'.*** The aim was to ensure that a passenger travelling unreserved is able to purchase a ticket within five minutes.

Audit reviewed the working of ATVMs installed on various selected stations over Indian Railways. The audit objective was to assess the extent to which these have been able to address the objectives for which they were installed.

The review covered the period from 2015-16 to 2017-18. A sample of 271 stations for various categories[42], where 974 ATVMs and 199 Co-ATVMs were installed was selected for detailed study. For obtaining feedback of passengers regarding use of ATVMs, 146 trains were also selected for review. Audit also carried out survey of 8392 passengers at all selected stations and trains to obtain their feedback regarding usage of ATVMs/Co-ATVMs. Details of stations selected are given in ***Annexure 2.6.***

[42] A1 – 51 stations, A-69 stations, B-58 stations, C-37 stations, D-56 stations. The earlier criteria for station categorisation was based on the annual passenger earnings only. Stations were categorised into 7 categories which A-1, A, B, C, D, E and F. Since December 2017, the criteria for categorisation of stations have been revised to include footfalls at the station.

Audit findings

2.2.2 Installation of ATVMs/ Co-ATVMs

As a Pilot Project, installation of 750[43] ATVMs were sanctioned by Railway Board over seven Zonal Railways through Works Programme 2006-07. Further, Railway Board sanctioned (May 2007) expansion and installation of 5964 ATVMs in all Zonal Railways. This was revised to 3964 ATVMs and 2000 Co-ATVMs machines. Subsequently, in order to allow stabilizing of Co-ATVMs, the number of Co-ATVMs was reduced (May 2014) to 450[44]. In July 2017[45], Railway Board replaced sanction of remaining 1550 Co-ATVMs with ATVMs. Of these, 10 *per cent* procurement was to be done through PPP mode.

Audit observed that as on 31 March 2018, 3851 ATVMs and 459 Co-ATVMs have been installed over Zonal Railways. Average cost of one ATVM - ₹ 1.71 lakh (based on PO issued by CRIS in January 2016).

Audit noticed that no ATVMs have been procured and installed through PPP mode. Further, in ECR[46] and NFR[47], no ATVM has been installed till date, as against the target of 510[48] ATVMs.

2.2.3 Assessment of requirement and identification of location for installation of ATVMs/ Co-ATVMs

The success of any project/ proposal depends on proper planning/survey before its implementation. It was imperative to conduct a survey/ feasibility study for assessing the requirement of ATVMs/ Co-ATVMs at

[43] 175 in CR, 125 in WR, 100 each for ER and SER, SR, 75 each for NR and SCR
[44] CR, WR, NR, ER, SER, SR, SCR and SWR
[45] Railway Board Letter No. 2005/C&IS/WP/vending machine(ATVM) dated 19.07.2017
[46] Railway Board sanctioned (May 2007) 353 ATVMs (228-ATVMs+125-CoATVMs) for installation over ECR. In May 2014, Railway Board communicated sanction for detailed estimate for ₹ 18.40 crore for the same. As of March 2018, no ATVM/Co-ATVM has been installed in ECR.
[47] The work in NFR did not take off as the Associated Finance had raised certain objections regarding non-availability of suburban section and the suitability of ATVMs in the region. However, in March 2018, acting on a request from CRIS, NFR furnished the requirement for 152 ATVMs, 60 SMCs (Smart Card Management), 60 RFID Readers, 152000 RFID smart cards and 60 printers to CRIS, New Delhi. As of March 2018 no ATVM/Co-ATVM has been installed in NFR.
[48] ECR-353 and NEFR-157

stations for optimum utilization of these machines. The main objective of installing these machines was to reduce congestions and long queues at the ticket counters. As such, factors which are responsible for long waiting time at ticket counters should form the basis for deciding the location for these machines. Accordingly, the survey/ feasibility study should be based on

- timings for bunching of coaching trains,
- quantum of UTS counters available,
- sale of UTS tickets from window counter,
- peak-hour queue length,
- availability of other options like JTBS[49] etc.

Audit, however, noticed that no feasibility study was conducted by the Zonal Railways except by WR, WCR and one division of SR. Further, the assessment made in WR and WCR did not take into consideration the number of existing booking counters. In WR, the number of ATVMs installed had no co-relation with the originating passengers handled by suburban and non-suburban stations.

Data regarding passengers handled was readily available with CRIS. This could have been used by Zonal Railways as input along with existing number of counters for identification of locations for installation of ATVMs/ Co-ATVMs.

Audit examination further disclosed that location survey for installation of ATVMs/ Co-ATVMs was not properly done. In SR, 22 ATVMs were shifted after installation to other locations. In NER, five ATVMs were installed at stations, where the sections were closed due to gauge conversion works.

For opening of a new booking window at a station, Railway Board has prescribed (March 2013) criteria of sale of 3000 tickets per day. However, for assessment of requirement of ATVMs/ Co-ATVMs at a station, no specific norms were framed. In the absence of any norms, ATVMs/ Co-

[49] Jan Sadharan Ticket Booking Sevaks

ATVMs were installed even at D category stations, where the numbers of sale of unreserved tickets were significantly low. Test check of sale of tickets through UTS and ATVMs at the selected D category stations during 2015-17[50] revealed the sale of tickets ranged only between 216 and 2926 per day[51].

During passenger survey Audit noticed that 32 *per cent* passengers were not aware of ATVMs and 27 *per cent* passengers were not aware of the installation of the ATVMs at the selected stations.

Thus, installation of ATVMs/ Co-ATVMs at stations was not preceded by proper surveys/ feasibility studies.

During Exit Conference (30 April 2019), Railway Board agreed that no norms have been laid down for deciding the location and station for installation of ATVMs/ Co-ATVMs.

2.2.4 Sale of tickets through ATVMs/ Co-ATVMs

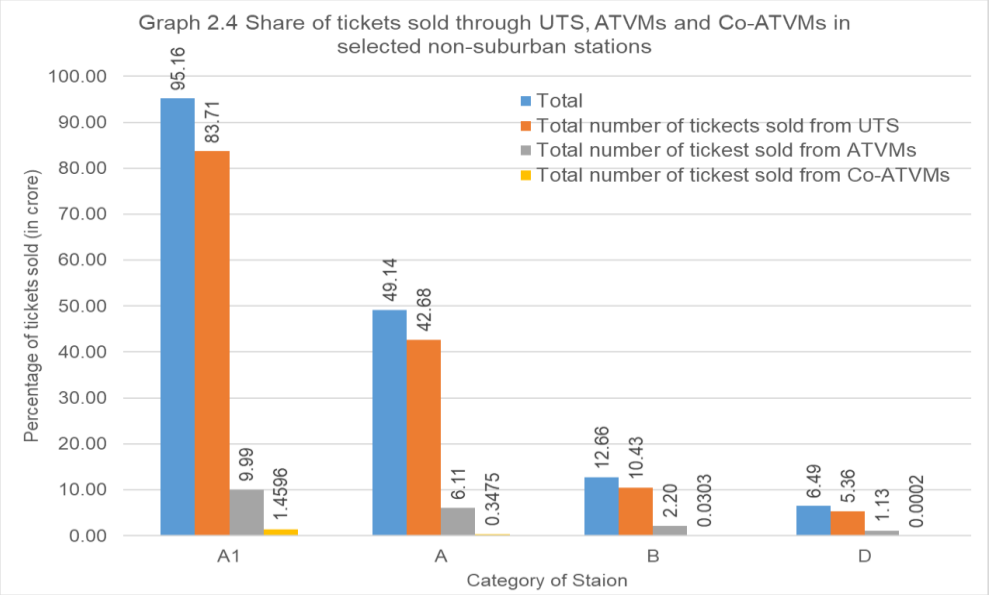
Audit made a comparative study of sale of tickets to passengers through ATVMs/ Co-ATVMs *vis-à-vis* sale of tickets through window counters at 271 selected stations. Audit observed that the share of sale through ATVMs and Co-ATVMs as compared to total tickets sold during 2015-16 to 2017-18 was only 16.52 per cent and 0.38 per cent respectively. No benchmark for optimal utilization of the ticket vending machines was found on record in Railway Board.

Audit noticed that

- In non-suburban stations (A1-51, A-69, B-58 and D-56), only 12 *per cent*[52] tickets were sold through ATVMs and 1.12 *per cent* through Co-ATVMs, while 87 *per cent* tickets were sold through window counters.

[50] September, October, November and December of 2015, 2016 and 2017
[51] except one station Bhiwandi Road of Central Railway
[52] Out of the total sale of 1744999618 tickets, only 220697753 tickets were sold through ATVMs/ Co-ATVMs and 1524301865 tickets were sold through ticket counters

- At 38[53] stations, the share of sale of ATVMs tickets with respect to window counter was less than five *per cent* during 2017-18. Some of



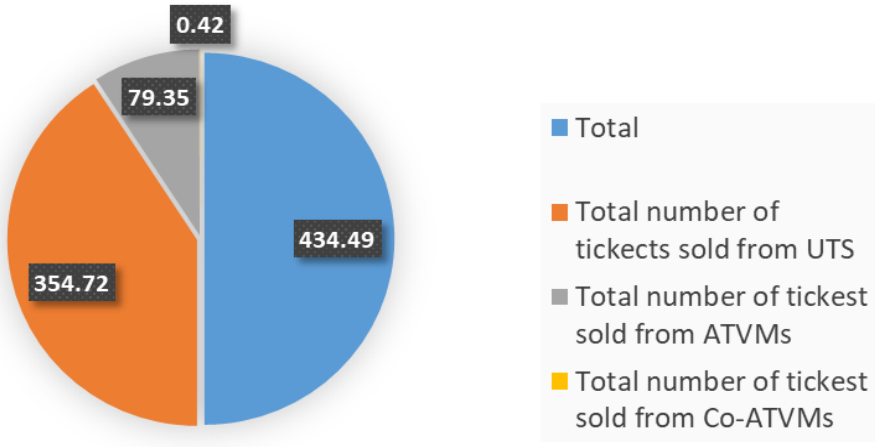
the important stations were Kharagpur, Jaipur, Vasco-da-Gama, Kolkata, Ludhiana, Jhansi, Sealdhah, Chandigarh, Howrah, Gwalior, New Delhi, Mathura, Tumakuru, Ghaziabad, Saharanpur, Bhusaval and Ahmednagar.

- In 37 selected suburban stations (C category), the share of tickets sold through ATVMs was comparatively high i.e. 18 *per cent*[54]. However, the same was only 0.1 *per cent* for tickets sold through Co-ATVMs. The sale of tickets through window counters was 82 *per cent* of the total tickets booked.

[53] Kharagpur, Tatanagar, Digha, Shalimar, Midnapur, Jaipur Keonjhar Road, Vasco-da-Gama, Bolpur Shantiniketan, Haripur, Phillaur, Datia, Kolkata, Banda, Dabra, Kalilabad, Mahoba, Korba, Campa, Ludhiana, Jhansi, Dhuri, Sealdhah, Chandigarh, Shahdol, Howrah, Gwalior, New Delhi, Anuppur, Karur, Naihati, Mathura, Tumakuru, Barddhaman, Vindhyachal, Ghaziabad, Saharanpur, Bhusaval, Ahmednagar

[54] Out of the total sale of 1744999618 tickets, only 220697753 tickets were sold through ATVMs/ Co-ATVMs and 1524301865 tickets were sold through ticket counters

Graph 2.5 Share of tickets sold through UTS, ATVMs and Co-ATVMs in selected suburban stations



- At 13[55] out of 15 stations of C category where both ATVMs and Co-ATVMs were installed, the share of sale of tickets through Co-ATVMs was significantly less than ATVMs.

Annexure 2.7

During passenger survey, 63 *per cent* passengers opined that they have never used ATVMs for purchase of tickets. Further, 68 *per cent* passengers were not aware of ATVM smart cards and 89 *per cent* did not have ATVM smart cards.

During the past three years, the sale of unreserved tickets through ATVMs/ Co-ATVMs was 16.90 per cent of the total sale of unreserved tickets at 271 selected stations. At suburban stations, ATVMs were preferred as compared to Co-ATVMs. Audit noted that the ATVM scheme suffered from frequent failure of machines, lack of passenger awareness and other shortcomings as mentioned in subsequent paragraphs. These shortcomings would automatically result in sub-optimal use of the machines.

[55] Ghatkopar, Kurla, Dombivli, Bhandup, Barrackpore, Bharatnagar, Hi-tech City, Avidi, Mambalam, Tambaram, Velachery, Bhayandar, Dadar

2.2.5 Utilization of ATVMs/ Co-ATVMs

Audit analysed the utilization of ATVMs/ Co-ATVMs installed at selected stations. Audit findings are discussed below:

(i) Downtime of ATVMs/ Co-ATVMs

ATVMs/ Co-ATVMs installed at various stations are covered under warranty for three years from the date of installation[56]. As per the clause, ticket vending machines and its other supporting components have to be attended within 24 hours from date of lodging of complaints. The defects should be rectified within two days, failing which, penalty was to be imposed. In case of complaints remaining unattended, CRIS was to deduct the penalty charges as applicable subject to maximum 10 *per cent* of the contract value calculated on quarterly basis.

Audit reviewed the position of failures of ATVMs and Co-ATVMs during the four-month period from September 2017 to December 2017. Audit noticed that

- In 13 Zonal Railways, where 3755 ATVMs were installed, 5064 instances of ATVMs failure for 2,16,425 hours were noticed.
- In eight Zonal Railways, where 449 Co-ATVMs installed, 1847 instances of Co-ATVMs failure for 85,190 hours were noticed.
- Per machine failure rate during the four months' period was 57.64 hours for ATVMs and 189.73 hours for Co-ATVMs.
- Information regarding failure of ATVMs/ Co-ATVMs was not found on record in SER, where 95 ATVMs and 10 Co-ATVMs were installed.

Audit further noticed that during the period checked, maximum number of Co-ATVM failures were noticed in CR, followed by WR. In SECR and SWR, the duration of failures was 8970 hrs and 4960 hrs in 19 and 23 failures respectively. Main reasons for failure of ATVMs included network, printer, screen problems, card reader faulty etc. Similarly, the reasons for

[56] CRIS PO No.2016/CRIS/1113619 dated 05.01.2016

downtime of Co-ATVMs were mainly the failure of cash device, faulty cash door, network and printer problem, etc.

Out of 14 Zonal Railways, only four Zonal Railways had levied the penalty[57] of ₹ 56.10 lakh against the firms and forwarded it to the CRIS for recovery. However, details of recovery from the firms were not found on record.

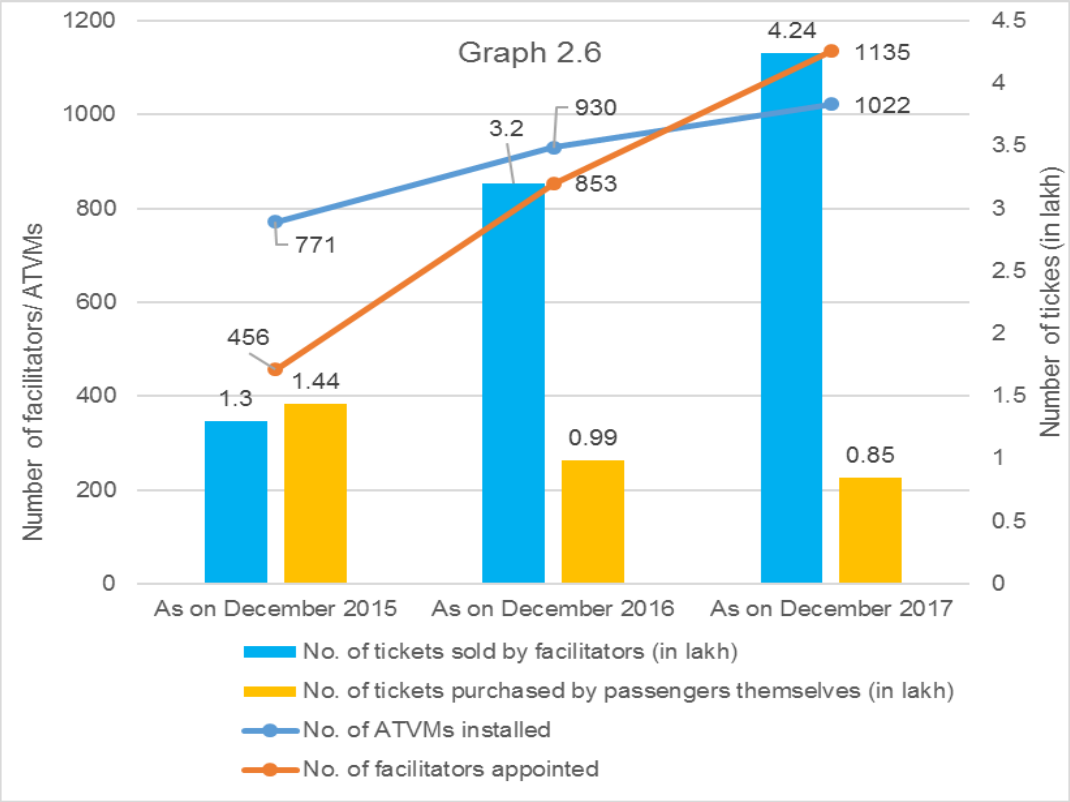
Thus, the Zonal Railways did not effectively take up the matter of rectification/repair of ATVMs/Co-ATVMs with the firms. As a result, the machines remained down for a long time. This also discouraged the passengers to use them.

(ii) Sale of tickets using ATVMs/ Co-ATVMs through facilitators in comparison to passengers buying themselves

Railway Board instructed[58] (November 2011 and May 2012) that Zonal Railways should appoint facilitators at those stations where ATVMs have been installed. The facilitators were to be issued smart cards in order to facilitate issuing of unreserved tickets through ATVMs. Railway Board also instructed (August 2007)[59] that ATVMs must be easy to understand, easy to operate. Further instructions (November 2011)[60] provided that the facilitators should also facilitate the user/ passenger (holding smart card) in purchasing ticket by themselves from ATVM. Adequate education to the user/ passenger should be provided by the facilitators.

Audit analysed the sale of tickets through facilitators of ATVMs vis-à-vis tickets purchased by passenger themselves at the selected stations. The data of tickets sold during September to December of three years (2015 to 2017) was analysed. The result can be seen from the ***Graph 2.6*** below:

[57] ECoR ₹ 6.95 lakh, NER-₹ 6.15 lakh, SECR- ₹ 1.00 lakh and WR-₹ 42 lakh (Total ₹ 56.10 lakh)
[58] Railway Board Commercial Circular no.2011/TG-I/10/ATVMs facilitators dated 23.11.2011 and No.2011/TG-I/10/ATVMs facilitators dated 18.05.2012
[59] No.2005/C&IS/Vending Machine/Pt.I PPP New Delhi, dated 31.8.2007
[60] Commercial Circular no.60 of 2011



Graph 2.6: Tickets sold, facilitators appointed and ATVMs installed on selected stations for the period September to December in 2015, 2016 and 2017

It can be seen that number of ATVMs installed and number of facilitators appointed increased by 33 *per cent* and 149 *per cent* respectively. As a result of increase in number of facilitators, the number of tickets sold by facilitators increased by 255 *per cent.* It was, however seen that number of tickets purchased by passengers themselves decreased by 41 *per cent.*

During passenger survey, 58 *per cent* passengers were of the view that facilitators did not educate passengers on how to use ATVMs. Further, 32 *per cent* passengers were of the view that the ATVMs were not user friendly.

Thus, the situation of sale of tickets through ATVMs improved where facilitators were appointed. Further, the decline in purchase of tickets by passengers themselves points toward the need to educate the passengers and make the awareness programmes more effective.

2.2.6 Awareness program for passengers

(i) Awareness programs at selected stations

Railway Board had issued instructions from time to time for creating awareness amongst passengers regarding ATVMs. The major initiatives required to be taken by Zonal Railways for creating awareness included the following:

i) Placement of Instructions Boards like "How to use ATVMs" for passengers at proper places;
ii) Display of videos on demo of passengers using ATVMs on CCTVs installed on the platforms so as to educate the passengers;
iii) Concerted efforts for promoting ATVMs and educating passengers about the ATVMs.
iv) Conducting skits/ demonstration drives etc.
v) Publishing information regarding use of ATVMs in local newspapers,
vi) Creating cultural teams of the railway to approach corporate offices/ major educational institutions to create awareness about ATVMs.

Audit reviewed the awareness programs initiated by Zonal Railways at 271 selected stations. Audit noticed that

- Instruction Boards like "How to use ATVMs" for passengers at proper places were found only in 142 stations. In NER, seven ATVMs had been installed at Lucknow junction. However, only one Instruction Board was placed at the place which was not easily visible to the passengers.

Figure 2.2: Lucknow, NER- Instruction Board installed in a corner, hardly visible to passengers

Figure 2.3: NER -Two ATVMs installed at first class gate at Gorakhpur Station; SR- ATVM at Tirur located next to reservation counter and SWR-ATVM placed in CCM's Office

- At 10 stations[61], ATVMs were not installed at proper locations. ATVMs were installed at first class entry gate, near reservation counters, at CCM's office. Only at nine stations[62], videos on demo of passengers using ATVMs were shown on CCTVs to educate the passengers on this aspect.

- SCR had devised seven easy steps to purchase tickets from ATVMs and displayed at stations for passengers. This is a best practice which other Zonal Railways may also follow to create awareness amongst passengers.

Figure 2.4: Instruction Board demonstrating seven easy steps to purchase tickets from ATVM at Secunderabad Stations(SCR)

- In SWR, video clippings were displayed in all selected stations and displayed at all the ATVMs locations. Displays were also seen in CCTVs and giant screen at Bengaluru station.

[61]NER (Lucknow NE, Gorakhpur, Basti), SECR (Raipur, Kamptee), SER (Dumdum Cantt.), SR (Chennai Egmore, Tirur), WR (Ahmedabad, Santra Cruz)
[62] Lucknow NE-NER, Madurai-SR, Bengluru, yasvantpur, Bangalore Cantt., Sri Sathya Sai Prasanti Nilayam, Tumkur, Bangalore East, Whitefield-SWR

(ii) Awareness programs at divisional level

Compliance of Railway Board's instructions for creating awareness amongst passengers regarding ATVMs was also analysed at Divisional level. Audit examined the records of 56 divisions of 14 Zonal Railways in this regard and noticed that

- In 28 divisions (six Railways[63]), no concerted efforts were made to proliferate and to educate passengers about the ATVMs.
- In 38 divisions (11 Railways[64]), no skits/ demonstration drives etc., had been conducted.
- In 30 divisions (11 Railways[65]), no information regarding use of ATVMs had been published in local newspapers.
- In 53 divisions (13 Railways[66]), the video showing the demo of passengers using ATVMs were not shown on CCTVs installed on the platform to educate the passengers.
- No Zonal Railways, except in two divisions of CR, created any cultural teams of the railway to approach corporate offices/major educational institutions to create awareness about ATVMs.

During passenger survey, 87 *per cent* passengers had no knowledge about the awareness program conducted by the Railways.

Thus, steps taken by the Zonal Railways to sensitize and make passengers aware of the ease of use of ATVMs/ Co-ATVMs were inadequate. This was one of the major reasons for under-utilization of ATVMs/ Co-ATVMs.

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[63] ECoR, NR, NWR, SECR, SR (all divisions) and in WR (3 divisions out of 5).
[64] ECoR, NCR, NWR, SECR, SR, SWR and WCR (all divisions) and in NER (Two divisions out of three), SER (3 divisions out of 4) WR (4 divisions out of 5), Solapur division of CR.
[65] ECoR, NCR, NWR, SECR, WCR and WR (all divisions) and in SCR (5 divisions out of 6) NR (3 divisions out of 5) NER (01 divisions out of 3), SER (3 divisions out of 4) and SR (3 divisions out of 6)
[66] ECoR, NCR, NWR, SECR, WCR and WR (all divisions) and in SCR (5 divisions out of 6) NR (3 divisions out of 5) NER (01 divisions out of 3), SER (3 divisions out of 4) and SR (3 divisions out of 6)

(iii) Time taken in purchase of tickets from ATVMs

For assessing the effectiveness of ATVMs and time taken for sale of tickets, a survey was conducted by Audit during peak hours of January 2019 over five stations[67] of NER and CR. Audit findings during survey at stations of NER and CR are tabulated below:

Table 2.1 – Average time taken for booking of tickets at ticket windows and ATVMS

S. no	Name of Station	Number of Passengers surveyed	Average time taken at Booking Window (in minutes)	Average time taken at ATVM (in seconds)
1.	Gorakhpur	43	7 to 8	30 to 120
2.	Lucknow	32	6	30 to 120
3.	Siwan Jn.	35	12	30 to 120
4.	Dombivali	20	1.5	30
5.	Thane	20	1.0	30

Audit observed that average time taken at booking window was much higher than that of ATVMs. Audit, however, found during passenger survey that 63 *per cent* passengers never used ATVMs for purchase of tickets. This was due to lack of awareness amongst passengers about the ATVMs. Audit also observed that there was no information/display regarding availability of ATVMs for purchase of tickets stations surveyed in Audit.

2.2.7 Conclusion

ATVMs/ Co-ATVMs were introduced to reduce congestions of unreserved class passengers and long queuing at the ticket counters. As on 31 March 2018, 3851 ATVMs and 459 Co-ATVMs have been installed over 14 Zonal Railways against the sanction of 5514 ATVMs and 450 Co-ATVMs. In ECR and NEFR, no ATVMs/ Co-ATVMs were installed.

Audit noticed that no feasibility study was conducted by the Zonal Railways for assessing the requirement of ATVMs/ Co-ATVMs at stations. The share of tickets sold through ATVMs/ Co-ATVMs was only 16.90 *per*

[67] NER – Gorakhpur (15 January 2019), Lucknow NE (21 January 2019) and Siwan (28 January 2019); CR – Dombival (22 January 2019) and Thane (22 January 2019)

cent as compared to total sale of unreserved tickets at the selected 271 stations. Audit noted that the ATVM scheme suffered from frequent failure of machines, lack of passenger awareness and other shortcomings. These shortcomings would automatically result in sub-optimal use of the machines. Zonal Railways did not effectively take up the matter of rectification/ repair of ATVMs/ Co-ATVMs with the firms. Passenger survey conducted by Audit revealed that 32 per *cent* passengers were not aware of ATVMs, 87 *per cent* of passengers stated that no awareness program was conducted by Railways, 58 per *cent* of surveyed passengers told that the facilitators did not educate passengers how to use ATVMs.

During Exit Conference (30 April 2019), Railway Board accepted the audit observations and noted the recommendations.

2.2.8 Recommendations

1. ***Railways need to undertake surveys/ feasibility studies for identification of stations as well as locations for installation of ATVMs/ Co-ATVMs.***
2. ***Facilitators appointed at ATVMs/ Co-ATVMs may be effectively used to educate passengers regarding ease of purchasing tickets through ATVMs/ Co-ATVMs. The incentive to facilitators may be linked to the number of tickets bought by the passengers themselves.***
3. ***Downtime for ATVMs/ Co-ATVMs may be reduced by ensuring timely rectification of defects/problems.***
4. ***Effective and extensive awareness drives may be undertaken for familiarizing and popularizing use of ATVMs/ Co-ATVMs amongst passengers.***
5. ***Effective utilization of ATVMs requires behavioral changes amongst passengers. Railways may plan replacing the booking counters with ATVMs/ Co-ATVMs in a phased manner on identified stations.***

2.3 Central Railway (CR): Implementation of Train Management System in Mumbai suburban system

TMS was not implemented in all the sections of Mumbai Division. This restricted the availability of full benefits of the system for the Mumbai suburban system of Central Railway. Various important functions continued to be done manually. The system remained ineffective due to non-compliance of basic input data, reduction of scope of contract and inadequate knowledge of Railway staff in operating the TMS. The objectives envisaged were not achieved despite expenditure of ₹ 24.23 crore since December 2013.

2.3.1 Introduction

The suburban rail network of CR extends from Mumbai Chhatrapati Shivaji Maharaj Terminus (CSMT) to Karjat, Kasara and Khopoli on the main line *via* Kalyan. It also extends from Mumbai CSMT to Panvel, Mumbai CSMT to Goregaon on the harbour line and Thane to Vashi/Nerul/Panvel on Trans harbour line. Mumbai CSMT to Kalyan, extends over 54 kms and comprises 26 stations. This section handles more than 800 suburban trains and carries more than 3.5 million passengers per day.

In the conventional system of working, Controllers of train movements collected information over phone regarding actual departure of each train from important nominated stations. Heavy density of suburban trains on this section made it impractical to collect timings from all the 26 stations. Therefore, CR decided to introduce a computer based information storage-cum-retrieval system viz. Train Management System (TMS). The system was to process and display information in real time. A contract for 'Design, supply, installation, testing and commissioning of TMS in Mumbai CSMT-Kalyan Suburban section of Mumbai Division' was awarded (June 2008) to M/s Bombardier Transportation India Ltd., Vadodara. TMS was commissioned in December 2013 at a cost of ₹ 24.23 crore.

TMS was to provide an effective system of regulating trains by monitoring their movements. The system was intended to provide timely information to the commuters through display boards and through announcements on public address system at all stations/other locations. The system was to provide inputs for control of train movements to Central Control Office/CSMT. In addition, it was meant for preparing/generating punctuality reports, rake and crew links and other MIS related reports. The system was intended to facilitate timely decisions for diversion of trains, induction/withdrawal of rakes, planning reversal of rakes etc. Audit reviewed the usefulness and extent of utilisation of TMS in the day to day operations in the CSTM-Kalyan Section since inception.

Audit Findings

2.3.2 Incomplete data entry in the system

It is the responsibility of the Station Master of the originating station to enter manually the Train Identification (Train ID) information in the system. This information includes train number, rake number, destination, platform number, classification of trains (i.e. Fast/Slow/Semi-fast) etc. This is to be done every time, the rake enters in the system from shed/sidings etc. It helps to flash the details by the system automatically on screen for all the journeys that train undertakes. This activity is vital for the successful operation of the TMS.

Audit observed that the unique Train ID number will apply to a rake only as long as it continues to make trips between different originating and destination stations without a break. Based on requirement of services, some rakes are withdrawn from trips, stabled in car sheds during non-peak hours and reintroduced into service during peak hours of the day. When a train is taken out of its running trips during any part of the day and stabled, it loses the unique Train ID earlier assigned to it. Thus, it becomes essential that when a train is reintroduced into service from the car shed during any particular day, it is assigned a unique Train ID again. This enables flashing of its details automatically in the TMS.

There were 856 trains run on Mumbai suburban Main line sections. Of these, 836 suburban trains[68] run between Mumbai CSMT and Kalyan[69]. Analysis of the data of TMS revealed that Train IDs information was keyed in the TMS for only 800 trains out of 836[70]. Of these, in 173 trains, actual departure time was not captured; in 161 trains, actual arrival time was not captured; in 232 trains, both actual arrival and departure time was not captured. This happened due to loss of Train IDs as a result of digital link failures.

Ministry, in its reply, stated (July 2019) that average percentage of valid entries to total number of trains in CSMT-Kalyan section, where TMS has been commissioned, was 97.79 per cent. However, due to intermittent and frequent failures and shortage of staff, departure/arrival of trains was not captured in TMS.

Audit further observed that the status of entering the Train IDs in TMS worsened further in December 2018. Audit reviewed the Controllers' Diaries of TMS Control Office for 19 December 2018. Audit observed that out of 836 trains, Train IDs were entered in respect of only 449 trains (52 *per cent*) in the TMS. Of these, in 10 trains, actual departure time was not captured. In 48 trains, actual arrival time was not captured. In 65 trains, both actual arrival and departure time was not captured. Reasons for decline in percentage of coverage of trains in the TMS were not found on record. The benefit of automatic real time information was thus, not available to the commuters.

Ministry stated (July 2019) that Audit has taken data of trains running only on non-peak hours (449 trains). However, during test check of Train Control Chart (TCC) for 19 March 2019, valid entries were 92.3 *per cent* for down trains and 72.60 *per cent* for up trains. The low percentage of valid train numbers was due to technical failures (malfunctioning of line

[68] 20 trains services outside the jurisdiction of TMS (18 train services on Karjat-Khopoli sections and 02 train services on Kalyan-Asangaon section)
[69] including trains to destinations beyond Kalyan
[70] as checked on 13 January 2017

interface unit, Router hanged etc.) and shortage of staff on certain dates and shifts.

Thus, technical failures continue to adversely affect the efficiency of TMS even after five years of commissioning of TMS.

Non-feeding the train IDs in the system also affected the ability of the system to regulate trains by monitoring their movements. The 'Expected Arrival in Minutes (EAIM)' of such trains was not displayed on the platform indicator. Also, automatic announcement on train approaching the station could not be done. The system also could not generate punctuality reports and other MIS related reports automatically.

Central Railway Administration agreed and stated (January 2018) that Controllers had been counselled to enter Train trips and appropriate Identifications (IDs) in the TMS.

2.3.3 Manual maintenance of records

TMS did not cover the entire suburban section of Central Railway. It was implemented only for Mumbai CSMT-Kalyan section. The sections beyond Kalyan (on main line) and entire Harbour and Trans Harbour lines were not covered.

Audit observed that train originating and terminating, punctuality figures were calculated manually from Train Register Books. Train clerks posted in the central cabins[71] recorded the time of departure of the trains manually in the Train Register Book. In addition to this, staff was also posted at central cabins for operation of TMS workstations. This was duplication of work, which could have been done entirely through the system, if TMS was implemented on full section. In Mumbai Divisional Control Office, Controller's Diary for Mumbai CSMT-Kurla and Kurla-Kalyan sections and Chief Controller's Diary (Suburban) were maintained manually. Operating Department also did not generate any report from TMS and depended on manually prepared reports. Thus, the envisaged

[71] for recording departure of the trains

benefit of TMS in generating automatic reports on real time basis was not achieved.

Ministry stated (July 2019) that for CSMT-Kurla and Kurla-Kalyan sections, punctuality can be calculated with the existing system provided that all the Train IDs are allotted and entered into the system. However, for calculating the overall punctuality for the entire suburban sections which stretches beyond Kalyan, CSMT (Harbour line) and beyond and Thane (Trans Harbour), manual calculation is unavoidable.

Further, train control charts, train graphs, punctuality reports, unknown delayed trains, Controller's Diary etc. can be generated through TMS. However, due to less number of train movements being captured in TMS and partial implementation of TMS, various MIS reports were not being generated.

Central Railway admitted (March and September 2017) that TMS covered CSMT-Kalyan section only and timing of trains running beyond Kalyan was not available in the TMS. They stated that generation of various standard MIS reports was also restricted to Mumbai CSMT to Kalyan. Thus, by implementing TMS in only a part of the section, CR was not able to use TMS effectively for the intended objective.

2.3.4 Live indications of signals, points etc. with geo-layout of the stations

TMS was to provide live indications of signals, points and crossings with geo-layout of the stations, on-line display of train movements with train details. This included Train ID, Rake number and Route settings on

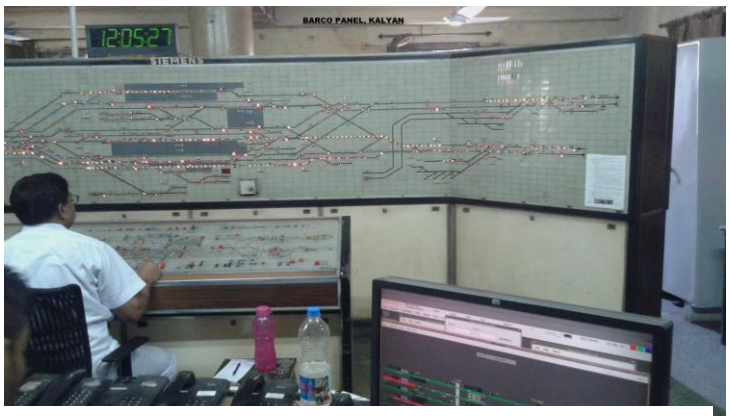

Figure 2.5: Barco Panel at Kalyan

a Mimic Indication Panel[72] (Barco Panel[73]) at workstations of Controllers and at train terminating/originating stations. Audit observed that although the Barco Panel installed at Mumbai Divisional Control was calibrated[74] departmentally in October 2016, visibility of train movements, points etc.in Barco Panel remained poor.

Central Railway stated (January 2018) that the above mentioned panel is being used since much before the commissioning of TMS i.e. December 2013. The panel had completed seven years of burning life and its replacement was planned in 2018-19. Audit, however, observed that the replacement proposal had not been included in the Works Programme of 2018-19.

Audit further noticed that the Barco Electronic Systems (P) Ltd[75]. had stopped production of this product line in March 2012. They also stopped technical support to Railway Administration since December 2013. Accordingly, the contractor of TMS M/s Bombardier had provided (October and November 2015) CR various options to ensure that the efficiency of Barco panel installed in TMS was not affected due to lack of spares etc. Timely action/decision in this regard was, however, not taken by Central Railway Administration.

Thus, non-replacement of Barco panel, despite completion of its burning life led to persistent issues of poor visibility in the Barco panel causing difficulties to panel controllers.

Ministry, in its reply, stated (July 2019) that visibility has been substantially improved by replacing the defective panel/cubes of Barco panel. However, work for complete replacement has been proposed in

[72]Technical Specification No. 7 of Section VI of Contract Agreement
[73] Barco refers to the make of panel which is an array of digital display units- two rows of eight panels each. The Barco video wall displays live indications of signals, points, track circuits etc. of suburban section with geo layout of the stations. Barco panel provides a visual aid to the controllers for managing the train movements.
[74] Calibration exercise involves updating of TMS database based on changes in station layouts. After calibration, updated layout is displayed on the Video wall.
[75] OEM of Barco Panel

Works Programme 2019-20. The overall visibility is slowly deteriorating due to increasing burning hours.

2.3.5 Interface of TMS with Passenger Information System

TMS was interfaced with Indicators, Visual Display Units (VDUs) and Passenger Announcement System (PAS). Audit observed that display of arrival of trains in the indicator, VDU and announcement in PAS was not being done by the system automatically. Announcers i.e. persons operating the TMS were giving instructions/commands to the system to display the arrival of next train in the indicator. In Mumbai CSMT, suburban train departure announcement and display of suburban train timings was done manually. This happened as CR did not procure equipment/modules for interfacing Central Announcement System (CAS)[76] with TMS at Central Control Office[77]. Reasons for non-procurement were not on record.

Central Railway stated (March 2017) that this facility was not used since it required maintaining of proper IDs of the running train, otherwise wrong information would be communicated to the commuters, which would result in passenger complaints. They also stated (January 2018) that integration of TMS with existing PIS at Mumbai CSMT was not implemented as Mumbai CSMT was originating station, where EAIM and VDU were not relevant from passenger point of view.

Audit, however, noticed that CSMT station was to be provided with Automatic Route Setting (ARS), a system providing online display of train movement, flashing message instructions from controllers and information about EAIM of next two trains on each line. These facilities as at other stations along with ARS were to be provided in CSMT Route Relay

[76] A part of Passenger Information System
[77] Schedule item (No. 41) provided in the Contract for Supply, installation, testing and commissioning of PC based CA system and Item No. 13.5 of FRS

Interlocking (RRI) Cabin. Audit noticed that provision of ARS[78] was also not done during execution of contract.

Ministry stated (July 2019) that manual intervention was essential to avoid wrong information being given to public on account of trains not logged on TMS through IDs, due to various reasons. At CSMT, integration of TMS with existing PIS system was not implemented since it is an originating station and EAIM and VDU has no relevance from passenger point of view. Further, CSMT was already provided with advance Train Information System before commissioning of TMS for suburban traffic and same is functioning satisfactorily and therefore no need was felt to integrate TMS with PIS. Purpose of CAS is to provide emergency as well as other social/security related messages collectively at a point of time to all the stations from centralized location.

Ministry's reply is not acceptable. As per FRS and GCC, these features were incorporated in the scope of work. Reasons for exclusion of interfacing the CAS with TMS have not been furnished. Manual intervention still continues even after five years of commissioning of TMS. As the Advance Train Information System was already provided for suburban traffic, the reasons for inclusion of work of integrating TMS with PIS has not been given by the Ministry.

2.3.6 Non-execution of Annual Maintenance Contract

Warranty of hardware and software of TMS supplied by M/s Bombardier under the contract was for a period of two years i.e. up to 05 December 2015. Audit observed that after the expiry of the warranty period, no Annual Maintenance Contract (AMC) was awarded by CR Administration. The hardware assets were maintained departmentally by Signalling Department.

Central Railway stated (January 2018) that efforts were under way to enter into AMC. AMC tender would be re-invited from M/s Bombardier to

[78] Item No.34 of Tender schedule

cover only proprietary items of the firm. For other items, further course of action would be decided based on response to the re-tender.

Ministry stated (July 2019) that Original Equipment Manufacturer (OEM) M/s Bombardier Transportation India Limited did not participate in two tenders opened in September and November 2017. However, system is being maintained departmentally through procurement of proprietary items from OEM and other items from Stores Open tender.

2.3.7 Conclusion

TMS was not implemented in all the sections of Mumbai Division. This restricted the availability of full benefits of the system for the entire Mumbai suburban system of CR. Details of movement of all trains running on the section, where TMS was implemented, were also not being captured. Functions such as recording train movement in train register, entering train details in TMS, collection and display of departure information by the controller was done manually. Post implementation, the work load at Central Cabins increased as they had to continue recording of train movements manually. The system remained ineffective due to not capturing basic input data and inadequate knowledge of Railway staff in operating the TMS. The objectives envisaged were not achieved despite expenditure of ₹ 24.23 crore since December 2013.

2.3.8 Recommendations

1. ***TMS needs to be implemented on all the suburban sections of suburban rail network in Mumbai Division of CR for deriving intended benefits.***
2. ***Complete information, on real time basis, about movement of suburban trains should be made available to commuters waiting for the trains on the platforms.***
3. ***Details of movement of all trains running should be captured to generate correct MIS reports.***

4. ***Punctuality figures should be calculated through TMS to avoid manual intervention and possible manipulation of punctuality figures.***

5. ***Annual Maintenance Contract should be entered into timely to maintain TMS in proper working condition.***

2.4 Southern Railway (SR): Injudicious conversion of Domestic Container Terminal as Container Rail Terminal led to loss of revenue

SR Administration decided to convert CONCOR Domestic Container Terminal (DCT) at Salem Market into Container Rail Terminal (CRT) without ensuring the availability of container or cargo storage and stacking facility, which was critical for successful running of CRT. DCT was exclusively used by CONCOR, whereas CRT was meant to be used by all container train operators. SR, however, did not assess the demand for creating another CRT at Salem Market station, where already a railway CRT existed. After conversion of DCT as CRT, there was no outward loading during 2016-17 and 2017-18. As a result, SR Administration lost the opportunity to earn the revenue on account of haulage charges and license fee from CONCOR.

Container Corporation of India Ltd (CONCOR) was incorporated in March 1988 as a Public Sector Enterprise under the Ministry of Railways. The prime objective of this corporation was to develop modern multimodal transport logistics and infrastructure. CONCOR provides support to the country's growing domestic and international containerized cargo and trade. It pays[79] license fees to Railways, whereever railway land is leased to them for operation of container terminals. The licence fee is based on the number of containers (TEUs – Twenty foot equivalent units) handled.

SR handed over railway land of 7.311 acres at Salem Market to CONCOR in 2001 for setting up of a DCT. The DCT became operational during July 2001. The land licence agreement was executed in July 2004 for a period

[79] Railway Board's letter No.2001/LML/13/55/Vol. III dated 24.1.2008, revised from time to time

of five years and later extended up to July 2014. The lease charges were payable as per Railway Board orders[80] on the basis of TEUs handled by CONCOR. At this terminal, inward traffic was white cement and outward traffic was starch sand, olivine sand, turmeric, magnesium powder etc. to Shalimar and Tughlakabad. The outward traffic was routed through the CONCOR, Tondiarpet hub (ICDT).

On expiry of land licence agreement, CONCOR approached SR Administration for renewing the licence for a further period of ten years from July 2014. SR Administration did not agree to extend the period of licence and asked CONCOR to vacate the land by April 2015. SR took the decision on the grounds that there was a decline in traffic and CONCOR was occupying a prime land by paying a modest licence fee. They also felt that they could convert the facility into a CRT and operate the same for use by all container train operators.

Audit observed that after notifying[81] DCT as CRT at Salem Market in May 2015, the outward traffic came down to 'Nil'. Before May 2015, an average of 135 container units was dealt with by CONCOR at Salem Market DCT per month. Besides, the inward traffic also got reduced marginally after the conversion of DCT to CRT, as can be seen from the table below:

Table 2.2 – Traffic handled at the terminal since 2012-13

When the terminal was functioning as	Year	Inward		Outward	
		Rakes	*No. of Units loaded*	*Rakes*	*No. of Units loaded*
DCT (handled by CONCOR)	2012-13	45	3212	45	1962
	2013-14	38	3036	38	1544
	2014-15	35	2770	35	1450
	2015-16 (up to May 2015)	6	412	6	186
CRT (handled by SR administration)	2015-16 (from June 2015 to March 2016)	20	1510	20	74
	2016-17	31	2528	31	0
	2017-18	31	2484	31	0

[80] Railway Board letter No.2001/LML/13/55 dated 24.09.2003
[81] Advance Rate Notification 5 of 2015

It can be seen that only 74 containers were loaded during 2015-16. In 2016-17 and 2017-18, no outward loaded traffic was booked from the terminal. As such, SR lost opportunity to earn additional revenue on account of freight haulage charges after conversion of DCT as CRT.

Audit noticed that subsequently CONCOR requested[82] SR Administration for restoring the DCT at Salem Market. They also assured to handle an average of 240 container units of inward and 120 container units of outward traffic per month. However, the proposal was not considered by SR Administration. Divisional Railway Manager of Salem Division also suggested (June 2016) for reverting back the CRT to DCT. However, the same was not agreed to by the Zonal Headquarters.

Audit further noticed that at the time of converting (May 2015) Salem Market DCT to CRT, the traffic carried by existing 21 CRTs[83] during 2013-14 and 2014-15 was nil. Audit noticed that

- The CRT at Salem Market Goods shed of the railways was also located in the vicinity of the DCT of CONCOR. This was converted to CRT by SR Administration. This Goods shed is located on the other side of the Salem Market Railway Station. It also did not carry any traffic during 2010-11 to 2014-15. This fact was not taken into consideration while notifying the DCT to CRT.
- There is no container or cargo storage facility at the newly notified CRT (akin to an ICD or DCT of CONCOR). Empty container availability was a major issue with the customers at this location.
- SR Administration did not consider the earnings on movement of containers from Tondiarpet hub (ICDT) to Shalimar and Tughlakabad under hub and spoke system[84] from Salem Market DCT.

[82] June and August 2016
[83] Only three CRTs (Melpakkam, Milavittan and Panambur) out of 24 had carried traffic
[84] Under hub and spoke system, a terminal is treated as hub and enables long lead services through short lead traffic collections using road and rail shuttle services by CONCOR. The same facility is not available with the Railways operating CRT.

- CONCOR continued to be the lone customer at the newly notified CRT at Salem Market even after a lapse of three years. No other private container operator offered traffic.

- There was no loading from this new CRT during 2016-17 and 2017-18. There is a possibility that the traffic has moved to road.

Railway Board in their reply stated (24 January 2019) that the decision to notify Salem Market DCT as CRT was in consonance with the principles of the new regime. They stated that other CTOs expressed willingness to operate from Salem Market DCT. Therefore, it was their duty to create a level playing field wherein all CTOs could operate. Taking into consideration the poor performance of CONCOR, SR decided to notify it as CRT. They, however, accepted that lack of stacking facility for containers/ cargo at Salem Market DCT affected the booking of loaded containers. They also stated that the proposal of SR requesting permission to allot unused railway land at Salem Market DCT to CTOs was under consideration. This would facilitate outward loading without additional cost to the CTOs.

Thus, the decision to convert CONCOR DCT at Salem Market to CRT by Southern Railway without ensuring the availability of container or cargo storage and stacking facility, which was critical for successful running of CRT, was injudicious.

Southern Railway also lost the opportunity to earn the revenue on account of haulage charges and license fee from CONCOR which was accruing to them before conversion as CRT.

2.5 Twelve Zonal Railways[85]: Non-recovery of penal interest from the Nationalized Banks for delayed payment of license fee

Zonal Railways entered into with Nationalised banks for installation of ATMs at stations. They, however, failed to incorporate suitable penalty clause in the agreement for delayed payment of licence fee. As a result, 12 Zonal Railway could not recover penal interest of ₹ 7.81 crore for the period from 2012-13 to 2017-18. Three Zonal Railways also did not recover license fees of ₹ 94 lakh for installation of ATMs at railway stations.

Railway Board instructions[86] to Zonal Railways allows installation of Automated Teller Machines (ATMs) by Nationalised banks at different categories of stations. Railways charge license fees from the bank for the land provided for installation of ATMs. The licesees (Banks) are liable for payment of damages up to ₹ 5,000 per default for late payment of dues to Railways up to 10 days. Further, instructions[87] clearly specified levy of penal interest at a uniform rate of 18 *per cent* per annum in case of delayed payment of license fees.

Audit reviewed the records of 36 Divisions of 12 Zonal Railways. Audit noticed that Railways did not incorporate suitable penalty clause in the Agreements with the Banks for levy of penal interest[88] for late payment of license fees. This resulted in non-recovery of penal interest of ₹ 7.81 crore[89] for the period from 2012-13 to 2017-18 (up to August 2018). Audit further observed that three Zonal Railway[90] also did not recover license fee of ₹ 94 lakh for installation of ATMs at different categories of railway stations.

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[85] SWR, SCR, ECoR, WR, NER, SR, NCR, SER, CR, NR, ECR and NFR
[86] Para 29 of Commercial Circular 3 of January 2001
[87] Commercial Circular No. 39 of 2012
[88] at the rate of 18 *per cent* per annum
[89] SWR – ₹ 59.11 lakh, SCR – ₹ 5.09 lakh, ECoR – ₹ 14.60 lakh, WR – ₹ 17.58 lakh, NER ₹ 53.44 lakh and ₹ 21.80 lakh (licence fee), SR – ₹ 61.12 lakh, NCR – ₹ 68.34 lakh and ₹ 7.16 lakh (license fee), SER – ₹ 11.73 lakh and ₹ 64.61 lakh (license fee), CR – ₹ 83.36 lakh, NR – ₹ 342.14 lakh, ECR – ₹ 12.35 lakh and NFR – ₹ 52.21 lakh.
[90] NER, NCR and SER

In response, South Western Railway stated that there was no provision in the Agreements for levy and remittance of 18 *per cent* penal interest for late payment of License Fees. They stated that a letter would be addressed to concerned Bank Managers to remit the interest for late payment. The replies from other Zonal Railways was however, awaited.

Audit is of the view that the Banks would not be legally bound to pay penal interest with retrospective effect in the absence of such provision in the agreement. The chances of remittance of penal interest ₹ 7.81 crore by the Banks are therefore, remote.

Further, agreement for operation of ATMs shall remain in force for a period of five years and extendable for a further period on mutually agreeable terms. Audit observed that execution of agreement with Banks by the Zonal Railways for extension of currency for operation of ATMs, were inordinately delayed. Railways also did not add the penalty clause while extending the agreements.

Thus, Commercial department of Zonal Railways failed to add appropriate penalty clause in the agreements for installation of ATMs at stations. As a result, penalty ₹ 7.81 crore for late payment from banks could not be recovered.

There is a need to fix responsibility for failure to include penalty clause in the agreement for late payment of license fees.

The matter has been referred to Railway Board on 4 January 2019; their reply has not been received (30 September 2019).

2.6 West Central Railway (WCR): Loss of revenue due to charging of lower freight than Normal Tariff Rate (NTR) of class LR1

As per Railway Board's directives, in case of mixed commodities, freight should be charged at the rate applicable to the higher class of the commodities. Further, minimum chargeable freight of the rake should not be less than the Normal Tariff Rate (NTR) of Class LR 1, after giving all the necessary eligible concessions. Audit observed that in Goods Sheds/ Kota of WCR, freight is being charged at lower rate than the NTR of Class LR 1 in case of mixed commodities. This led to short recovery of freight charges of ₹ 8.49 crore during July 2015 to June 2018.

In June 2014, Railway Board issued directives[91] for operation of various freight incentive schemes including Incentive Scheme for Freight Forwarders (ISFF). The objective of this scheme was to facilitate cargo aggregation and expansion of the commodity basket of the Railways. The scheme was revised in June 2015[92] with some modifications. As per the provisions[93], that minimum chargeable freight rate should not be less than Normal Tariff Rate[94] (NTR) of Class LR 1 (after considering all concessions). Under this scheme, the prescribed conditions for charging of freight are as follows:

Table 2.3 - Conditions for charging of freight

Particulars		No. of wagons	Freight Rates
A	Individual wagons loaded with a single commodity	Any number of wagons	Train load rate for each wagon for the commodity loaded
B	Individual wagons loaded with two commodities	Any number of wagons	Train load rate for each wagon for the higher class of the two commodities loaded
C	Individual wagons loaded with more than two commodities	Not more than 10 wagons	Composite class rate of 120

[91] Rate Master Circular No. TCR/1078/2014/02 dated 13 June 2014 (Rates Master Circular FIS/2014/0)
[92] letter No. TCR /1078/2014/02 dated 16 June 2015 (Rates Master Circular 2015)
[93] Para 2.3 (Floor Rates) of Rate Master Circular 2015
[94] NTR refers to the total charges for transport for a commodity inclusive of the base rate as published in Goods Tariff plus demand management charges like busy season charge, congestion charge and supplementary charge as applicable on various transportation products

Audit reviewed the records of Goods Shed, Kota. During July 2015 and June 2018[95], 120 rakes were booked under ISFF to Changsari Goods Shed and Baihata Goods Shed for various commodities[96]. Audit noticed that 104 out of 120 rakes loaded in Kota Goods Shed, freight was charged at the rate lower than NTR of Class LR 1. This was not in line with the Railway Board's directives of June 2015, as the rakes were loaded with mixed commodities. Audit assessed short collection of freight of ₹ 8.49 crore due to incorrect charging of freight lower than NTR by Sr. Divisional Commercial Manager/ Kota in WCR.

The matter was referred to Railway Board in September 2018; they stated (05 September 2019) that:

(i) Railway have charged the freight as per the Railway Board's guidelines of November 2014. As per this guidelines, freight of Class LR 1 rate would not be charged for commodities under Class LR 2, LR 3 and LR 4 except in those cases where more than one commodity was loaded in a wagon.

(ii) Any commodity below Class LR 1 should not be charged at higher class under any scheme unless the wagon is loaded with more than one/single commodity.

(iii) The party concerned was granted concession under ISIT (Incentive Scheme for Incremental Traffic) agreement for the period from April 2015 to March 2016 along with the existing ISFF scheme. Railway Board also issued clarification to WCR (August 2019) stating that agreements executed by zonal Railways with their customers based on Rates Master Circular/ 2014 continued to be valid till their currency.

Audit, however, noticed that Rates Master Circular/ 2014 itself stipulated that minimum chargeable freight after all concessions should not be less than NTR of Class LR 1. The was mentioned for both the schemes viz.,

[95] till 19 June 2018

[96] Lignite Powder, Maize, Carboxy Methyl Cellulose, Ceramic tiles, Kota Stone, Putti, PVC Powder, Sugar candy, Sodium Sulphate, D.O.C, Snacks, Gram husk, Groosri

ISIT and ISFF. The same clause was reiterated in the revised Rates Master Circular/ 2015, wherein all existing concession schemes had been discontinued except ISFF. Further, Railway itself stated that the agreement for the concession under ISIT scheme was valid up to March 2016.

Thus, charging of freight below NTR of Class LR 1 was not correct as per the Rates Master Circular of 2014 and 2015.

2.7 East Central Railway (ECR): Underloading of caustic soda lye in higher volumetric BTPN wagons

BTPN wagons have volumetric capacity of 1.82 times to that of BTCS wagons. In ECR, BTPN wagons were underloaded by almost one tonne per wagon. These were also charged as per the stencil carrying capacity of BTPN wagon, which was meant for POL traffic. However, there is scope of carrying more caustic soda in BTPN wagons, a non-POL product having higher volumetric capacity. There is a need to revise the carrying capacity of the BTPN wagons which are used for carrying caustic soda lye and charge freight accordingly.

In ECR, there is regular demand of transportation of caustic soda lye by Grasim Industries Limited siding[97]/ Garwa Road to two sidings[98] at Muri. For carrying of caustic soda lye, siding owner is using BTCS[99] wagons. In addition, siding owner is also indenting to Railways for BTPN[100] wagons for transportation of caustic soda lye. BTPN wagons are meant for carrying only petroleum products, which is highly inflammable and have a low specific gravity in comparison to caustic soda. Further, in BTPN

[97] Owned by Aditya Birla Company Limited
[98] Hindalco Industries Limited and M/s Utkal Alumina International Limited
[99] Bogies Tank Caustic Soda wagons meant for carrying caustic soda lye
[100] Bogie Tank wagons for loading of Petrol, Naphtha & other Petroleum products

wagons, for carrying POL products, air space of not less than five *per cent* of the capacity of the wagon is required to be left[101].

Since June 2014, as per the request of siding owner, Railways were providing one rake of 30 to 36 BTPN wagons for carrying caustic soda lye between Garwa Road and Muri. BTCS wagon has a volumetric capacity of 38.75 cum and caustic soda lye was being loaded up to 55.28 tonnes. On the other hand, BTPN wagons have a volumetric capacity of 70.40 cum, which was 182 *per cent* of the volumetric capacity of BTCS wagon. Audit, however, observed that caustic soda was loaded in BTPN wagons up to 54.28 tonne only[102]. This was because 54.28 tonne was stenciled carrying capacity (CC) of BTPN wagon. Hence, freight for BTPN wagons is being charged at stencil CC (54.28 T) of BTPN wagon. Further, there is no supervision by the Railways for checking weight of loading in these wagons and sender's declared weight was accepted.

Thus, BTPN wagons, having volumetric capacity of 1.82 times to that of BTCS wagons, were being underloaded by one tonne per wagon. However, there is scope of carrying more caustic soda in BTPN wagons, a non-POL product having higher volumetric capacity.

The matter was referred to Railway Board in September 2018, they stated (February 2019) that BTPN wagons have been inducted in the Garwa Road-Muri section to capture caustic soda lye traffic from roadways to railways. They further stated that as no railway staff has been posted in the siding, supervision of loading by Railway staff is not feasible and all over Indian Railways, BTPN wagons are loaded and freight is being charged on sender's weight only.

Railway Board's reply is, however, silent about volumetric capacity of BTPN vis-à-vis BTCS. They have not furnished reasons for charging the BTPN wagons as per stenciled CC which was meant for carrying POL

[101] As per IRCA Red Tariff no.20 effective from 16 August 2000, petroleum being highly inflammable, air spare not less than 5 *per cent* of capacity of tank wagon is required to be left for carrying it.
[102] As per the sender's declared weight for loading of caustic soda lye.

traffic. Audit is of the view that there is scope of carrying more caustic soda lye than is being loaded and charged.

It is recommended that Railway Board may examine the issue and revise the CC of the BTPN wagons which are used for carrying caustic soda lye. This will ensure optimum utilization of BTPN wagons and charging of freight accordingly.

2.8 East Central Railway (ECR): Non-levy/ collection of shunting, demurrage and detention charges

ECR failed to levy shunting charges of ₹ 8.08 crore on three coal sidings. Demurrage and detention charges of ₹ 21.51 crore was also yet to be recovered from these sidings.

In November 2004, Railway Board decided that wagons which are found to be overloaded beyond the permissible limits at the loading point, will be adjusted by the consignors before Railway Receipt (RR) is issued and *demurrage charges* will accordingly be levied for detention of the rake till the weight is adjusted.

Railway Board further directed (March 2007) that where load adjustment/ detachment had to be resorted to, *detention charges* from the time of completion of weigthment to the time of completion of load adjustment/ detachment, would also be realized in addition to the *demurrage charges*. Railway Board fixed (September 2011) a penalty of ₹ 5000 as *detention charges* per overloaded wagon in case of detection of overloading at originating point.

Further, as per Railway Board's Rates Master Circular of July 2014, if a railway locomotive is utilized for load adjustment, *shunting charges* would also be leviable as per extant guidelines.

In respect of three Coal Sidings of Central Coalfields Limited (CCL) and Monet Daniel Coal Washery Pvt. Ltd. (MDCW) at Khalari station over Dhanbad Division of ECR, Audit observed the following:

- Load adjustment was carried out for 1281 rakes handled during the period February 2014 to March 2016. Bills of to ₹ 14.56 crore against demurrage and detention charges were preferred by Station Superintendent, Khalari (ECR) to CCL and MDCW in November 2016. This amount was yet to be received by ECR;
- Load adjustment was carried out for 846 rakes handled during the period April 2016 to March 2018. However, bills of ₹ 6.95 crore for demurrage and detention charges were not raised by ECR on CCL and MDCW. On this being pointed out by Audit, Station Superintendent, Khalari (ECR) raised bills of ₹ 6.95 crore in September 2018; and,
- Two multi electric locos were utilized for carrying out load adjustment of rakes for the period February 2014 to March 2018. Bills of ₹ 8.08 crore for shunting charges were also not raised by ECR on CCL and MDCW.

Thus, as of May 2018, ECR was yet to recover demurrage and detention charges amounting to ₹ 21.51 crore. Further, bills of ₹ 8.08 crore for shunting charges for the period February 2014 to March 2018 were yet to be raised by ECR.

There is a need to fix responsibility on officers responsible for late/ non rasing of bills demurrage/ dention and shunting charges. Railways also need to expedite the process of recovery of dues on this account.

The matter was referred to Railway Board on 18 September 2018; their reply has not been received (30 September 2019).

2.9 Northern Railway (NR): Loss of revenue due to non-realization of empty haulage charges and stabling charges for the flat wagons owned by CONCOR

NR did not follow Railway Board's instructions regarding levy of empty haulage charges and stabling charges for flat wagons of container operators. Consequently, Railways suffered a loss of revenue of ₹5.72 crore.

Railway Board issued (July 2008) instructions[103] for recovery of haulage charges at prescribed rates from all operators including CONCOR (Container Corporation of India) for movement of containers in privately owned wagons. Haulage charges for empty flat wagons[104] are also fixed and revised by Railway Board from time to time[105]. Further, when a party is unable to receive privately owned stock in its siding beyond permissible period or declines to accept such stock at its siding, stabling charges are levied. These are levied for detention of privately owned stocks at Railway premises beyond four hours[106]. The rates for recovery of stabling charges are also prescribed by Railway Board from time to time[107].

Audit observed that CONCOR owned 4,050 Flat Wagons were received at Khanalampura Goods Yard/Saharanpur/ Northern Railway between October 2008 and September 2014. These Flat Wagons were hauled from 91 stations of three Zonal Railways[108] to Khanalampura Goods Yard without issue of Railway Receipts (RRs). Empty haulage charges were

[103]Railway Board's letter No.2008/TT-III/73/8 dated 01.07.2008
[104] Flat wagons are wagons on which the containesr are carried. Once the containers are unloaded, the flat wagons are returned empty.
[105]Freight Rate Circular No. 37 of 2009-effective from 01.07.2009, 32 of 2010-effective from 01.01.2011, 34 of 2012-effective from 01.12.2012 and 03 of 2013-effective from 01.04.2013
[106] Stabling charges shall be levied only where the detention of the rolling stock is stabled for a period in excess of four hours. {Refer Para 7.6.1 of Concession Agreement between Railway Administration and Concessionaire (2006) and 7.12.1 of Concession Agreement between Railway Administration and Special Freight Train Operator (2012)}
[107]Freight Rate Circular No.97 of 2006-effective from 01.12.2006, Corrigendum to Freight Rate Circular No.97 of 2006-effective from w.e.f. 01.02.2008 and Railway Board's letter No.TC-I/2005/201/2/Pt. R dated 22.03.2013 and effective from 01.04.2013
[108] Northern Railway-87 stations, North Central Railway-03 stations and Western Railway-one station

also not collected by the Forwarding (Originating) stations. Reasons for dispatching the flat wagons without preparing the RRs were not on records. When the 'Forwarding stations' did not recover empty haulage charges, Receiving (Destination) station (i.e. Khanalampura Goods Yard) should have realized[109] empty haulage charges for these flat wagons. However, Khanalampura Goods Yard authorities did not raise debits for recovery of empty haulage charges from CONCOR for the flat wagons hauled during October 2008 and September 2014.

Non-realization of empty haulage charges by both Forwarding and Destination stations resulted in loss of revenue of ₹ 3.27 crore. Audit also noticed that empty haulage charges were levied and recovered from CONCOR during the period prior to October 2008 and after September 2014.

It was further observed that 2,810 CONCOR owned Flat Wagons[110] were stabled in Railway premises at Khanalampura Goods Yard/Saharanpur/ Northern Railway. These were stabled for one to 307 days beyond the free time of four hours during January 2008 to April 2011 and July 2013 to January 2014. However, bills for stabling charges for the Flat Wagons (beyond free time) were not raised by the Sr. Divisional Commercial Manager/ Ambala Cantt. against CONCOR. NR suffered a further loss of revenue of ₹ 2.45 crore as these bills were not raised. Audit further observed that stabling charges after January 2014 were being recovered from CONCOR.

In reply, Traffic Accounts/ Northern Railway, stated (June 2014 and May 2017) that Originating (booking) stations, where rakes were allowed to move without preparation of RRs, were responsible to levy empty haulage charges. Regarding stabling charges, Sr. Divisional Commercial Manager/ Ambala Cantt. stated (November 2016) that there were no clear instructions to Saharanpur Goods Shed to realize stabling charges. They,

[109] Para 1811 of Indian Railway Manual for Commercial Department (Volume II)
[110] received from 84 stations of Northern Railway and three stations of North Central Railway

however, accepted that stabling charges of ₹ 0.81 crore had not been levied in some cases pertaining to period January 2010 to April 2011.

Audit, however, observed that there were clear instructions of Railway Board to realize empty haulage charges. It was the responsibility of receiving station to recover undercharges, when the originating (booking) stations failed to levy empty haulage charges. Thus, there was non-compliance of Railway Board's instructions by Traffic authroties. This resulted in loss of revenue of ₹ 5.72 crore towards empty haulage charges and stabling charges from CONCOR.

The matter was referred to Railway Board on 12 September 2018; their reply has not been received (30 September 2019).

2.10 North Eastern Railway (NER): Non-realization of staff cost from siding owners

NER Administration failed to raise bills against seven siding owners, in contravention to Railway Board instructions and contractual provisions. This resulted in non-realization of ₹ 6.91 crore towards staff cost from the sidings owners for the period from April 2014 to June 2018.

As per provisions[111], Railways are required to recover staff cost from siding owners. Further, in January 2012, liberalisation of siding rules provided that in all private sidings other than 'Engine on Load', barring the cost of one commercial staff per shift, Railway shall bear the cost of all other railway staff[112].

In August 2016, Railway Board reiterated[113] that the party (siding owner) shall bear the cost of one commercial staff per shift or as decided by the Railway, depending upon the work load. After notification of the siding by the Railways, divisional authorities would advise the party to deposit cost

[111] Railway Board Circular no.99/TC(FM)/26/1 dated 20 September 2000
[112] Railway Board Circular no.99/TC(FM)/26/1 Pt. II dated 30 January 2012
[113] Railway Board Circular No. 11 of 2016 dated 22 August 2016

of the commercial staff estimated for 10 years' period. This would facilitate commercial functioning of the private siding.

The issue of deficiencies in recovery of cost of commercial staff posted at the sidings was earlier raised in the Audit Report[114]. Ministry of Railways, in their Action Taken Note, had stated (July 2017) that the bills were regularly raised and the Zonal Railways have been advised to recover all the outstanding dues as per the provisions. Audit, however, noticed that irregularities in regard to non-raising of bills/ non-recovery of dues from siding owners towards staff cost are continuing.

Audit reviewed (May 2017) the records of seven sidings of NER. Audit observed that the concerned commercial department of the divisions had not raised the bills towards cost of commercial staff as per rules. This resulted in non-recovery of the staff cost of ₹ 6.91 crore from these siding owners as detailed below:

Table 2.4 – Details of outstanding amount against seven sidings in NER

S. no	Name of siding	Serving station/ Division	Period	Amount due for recovery (₹ in crore)
1	Century Pulp and Paper (CPP) Siding	Lalkaun	April 2014 to June 2018	1.28
2	Indian Oil Corporation Ltd. (IOC) siding	Lalkaun	April 2014 to June 2018	0.93
3	Bharat Petroleum Corporation Ltd. (BPCL) siding	Baitalpur	April 2014 to June 2018	1.28
4	Food Corporation of India (FCI) siding,	Gonda-Katchehery	April 2014 to June 2018	0.97
5	Bharat Petroleum Corporation Ltd. (BPCG) siding	Gonda-Katchehery	April 2014 to June 2018	0.97
6	Food Corporation of India (FCI) siding,	Gorakhpur Cantt.	April 2014 to June 2018	0.97
7	Bajaj Hindustan Limited	Paliakalan	April 2014 to December 2016	0.51
			Total	**6.91**

Audit also noticed that an amount of ₹ 1.23 crore was due towards staff cost for the period 2007 to 2015 from BPCL, Baitalpur. Commercial

[114] In Chapter 2 of Audit Report No. 24 of 2015 (Railways) Volume 1

Department in NER however, recovered[115] only ₹ 22.69 lakh against the total staff cost from the siding owner. Further, the bill raised for staff cost was partial. Railways had taken into account only pay and allowances and two shifts of commercial staff, instead of taking into account all the components of staff cost[116].

In reply, Sr. DCM, Izzatnagar division intimated that no commercial staff were posted inside the siding premises and hence the question of recovery did not arise.

Audit, however, observed that the Commercial Department regularly carries out various commercial activities[117] in the sidings. These commercial activities are being provided with the assistance of commercial staff posted at respective serving stations. As such, Sr. DCM should have raised bills and recovered amounts towards cost of at least one commercial staff per shift from siding owners.

On this being pointed out by Audit (August 2018), the Ministry stated (July 2019) that the bills for the staff cost were raised by Railway for the period of 2007-15 and an amount of ₹ 1.38 crore has been recovered from BPCL, Baitalpur the siding owner. Bills have also been raised by the Railway for the years 2016-18 and the party has been asked to deposit the same. The Ministry further stated that keeping in view the policy guidelines and provision of agreement, instructions have been issued by NER to concerned divisions to raise the bills for recovery of staff cost. However, on verification of the recovery particulars, it has been noticed that an amount of ₹ 99.88 lakh only was recovered against ₹ 1.38 crore from the BPCL, Baitalpur siding for the period 2007-15.

[115] September 2010 and June 2013
[116] like pay and allowance, contribution towards leave salary, provident fund, gratuity etc.
[117] collection of railway receipt, checking of freight, distance, load (number of wagons and their actual weight), realisation of applicable charges, arrangement of unloading of consignment, realisation of applicable demurrage charges etc.

2.11 East Central Railway (ECR) and Northern Railway (NR): Non-levy of siding charges from the siding owners

As per Railway Board's directives/ circulars, two sidings in ECR and NR did not qualify for charging of freight on through distance basis[118]. However, siding charges were not levied by the Zonal Railways on two sidings. This resulted in loss of ₹19.74 crore for the period July 2013 to March 2018.

Railway Board prescribed (June 2010) the following criteria on which sidings were to be notified for charging freight on through distance basis:

(i) Traffic should be train load,

(ii) Traffic should go into the siding directly or indirectly with the engine pulling or pushing,

(iii) There should be no detention of engines except for change of engine, and

(iv) No separate shunting staff is required exclusively for this purpose.

Bokaro Thermal Power Siding (BTPS) is a private siding of Damodar Valley Corporation (DVC) served by Jarangdih Station of Dhanbad Division of ECR. Audit observed that

- At BTPS siding, rakes are placed/withdrawn with the help of shunting staff. As per muster roll of Bokaro Thermal station four shunt men are exclusively kept for the placement/ withdrawal of rakes.
- Rakes are placed with the help of two railway engines and after placement of rake in the siding one engine is returned back to serving station (Jarangdih). Another engine is attached in the rake with load in the siding for placement of rake in part on the hopper for unloading.
- The unloading in above siding is done on hopper, where only 11 wagons can be unloaded at a time. Once the 11 wagons become empty, another 11 loaded wagons are pushed to the hopper. After completion of unloading of this part, the same is pushed up to another

[118] The sidings are charged freight as per the distance travelled by the rake. The siding owners gets benefit of telescopic rates when he is charged freight on through distance basis i.e. from the origin point to destination in siding and not the serving station.

line of siding yard. Rest one third part of the rake is brought to the hopper and unloaded. This part is also pushed to the same line where previous empty wagons are standing. Thereafter, full empty rake is drawn out from the siding.

In the above process, starting from placement of rake, shunting work inside the siding and to draw out the rake, the service of one shunting staff is exclusively being utilized. Therefore, BTPS siding does not qualify for charging of freight on through distance basis and siding charges are leviable. However, freight charges were being charged on through distance basis and siding charges were not being levied by Sr. Divisional Commercial Manager, Dhanbad. Audit assessed the loss of ₹ 8.99 crore due to non-levy of siding charges for the period July 2013 to March 2018.

In reply, ECR Administration stated (November 2018) that the shunting staff were at Bokaro Thermal Power Station for the requirement of station. They were also utilized same time for loco attachment/ detachments at the siding, but they were not posted exclusively for shuting purpose in the siding. They further stated that siding authority has no enginer and on request, Railway enginer was utilized for shuting purpose on payment of shunting charges. As such, charging of freight on through distance basis was not applicable for this siding.

Audit, however, observed that as per layout of the siding, rake could not be placed without help of shunt man. Also the shuting engine was being used in the siding for placement, withdrwal and unloading of goods. As such, the Railway Board's orders of June 2010 itself required charging the freight on through distance basis.

In another case in NR, the container traffic for the Gateway Rail Freight Limited (GRFL) siding is received at Sanahwal station (serving station of the siding) of Firozepur division. Audit noticed that the rakes were detained at the serving station beyond the permissible time before placement in the siding. The movement of rakes from serving station to the siding involved shunting by separate staff. The engine was detained in

addition to the detention due to change of end. As such, in terms of laid down criteria, the siding does not qualify of charging of freight on through distance basis and siding charges should be leviable. However, the traffic to and from GRFL siding has regularly been booked on through distance basis and no siding charges were recovered by Sr. Divisional Commercial Manager, Firozepur (NR).

Audit further noticed that a Committee formed (February 2013) by NR Administration to look into the issue of levy of siding charges. This committee recommended (March 2013) the basis for levy of siding/ shunting charges. They suggested that siding/shunting charges would be levied in sidings where

- there is no direct reception or dispatch from/to the siding; and
- exclusive shunting staff is required for placement and removal of rakes from/to the siding.

However, Audit found that no action was taken in the matter by NR Administration. Audit assessed the loss ₹ 10.75 crore on account of non-levy of siding charges for the period July 2013 to March 2018.

Thus, ECR and NR suffered avoidable loss of siding charges of ₹ 19.74 crore during the period from July 2013 to March 2018 in two sidings. There is a need to fix responsibility on officers responsible for non-rasing of bills for siding charges. Railways need to take immediate action to levy and recover siding charges.

The matter was referred to Railway Board on 30 October 2018; their reply has not been received (30 September 2019).

2.12 South Central Railway (SCR): Non-levy and short levy of service tax on taxable auxiliary services

In September 2012, Railway Board issued instructions on the issue of levy and collection of service tax on transportation of goods, passengers and auxiliary services. However, SCR Administration failed to include parking contracts at stations, leasing by catering department, commercial lease of stalls in stations etc. in the list of auxiliary services identified in the Joint Procedural Order issued by them. SCR also failed to levy full service tax on 'Lease of space in parcel vans'. This resulted in non-levy/ short-levy of service tax ₹ 41.85 crore for the period October 2012 to March 2017.

Service tax is leviable[119] on all services other than the services specified in the negative list under Section 66D. Accordingly, Railway Board issued instructions (September 2012) on the issue of levy and collection of service tax on transportation of goods, passengers and auxiliary services[120] rendered by the Railways. SCR issued a Joint Procedural Order (No. 1 of 2013) in October 2013 identifying auxiliary services on which service tax was to be levied.

Audit observed that SCR Administration failed to include parking contracts at stations, leasing by catering department, commercial lease of stalls in stations etc. in the list of auxiliary services identified in the Joint Procedural Order issued by them. These services were taxable under the service category 'Renting of immovable property i.e., leasing of space' as per Notification No. 25/ 2012-Service Tax dated 20 June 2012. Further, though interest and maintenance charges were taxable as per the JPO, service-tax was not levied by SCR Administration. Audit assessed non-

[119] Section 66B of the Finance Act (1994 amended) effective from 1 July 2012

[120] Selling of space or time slots for advertisements, services by way of motor vehicle parking to general public, services by way of public conveniences such as provision of facilities of bathroom, washrooms, lavatories urinal or toilets, services by way of renting of a hotel, inn, guest house, club, campsite or other commercial places meant for residential or lodging purposes, having declared tariff of a unit of accommodation below rupees one thousand per day or equivalent.

levy of service tax of ₹ 30.24 crore in respect of these services for the period from October 2012 to March 2017.

In addition, 'Lease of space in parcel vans' which constituted a declared[121] service viz., supply of tangible goods, was erroneously treated as 'transportation of parcels'. This resulted in short levy of service tax of ₹ 11.61 crore due to allowing abatement provided for 'transportation of parcels'.

Thus, Sr. Divisional Finance Manager/ SCR failed to collect service tax amounting to ₹ 41.85 crore on taxable auxiliary services.

In reply, Railway Board (January 2019) stated that parking contracts at stations are awarded to the licensees on payment of license fee to provide the parking facilities to the Rail users on payment of specified parking charges. Service Tax is not applicable for parking contracts as per JPO 01/ 2013. Hence question of levying of Service Tax does not arise.

Audit, however, noticed that in terms of Service Tax Act[122], the renting of immovable property shall constitute declared as service. Hence, renting/leasing/licensing of immovable property belonging to Railways to different persons for parking, catering, book stall, ATM, STD-PCO, leasing of plots and renting of buildings would fall under the category of 'Renting of Immovable Property Service' and they are liable to pay service tax.

Regarding 'Lease of space in parcel vans', Railway Board stated (January 2019) that there was no 'transfer of right' or leasing of any infrastructure involved under the parcel leasing scheme. Rather, only parcel capacity was kept reserved for 'transportation of parcels' by a private operator. As such, Railway's activities of providing parcel space to the private operator for 'transportation of parcel on lease' basis did not come under the purview of service tax. Audit, however, observed that treating this charges as "transportation of parcels" was not correct. The service or

[121]As per Section 65B of Finance Act, 1994, declared services means any activity carried out by a person for another person for consideration and declared as such under the Section 66E.

[122] Chapter IV of Finance Act 1994, Section 66E

"transportation of parcels" is offered by the lease holder and not Railways. The amount collected by Railways was thus, lease charges. The exemptions made were not based on any orders issued by the Ministry of Finance. Audit further observed that as per the orders of Central Excise and Custom Commissionerate, sale of space for parcel van and SLRs in various trains of a Rajkot division of Western Railway, were correctly classified under 'Supply of tangible goods' and service tax was leviable.

Chapter 3 - Engineering

Member Engineering at Railway Board is responsible for maintenance of all fixed assets of Indian Railways such as Tracks, Bridges, Buildings, Roads. In addition, construction of new assets such as new lines, gauge conversion, doubling and other expansion and developmental works are also undertaken by him. He is assisted by Additional Member (Civil Engineering), Additional Member (Works) and Advisor (Land & Amenities).

At Zonal level, the Engineering Department is headed by Principal Chief Engineer (PCE). He is assisted by various Chief Engineers for maintenance of Tracks, Bridges, Buildings, Roads etc. Each Zonal Railway also has a construction organization headed by a Chief Administrative Officer (Construction) who is responsible for major construction works of Zonal Railway. He is assisted by various Chief Engineers (Construction).

In 2017-18, the total expenditure on repair and maintenance of assets[123] by Indian Railways during the was ₹ 13,947.38 crore[124]. Indian Railways also incurred an expenditure of ₹ 38156.76 crore[125] on creation of new assets[126]. During the year, apart from regular audit of vouchers and tenders, audit of 1746 offices of Engineering department including Construction Organization was conducted.

This Chapter includes 19 individual paragraphs. These paragraphs highlight issues that relate to construction and utilization of limited height subway, short recovery of cess from contractors, discrepancies in execution of contracts, delay in execution of works and non-recovery/short recovery of land license fee.

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[123] Permanent way and works, bridges, tunnels, roads, sanitation and water supply etc. including plant and equipment

[124] Sub head 3002-3003 (02) - Repair and maintenance of Permanent Way and works and repair and maintenance of plant and equipment during 2017-18

[125] Sub head 5002-5003 – Assets – Acquisition, construction and replacement

[126] new line, doubling, gauge conversion, traffic facility works, track renewal works, bridge works, level crossing and passenger amenities works

3.1 South East Central Railway (SECR): Construction and utilization of Limited Height Subway (LHS)

LHS were constructed without adhering to the prescribed norms, where density of train vehicle unit was very low. These were also constructed at locations very near to diversion road under/over bridges, and thus were not used. As such, Railways incurred an expenditure of ₹ 18.63 crore without any fruitful results. Drainage system was either not constructed or partially constructed in many LHS. Proper feasibility study was not conducted before constructing these LHS. This led to water logging and the LHS remained closed/were not utilized. Railways assigned the responsibility for maintenance related works to respective the State Governments. However, the same was not acknowledged by the State Governments and the issue remained unresolved. A number of accidents took place at locations where LHS remained unused/closed due to water logging and road travellers tried to cross tracks.

Level Crossings (LCs) facilitate smooth running of traffic in a regulated manner. They also pose a major challenge in the operation of safe running of trains. The highest number of fatalities in Railways occurs due to accidents at unmanned level crossings[127]. As per Indian Railways Vision 2020, nearly 70 *per cent* of the fatalities in railway mishaps take place at UMLCs. Thus, LCs are vulnerable points for accidents. Railways remove UMLCs by building Road Over Bridges (ROBs), Road Under Bridges (RUBs), Limited/Normal Height Subways (LHSs/NHSs) and through other prescribed methods.

In November 2006, Railway Board issued orders regarding elimination of level crossings by construction of limited use subways. The order stated that at many locations, the traffic consist of light vehicles, two wheelers etc. This can be catered by providing subways of limited height, which are

[127] White Paper-Indian Railways (February 2015)

economical. Zonal Railways were directed to identify such unmanned/ manned level crossings, which can be eliminated by construction of limited use subways. This was to be done selectively with the personal approval of General Manager at critical locations. The following issues were to be taken into considerations:

1. ***Safety consideration***: Accident vulnerable LC locations where visibility is poor and elimination of level crossing will increase safety.
2. ***Reduction in number of LCs***: Locations where elimination of LCs will yield substantial operational benefits e.g. where the number of level crossings is large or in suburban sections.
3. ***Site feasibility***: Locations where the embankment height (3 m) is adequate and will not allow collection of water under the bridge and surroundings. In these locations, water table should be low and approach road feasible.
4. ***Train Vehicle Unit***[128]***(TVUs):*** Locations where TVUs are less, but have potential of getting manned or have already qualified for manning.

SECR Administration constructed 159 LHS at 159 locations in Bilaspur, Nagpur and Raipur Divisions during the period from 2011 to 2016. Audit reviewed the work of construction of LHS undertaken by SECR. The objective was to study the justification and site feasibility undertaken before construction of LHS. Agreements entered into with State Government for maintenance of these LHS and problems being faced at the LHS constructed were also reviewed. Audit also studied whether these LHS are being used properly and have been able to reduce the incidence of accidents. Audit findings are discussed below:

3.1.1 Justification for construction of LHS

a. Construction of LHS at LC with very low TVUs

As per provisions, locations where TVU were less but have potential of getting manned or have already qualified for manning should be selected

[128] TVU-Train Vehicle Units/Day (train units x road vehicle units)

for construction of LHS. Railway Board further directed (August 2014) to close UMLCs having nil/negligible TVU.

Audit noticed that in SECR, LHS were constructed without adhering to the prescribed norms. During test check, Audit found that seven LHS[129] were constructed at a cost of ₹ 10.92 crore, where density of TVU ranged between 68 and 321.

In reply, SECR stated (October 2017) that no guidelines had been issued by Railway Board for fixing of minimum TVU for construction of LHS. In this regard, Audit noted that Chairman Railway Board had directed (September 2011) Zonal Railways to eliminate LCs with very low TVUs, (less than 500 or so) by outright closure.

b. Construction of LHS at places where diversion road already existed

Railway Board instructed (May 2010) Zonal Railways to prepare a Master Plan for elimination of UMLCs. One of the methods for elimination of UMLC was diversion of road to other LCs. Audit conducted joint inspections of selected LCs with railway officials.

At LC no. BK-39, the LHS was newly constructed at a cost of ₹ 2.34 crore in 2014. A diverted RUB already existed at a distance of only 134 m from this location. Audit noticed that due to water logging during rainy season, dried up mud had accumulated on the basement of LHS. Vehicles preferred to use the RUB as compared to the LHS.

In reply, SECR stated (October 2017) that LC no. BK-39 was initially eliminated (March 2013) by construction of diversion road through bridge as an interim measure to enhance safety. During peak monsoon, the diversion road becomes unusable due to high water level in the bridge. As such, for safe movement of the road users in all weather, subway was constructed to avoid any mishap. At this LC, the drainage arrangement planned along with LHS work was not carried out by the contractor.

[129] AB-67 (68), AB-35 (110), AB-44 (144), AB-14 (80), GCF-51 (201), BK-105 (296) and BK-106 (321)

Accordingly, the contract was terminated. However, the problem of accumulation of water and mud at this subway is being addressed by making suitable drainage arrangements in 2017-18.

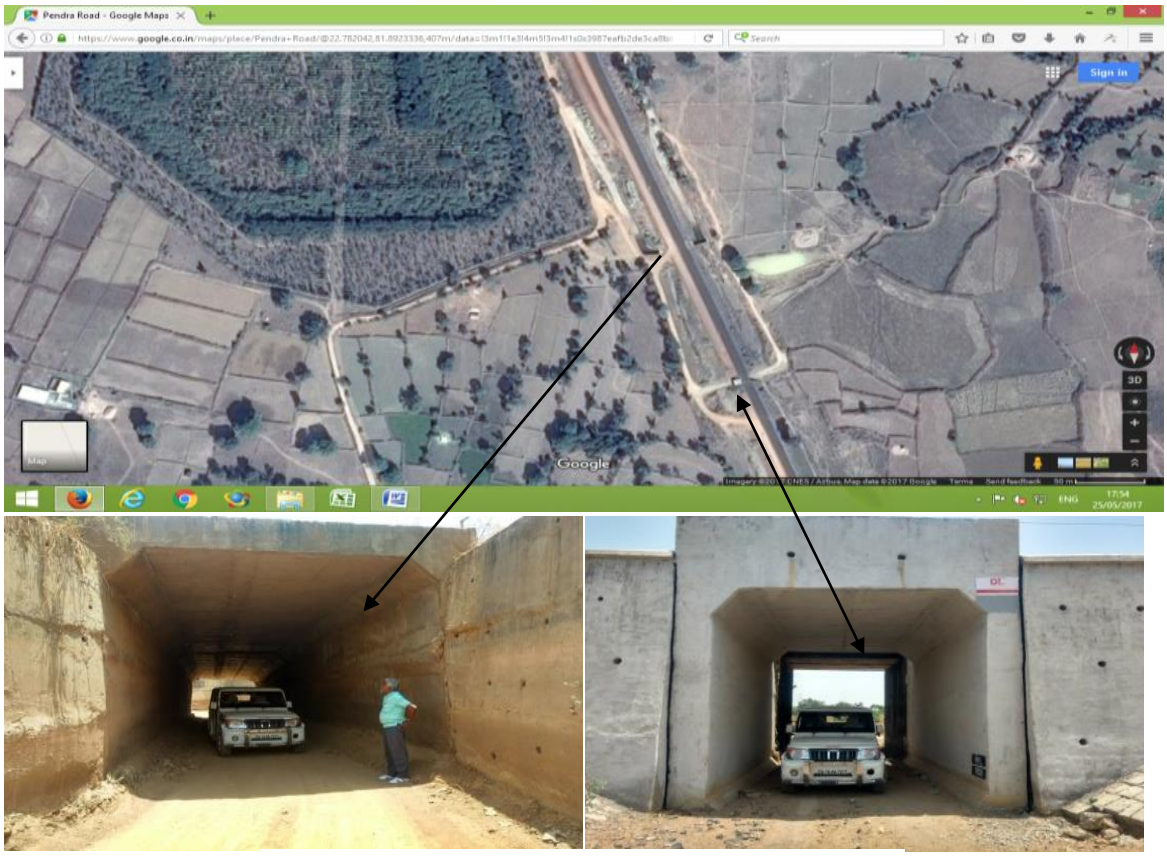

Figure 3.1: Clockwise – Satellite image of BK-39, RUB and LHS

During the joint inspection, Audit noticed that bases of the LHS at the LC were lower than the existing bridge. The drainage system was defective and LHS was more prone to water logging than the existing RUB.

Similarly, at LC nos. AB-23, AB-24, AB-25 and AB-35, LHS were constructed at cost ₹ 5.37 crore, where a diversion RUB already existed. All the LHS were within a distance of less than 304 m from these RUBs. Construction of all these LHS was not justified and in violation of Railway Board's order of May 2010.

In reply, SECR stated (October 2017) that LC nos. AB-23, AB-25 and AB-35 were eliminated initially during 2012-13 by construction of diversion road through nearby bridges.

Figure 3.2: Clockwise - Satellite image of LHS at LC No. AB-23, RUB and LHS

Later on, there was protest by local public demanding for construction of subways due to difficulty in negotiating additional distance of 300 m to 700 m. Also, in case of LC no. AB-23, the slope of the connecting diversion road was very steep. In peak monsoon, when the water level in the bridge increases, passing through the bridges also became unsafe. As such, for safety and providing unobstructed path in all-weather, subways were required to be provided at the above LCs.

They further stated that LC no. AB-24 was eliminated (February 2011) by constructing LHS of 2.50 m height. The height was kept less as movement of heavy vehicles was not there. But, later local public demanded for giving path for heavy vehicles. Accordingly, an alternate path through nearby bridge (at a distance of nearly 30 m) was provided to facilitate movement in dry season.

Figure 3.3: Clockwise - Satellite image of LHS at LC No. AB-25, LHS and diversion RUB

Figure 3.4: LHS at LC No. AB-24 and diversion RUB

Audit noticed that the distances between diversion RUB and closed LCs (nos. AB-24, AB-25 and AB-35) ranged between 24 m and 210 m.

Hence, the contention of SECR that there was difficulty in negotiating additional distance of 300 m to 700 m was not justifiable. At LC no. AB-23, distance of Diversion RUB is 304 m. Moreover, in same section[130], three LCs had been closed either by diversion RUB or by constructing LHS. The distance from closed LCs to diversion RUB/LHS was more than 400 m at LC Nos. AB-40, AB-48 and AB-33. Thus, LHS were constructed without any justification for their requirements.

[130] except LC No.BK-39, Bijuri and Ambikapur

Figure 3.5: LHS at LC No. AB-35, LHS and diversion RUB

3.1.2 Problems faced after construction of LHS

In March 2010, Railway Board remarked that Railways were not constructing LHS if adequate embankment height was not available. They, however stated that with water proofing arrangements[131], LHS can be provided in lieu of most of level crossing. During joint inspection, Audit observed the following:

(a) Non-provision of drainage system - Railway Board's letter (April 2008) envisaged that cost of approaches falling outside Railway boundary, if required, should be borne by the respective State Government/Local authority. Drainage arrangement etc. should also be provided by the State Government/ Local authority. During joint inspection of 18 LHS[132], Audit noticed that 11 LHS were non-gravitational. The water did not drain out automaticaly from these LHS and needed to be drained out by construction of drains, pumps, sumps etc. Further, there was accumulation of water either during rainy season or throughout the year. Audit also noticed that of these 11 LHS, in seven LHS, drainage system was either not constructed or partially constructed.

(b) Accumulation of water in LHS - Railway Board orders (November 2006) considered embankment height of 3 m as adequate, where water table was low and approach road was feasible. It was stated that this would not allow collection of water under the bridge and

[131] Retaining wall along approach ramp, top covering, water harvesting and other local measures
[132] 10 LHS at Bilaspur, four LHS at Raipur and four LHS at Nagpur

surroundings. Further, no RUB/LHS were to be planned where natural drainage is not available[133]. Thus, LHS were to be constructed where there was no accumulation of water or remedial action could be taken to eradicate water stagnation. Audit, however, noted that there was accumulation of water in 39 LHS of Nagpur Division, 11 LHS of Bilaspur Division and seven LHS of Raipur Division. Thus, the site conditions were not correctly reviewed at the time of survey for construction of LHS. Further, proper remedial action was also not taken after construction of LHS as well.

SECR stated that they always tried to provide gravitational drainage wherever feasible in the past. Further, arrangements like retaining wall along approach road, top covering of the approaches and drainage system were provided to avoid entry of water in the subways.

Fig 3.6: Above- Three ponds in the vicinity of the LHS; below-LHS at LC No.DD-51

[133] Member Engineer's and PCE's seminar (December 2016)

By constructing LHS with gravitational drainage, the problem of water logging could have been avoided at a large number[134] of LHS in SECR. Even after construction of retaining wall along approach road, top covering of the approaches etc. there was water logging in several LHS. These LHS remained closed for most of the year, defeating the main purpose of construction. Thus, SECR Administration constructed the LHS without proper feasibility study.

During joint inspection (April 2017 to June 2017), Audit observed the following:

- The sign of water accumulation on the walls of LHS from 1 feet to 8 feet was visible and dried up mud was lying inside the 10 LHS[135]. During rainy season, these LHS remained closed due to water logging.
- LHS no. CG-7 in Bilaspur Division was full of water even during hot, dry summer season. This indicated that dewatering may not be possible during rainy season even after use of pumps due to high seepage of water. Audit found that people continued to cross the closed LC risking their lives.

Fig 3.7: LHS CG-7 under ADEN/CPH full of water looking like a canal (April 2017)

- Water accumulation with mud was also seen in LHS no.286, 294 and 295 of Bilaspur Division during the month of December 2016.
- In Nagpur Division, LC No. GCF-49 could not be commissioned due to water logging. Railway Administration replied (November 2014) that LHS was functional, pumping was done as and when required and the LC is closed.

[134] 39 LHS in Nagpur Division, 11 LHS in Bilaspur Division and 7 LHS in Raipur Division
[135] LHS no.BK-12, TT-6, GCF-57, CG-1, BK-39, 388, 358, DD-16 ,DD-5, AB-16

Fig 3.8: Clockwise - LHS 295 (Dongha Dhakel-Raigarh); LHS 286 (Bhikharimal-Raigarh); LHS 294 (Parsada-Raigarh); and LHS GCF-49 full of water up to the brink-looking like swimming pool (May 2017)

During joint inspection (May 2017) Audit noticed that the LHS was full of water and that the LC was not closed. Railway Administration accepted that there is an irrigation canal near the LHS at GCF-49. They stated that due to the existence of the canal nearby, there occurs heavy sub-surface flow of water resulting stagnation of water in the LHS. Even though, pumping arrangement has been made, due to heavy sub-surface flow of water, draining out of water was not possible. A work for providing natural drainage by construction of 700 m of long drain had been sanctioned to permanently solve the drainage issue at this LC. Another LHS at LC No. 51 in Nagpur Division was processed for plain closure due to water logging, after casting of boxes and base slabs at a cost of ₹ 29.39 lakh. Audit observed that the problem of water logging was brought to notice by the concerned Senior Section Engineer (Works) only after a substantial amount had been spent over the work. Since one of the major concerns of LHS was water accumulation, measuring the level of ground water should have been done during estimation stage.

Thus, LHS were constructed without conducting the proper feasibility study. In several LHS, there was water logging for want of proper drainage facility and thus, these were remained closed/not fully utilized. These are clear cases of lapse on part of railway officials and responsibility need to be fixed on the erring railways officials.

3.1.3 Agreements with State Government for maintenance of LHS

In April 2012, Railway Board, directed all the Zonal Railways that LCs, which did not qualify for sanction of RUB on cost sharing basis[136], could be planned for elimination by subways, if found technically feasible. Railways were to bear the complete initial cost of construction of subway and future maintenance cost of subway proper. State Government was to acquire and provide encumbrance free land free of cost to Railway area, where required. The responsibility for maintenance of road passing through subway, lighting, drainage system, diversion road and any other allied works, was also to rest on the State Government. In this regard, SECR Administration wrote to the Chief Secretary, Government of Chhattisgarh, Maharashtra, Odisha and Madhya Pradesh. In response, Chhattisgarh State Government clarified that maintenance of road passing through subway, lighting, drainage system, diversion road and any other allied works will be done only in Municipal areas. No response was received from other State Governments.

Test check of records showed that none of the selected LHS were found to be under any municipal areas except one[137]. As such, no maintenance was committed by the State Government. In May 2014, SECR requested Railway Board to withdraw the condition for maintenance and other arrangements through the concerned State Government. However, Railway Board did not agree with the proposal.

[136] in terms of Para 925 of Indian Railway Permanent Way Manual (IRPWM)
[137] except in LHS DD-51 under Raipur Division

Audit observed that in Bilaspur and Raipur Divisions dewatering was got done by zonal contractors in respect of seven LHS[138]. In Nagpur Division, the work of dewatering for 20 subways[139] was awarded at a cost of ₹ 25.35 lakh. Therefore, due to faulty construction of LHS and lack of agreement with State Government, SECR had to undertake maintenance and a recurring expenditure on dewatering of these LHS.

Role and responsibility of Railways and the State Governments for construction and maintenance of LHS are required to be revisited. These need to be clearly spelt out. Railway Board should initiate steps to take State Governments on board to commit these costs and prepare a model agreement/MoU for the same.

3.1.4 Accidents at LCs where LHS could not be used

Audit noticed that as per the report of RPF (30 December 2016), an accident took place on 6 December 2016 at the LC no.286. In the report, it was mentioned that though the LC was closed, it was not barricaded. Audit conducted a joint inspection at this LC on 7 December 2016 and noticed that the LHS was filled with water up to brink.

An accident also took place on 13 September 2016 as reported (20 February 2017) by Railways. It was mentioned in the report that there was heavy rainfall on the date of accident and the LHS was flooded with water.

Audit also observed that as per RPF report (31 May 2017), an accident occurred at LC no. BK-12 on 22 May 2014. Audit observed that at the time of accident, construction of LHS was not completed though the scheduled date of completion of the LHS was 11.09.2013.

Railway need to review the cases, where LHS could not be used and people have been forced to use LCs, which pose safety risk for them.

3.1.5 Conclusion

LHS were constructed without adhering to the prescribed norms, where density of TVU was very low. These were also constructed at locations

[138] LHS no. BK-11 in Bilaspur Division and LHS no. 388, DD-11, DD-16, DD-29, DD-42 and DD-47 in Raipur Division
[139] in Gondia-Chanda Fort section under ADEN/Nagbhir

very near to diversion RUBs/ROBs, and thus were not used. As such, Railways incurred an expenditure of ₹ 18.63 crore without any fruitful results. Drainage system was either not constructed or partially constructed in many LHS. Proper feasibility study was not conducted before constructing these LHS. This led to water logging and the LHS remained closed/were not utilized. Railways assigned the responsibility for maintenance related works to respective the State Government. However, the same was not acknowledged by the State Governments and the issue remained unresolved. A number of accidents took place at locations where LHS remained unused/closed due to water logging and road travellers tried to cross tracks.

It is recommended that

1. ***SECR Administration may take steps to make these LHS usable, so that the amount invested by Railways is not wasted and safety of trains and those crossing the railway track is ensured.***
2. ***LHS which are under construction/lying incomplete may be completed at the earliest and respective level crossings may be closed to avoid accidents.***
3. ***There is no agreement between State Government and the Railways to provide drainage facilities by State Government outside the Municipal areas. Railways may initiate action to take State Governments on board to commit these costs.***

The matter was taken up with Railway Board on 2 July 2018; their reply has not been received (30 September 2019).

3.2 All Zonal Railways: Payment of Workers Welfare Cess by the Railways in compliance of Building and Other Construction Workers Welfare Cess Act

Building and Other Construction Workers Welfare Cess Act and Building and Other Construction Workers Welfare Cess Rules were enacted and notified in August 1996 and March 1998 respectively. As an 'Employer' it was the responsibility of the Railways to ensure that the prescribed share (one per cent) of the cost of construction was set aside and deposited with the Worker's Welfare Boards. However, in some cases, Railways deducted only a part of this amount from the contractors (e.g. one per cent of the cost of labour in the contract and not on the material) and deposited the same in the Worker's Welfare Boards. Nevertheless, it was the obligation of the Railways to deposit one per cent of the total cost of the work (which includes labour, material etc.) with Workers Welfare Boards. There was short recovery of Cess from the contractors as Railways were not recovering Cess on the cost of materials supplied by the contractors. Cases were seen where no recovery of Cess was made from the contractors. Cess recovered from the contractors was also not deposited by the Railways to the Workers Welfare Boards within the stipulated period. In the cases test checked in Audit, ₹ 10.24 crore was short recovered from contractors, ₹ 2.28 crore recovered from contractors was not transferred to the Boards and ₹ 12.95 crore was outstanding for payment by Railways to the Boards.

Government of India (GOI) enacted BOCW Regulation of Employment and Conditions of Service (RECS) Act, 1996 (Main Act)[140] and BOCW Welfare Cess Act, 1996 (Cess Act)[141] on 19th August 1996. The objective was to regulate the employment and conditions of service of Construction

[140]Act No. 27 of 1996 (19th August 1996), shall be deemed to have come into force from 1st March 1996

[141]Act No. 28 of 1996 (19th August 1996), shall be deemed to have come into force from 3rd November 1995

Workers and to provide for their safety, health and welfare measures. For implementation of the Act, GOI framed BOCW Welfare Cess Rules, 1998 (Cess Rules) in March 1998[142].

As per provisions[143], Cess shall be levied at such rate not exceeding two *per cent,* but not less than one *per cent* of the cost of construction incurred by the employer (Railways) as the Central Government specify. Further, the proceeds of the Cess so deducted/collected shall be transferred to the Building and Other Construction Board within 30 days of its collection[144]. Rules[145] also provides for levy of interest not exceeding the amount of Cess for non-payment of Cess within the specified time[146].

For implementation of provisions of these Acts, Ministry of Railways directed (July 2008) all the Zonal Railways to include a new clause in the Tender Notice/Tender Documents. In November 2013, the Ministry added[147] a new clause in the General Conditions of Contract for enabling the Railways implementing the same. As per this clause, the tenderers for carrying out any construction work must get themselves registered from the Registering Officer[148]. They have to submit Certificate of Registration issued from the Registering Officer of the concerned State Government (Labour Department). The tenderer shall be levied Cess @ one per cent of cost of construction work which would be deducted from each bill. Cost of material, when supplied under a separate schedule item shall be outside the purview of Cess.

Audit reviewed the status of deduction/collection of Cess from the contractors and their remittance to Workers Welfare Boards (Boards) in all

[142]vide GSR 149(E), dated 26 March 1998
[143]Rule 3 of BOCW Workers Welfare Cess Act,1996
[144]Rule 5 of BOCW Welfare Cess Rules, 1998
[145] Rule 8 of BOCW Welfare Cess Act, 1996
[146] at the rate of two *per cent* for every month or part of a month from the date on which such payment is due till such amount is actually paid
[147]Clause 55 C to the Indian Railways Standard General Conditions of Contract (GCC) vide Ministry of Railways' letter No.2008/CE-I/CT/6 dated 29-11-2013
[148] under Section 7 of the BOCW Act, 1996 and rules made thereto by the concerned State Government.

the Zonal Railways including Railway Production Units. Audit findings are discussed in the succeeding paragraphs:

3.2.1 Non-recovery of Cess from contractors

Ministry of Railways, in July 2008, issued instructions stating that the tenderer shall be required to pay Cess @ one *per cent* of cost of construction work to be deducted from each bill.

In this regard, Audit observed that keeping cost of material outside the purview of Cess was against the spirit of the Cess Act. As per the Act, cost of construction shall include all the expenditure incurred by Employer excluding the cost of land and compensation to a worker or his kin. However, the Railways excluded the cost of material from the cost of construction and did not recover Cess on this amount as observed in the cases checked. The clause added by the Railways in the GCC was also interpreted differently by Zonal Railways and led to non-uniform implementation.

Audit test checked of 711 completed and on-going Works Contracts in various Zonal Railways during 2017-18 and found that:

- In 74 cases[149] in 13 Zonal Railways, no Cess was recovered by the Railway Administration from the contractors. A sum of ₹ 1.85 crore due from the contractors was not recovered and deposited with the Boards.
- In 351 cases[150], there was short recovery of Cess of ₹ 8.39 crore from contractors in all Zonal Railways and RWF.
- In 286 cases[151], Cess was recovered from the contractors in all Zonal Railways and RWF as per rules.

[149]ECoR-09, ECR-06, ER-04, NER-05,NR-07, SER-17, CR-05, NCR-04,NFR-02, SECR-06,SR-02,WR-06,SWR-01

[150]CR-12 (₹ 0.15 crore), ECR-17 (₹ 0.37 crore), NCR-20 (₹ 0.32 crore), NFR-12 (₹ 0.77 crore), NWR-20 (₹ 1.19 crore), SECR-33 (₹ 0.61 crore), SR-27 (₹ 0.32 crore), WR-12 (₹0.36 crore), SWR-01(₹ 0.0002 crore), ECoR-22 (₹ 0.92 crore), Metro Rly-11 (₹ 0.42 crore), NR-21 (₹0.32 crore), SCR-64 (₹ 0.42 crore),SWR-16 (₹0.29 crore), ER-18 (₹0.38 crore),NER-20 (₹0.13 crore),RWF-16 (₹0.03 crore),SER-15 (₹1.47 crore)

3.2.2 Non-transfer of Cess recovered from contractors to Workers Welfare Boards

Rules provide that proceeds of the Cess deducted/collected shall be transferred to the Welfare Board within 30 days of its collection. Interest is also leviable for non-payment of Cess within the specified time[152]. Audit observed that

- In 72 cases[153], cess amounting to ₹ 2.28 crore was not transferred to the Boards by eight Zonal Railways. Consequently, Railways were liable to pay the dues along with the interest accrued until cess is transferred to Boards.
- In 99 cases[154], cess amounting to ₹ 3.03 crore was recovered from contractors. However, the details of transfer of this amount to Boards were not available on record. Actual remittance of Cess could not be ascertained in audit.

In November 2012, Ministry of Railways, issued instructions[155] that contractor bill amount shall be debited to concerned work. The recoverable amount of Cess shall be credited under Suspense head[156] before arranging payment to the contractors. The Suspense head shall be cleared/debited at the time of payment to respective Fund/Board by credit to the Suspense head-Cheques and Bills. Audit observed that these instructions were not followed by various Zonal Railways and large amounts were kept under suspense for long time.

- In NFR, in Lumding Division, the cess was recovered from the contractor's bills. However, the same was not sent to the Board due to non-availability of bank details of the Board. The amount was kept under the Suspense Head Deposit Miscellaneous/ Expenditure. In

[151] CR-11, NCR-16, NFR-23, NWR-18, SECR-01, SR-09, SWR-16, WR-22, ECoR-10, ER-18, Metro Rly-28, NER-14, NR-09,RWF-04,SCR-35,SWR-04,WCR-40,ECR-09
[152] at the rate of two *per cent* for every month or part of a month from the date on which such payment is due till such amount is actually paid
[153] NWR-07,SR-02,WR-05,ER-04,NER-27,NR-14,SER-09,NFR-04
[154] ER-24, Metro Railway-39, SER-02,SECR-34
[155] Letter No. 2008/CE-I/CT/6 dated 8-11-2012 on 'Implementation of BOCW Welfare Cess Act, 1996 in Railway Contracts –Allocation of head'
[156] Deposit Miscellaneous (BOCW Cess)

Rangia Division, cess was not recovered in respect of any completed contracts reviewed in audit.

- In NER, cess of ₹ 2.04 crore was lying with the Railway Administration as on 31 March 2018 under the Suspense head. On pointing out in audit, Railway Administration (Varanasi Division) transferred (August/September 2018) ₹ 6.07 lakh to the respective Boards. Cess amounting to ₹ 1.98 crore was not remitted to the Boards.
- In DLW, cess was being recovered regularly from the contractors.
- In Metro Railway, the cess of ₹ 2.98 crore was deducted from the contractors during the period from December 2013 to March 2018. This was not deposited to the Labour Commissioner/West Bengal and kept under Suspense Head-Deposit Miscellaneous. The same was deposited only on 5 September 2018.
- In NWR, in Jodhpur, Jaipur and Bikaner Divisions, cess recovered from the contractors was not transferred to the Boards within the stipulated period of 30 days. There was a delays of one to 29 months. Delay in depositing of cess will entail liability on Railways towards payment of interest.
- In Malda Division in ER, cess of ₹ 2.40 lakh recovered from contractors in four contracts was incorrectly booked under head 'Primary Education cess recovered from Contractors'.
- In NR, in Lucknow Division, cess recovered was remitted to the State government as a whole. However, the contract wise details of cess recovered and remitted to Board was not available.
- In WR, Rajkot Division, the cess recovered was being transferred on a quarterly basis. In Ahmedabad, Bhavnagar, Mumbai Central Divisions, the cess deducted[157] from the contractors was yet to be deposited with the Board. The amount of cess has been kept in the Suspense head-Miscellaneous Deposit.

[157] pertaining to period 2016-17 to 2017-18, May 2016 to July 2018 and June 2016 to September 2018 respectively

- In SECR, cess of ₹ 5.20 crore deducted by the Construction organisation from the contractors was not transferred to the Madhya Pradesh and Orissa Boards. This was lying under Suspense head. Railway Administration has not offered any remarks for non-transferring of cess to the Boards.

3.2.3 Short payment of Cess by the Railways

Audit observed that it was the responsibility of the Railways to ensure that the prescribed share (one *per cent*) of the cost of construction was set aside and deposited with the Worker's Welfare Boards. Railways were however, deducting only a part of this amount from the contractors (e.g. one *per cent* of the cost of labour in the contract and not on the material). Railways deposited the same in the Worker's Welfare Boards. Nevertheless, it was the obligation of the Railways to deposit one *per cent* of the total cost of the work[158] with the Workers Welfare Boards, whether recovered from the contractor or not.

Review of records (contractor ledgers, contract files, contract agreements) revealed that

- Against Cess of ₹ 26.87 crore due for payment, Zonal Railways paid ₹ 13.92 crore to Welfare Boards in 409 cases[159] in 2017-18. Thus, ₹ 12.95 crore was outstanding for payment.
- In 99 cases, Cess of ₹ 4.65 crore was due for payment to Board. Against this, the Railway Administration recovered ₹ 3.03 crore from the contractors. However, remittance of this amount to Boards could not be ascertained for want of contract wise details of remittance.
- In 203 cases[160], there was no short payment of cess by the Railway Administrations.

[158] which includes labour, material etc.
[159] CR-20,ECR-17,NCR-25,NFR-19,NWR-21,SECR-06,SR-33,SWR-11,WR-22,ECoR-30,ER-08,NER-35,NR-31,RWF-16,SCR-67,SER-30,SWR-17
[160] CR-10,ECR-08,NCR-15,NFR-18,NWR-16,SR-06,WR-18,SWR-06,ECoR-10,ER-08,NER-05,NR-04,RWF-04,SCR-32,SWR-03,WCR-40

3.2.4 Non-inclusion of clause for payment of Cess by the contractors in the tender documents

Ministry of Railways directed (9 July 2008) all the Zonal Railways to include a new clause[161] in the Tender Notice/Tender Documents for payment of Cess by the tenderer. In November 2013, Clause 55C was added to the Indian Railways Standard General Conditions of Contract (GCC) for enabling the Railways implementing the same. Audit observed that in 18 contracts in three Zonal Railways and CLW[162], the said clause was not incorporated in the tender documents. As a result, the amount of Cess due from contractors was not recovered and transferred to the Board.

3.2.5 Non-submission of information to Assessing Officer

As per provisions[163], every Employer within 30 days of commencement of work is required to furnish the information of work in Form I to Assessing Officer. In case of modification in the Plan of construction undertaken thereby reducing the cost of construction, foreclosure of work etc. information in Form-II is to be furnished. Audit observed that

- In four Zonal Railways[164] and RWF, the required information in Form I and II was being sent by the Railway to the Assessing Officer.
- In two Zonal Railways[165], the required information in Form I and II was not being sent by the Railways to the Assessing Officer. Instead, copy of Letter of Acceptance was sent to Assessing Officer by these Zonal Railways.

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[161] 'The tenderer for carrying out any construction work in (Name of the State) must get themselves registered form the Registering Office under Section-7 of BOCW Act, 1996 and Rules made thereto by the (Name of the State) Government and submit certificate of Registration issued from the Registering Officer of the (Name of the State) Government Labour Department. For enactment of this Act, the Tenderer shall be required to pay Cess at the rate of one per cent of the cost of construction work to be deducted from each bill. Cost of material shall be outside the purview of Cess, when supplied under a schedule item.'

[162] CLW-01, NER-04, WR-09, NCR-04

[163] Rule 6 of BOCW Welfare Cess Rules, 1998,

[164] SWR, NFR, WCR, SR

[165] NER,NWR

- In two Zonal Railways[166] and CLW, no records indicating submission of the required information in From I and II were available.
- In three Zonal Railways[167], the required information in Form I and II was not being sent to the Assessing Officer.

Thus, provisions of BOCW Rules, 1998 for furnishing the required information to Assessing Officer in the prescribed forms were not being followed scrupulously in most of the Zonal Railways.

3.2.6 Other audit findings

In SCR, Clause 55-C of GCC clause was included in the tender conditions in the contracts awarded by all the six Divisions. However, the Construction organization deleted the sentence '*Cost of material when supplied under a separate schedule item shall be outside the purview of Cess'* from the tender conditions w.e.f. 25th May 2015. Therefore, two departments of the same Zonal Railways were following the above clause differently.

Audit reviewed the contracts in all the six Divisions and Construction Organization of SCR. It was observed that Railway Administration recovered Cess only on cost of labour and not on the cost of construction. Non-compliance of provisions of BOCW Act and Rules resulted into short recovery of Cess of ₹ 0.84 crore in 77 contracts during the period 2012-13 to 2016-17. Exclusion of cost of material for levy of Cess was in violation of provisions of BOCW Act and Rules.

3.2.7 Conclusion

The main objective for enactment and notification of BOCW Welfare Cess Act and BOCW Welfare Cess Rules was to provide a share of the cost of construction to Workers Welfare Boards. This share was meant to provide for safety, health and welfare measures of the workers. However, Railways as an 'employer' did not ensure that amounts as prescribed in the Act are deposited with Workers Welfare Boards. Railways kept the

[166] ER,SECR
[167] WR, ECoR, NCR

cost of material outside the purview of Cess, which was against the spirit of the Cess Act. This led to short recovery of Cess from the contractors. Railways were not recovering the Cess on the cost of materials supplied by the contractors. In some cases, no recovery of Cess was made from the contractors. Cess recovered from the contractors was not deposited by the Railways to the Workers Welfare Boards within the stipulated period. Thus, the provisions of the BOCW Act/Rules were not being followed scrupulously in the Railways.

3.2.8 Recommendations

It is recommended that Railways may

1. ***modify the tender conditions to correctly reflect the provisions of the BOCW Act. They may also issue instructions to all field formations to recover the Cess in line with the BOCW Welfare Cess Act.***
2. ***ensure that the Railways fulfill their responsibility of remitting the Cess at the prescribed rate on the cost of construction to the Workers Welfare Boards. This should be done irrespective of the amount recovered from the contractors, as the responsibility to pay Cess entirely lies on the Employer.***
3. ***ensure that the Cess recovered from the contractors is remitted to the Workers Welfare Boards within the stipulated time period as per the BOCW Welfare Cess Act.***
4. ***ensure the forms as required are submitted to the Workers Welfare Boards by the executives of all the concerned Departments.***

The matter was taken up with Railway Board on 16 May 2019; their reply has not been received (30 September 2019).

3.3 East Central Railway (ECR): Short deduction of Jharkhand VAT from the contractors on-account bill resulting in avoidable liability

With effect from 1 April 2012, Government of Jharkhand revised the rate of VAT from two to four per cent. The same was to be deducted in advance in respect of works contracts. Construction Organization, ECR did not deduct VAT at the revised rate in 26 works contracts awarded between December 2012 and April 2017. In 346 running on-account bills processed for payment, an amount of ₹12.14 crore was short-recovered from the contractors. Railways now have the liability to pay the same to the State Government as and when demanded.

As per Section 44 of Jharkhand Value Added Tax (VAT) Act, 2005, for effective recovery of tax, the State Government may require in respect of contractors or any other class or classes of dealers that any person making payment of any valuable consideration to them for the execution of a works contract in the State involving transfer of property in goods, shall, at the time of making payment, deduct tax in advance therefrom which shall be calculated as per the rates specified by the State Government from time to time.

Further, the Act stipulates that every person who is required to deduct tax in advance shall furnish prescribed returns and pay the tax deducted according to such returns to the State Government in such a manner as may be prescribed. If any person fails to deduct the whole or any part of the tax or fails to pay the whole or any part of tax then, the authority may, at any time within five years of the close of the year when he failed to do so, by order in writing, direct him, after giving him a reasonable opportunity of being heard, to pay, by way of penalty, a sum equal to the amount of tax which he failed to deduct or pay as aforesaid.

Commercial Tax Department of Government of Jharkhand notified (31 March 2006) the rate of deduction of Jharkhand VAT as two *per cent.* On 3 October 2012, it was further revised to four *per cent* with effect from 1 April 2012. The notification was communicated (9 October 2012) to the

Senior Finance Manager/ECR/Dhanbad by the Commercial Tax Department, Dhanbad Circle/Jharkhand. He was requested to recover the VAT at the rate of four *per cent* from the bills of works contract with effect from 1 April 2012.

Audit reviewed the records of works contract agreement, in four construction projects[168] under the jurisdiction of Jharkhand State. Audit noticed that in 26 works[169] awarded after 9 October 2012, recovery from the bills of contractors were made at pre-revised rate of two *per cent*. In these contracts, 346 running on-account bills were processed for payment to contractors, wherein VAT was deducted @ two *per cent* instead of four *per cent*. As a result, an amount of ₹ 12.14 crore was short-recovered from the contractors. Besides, railways now have the liability to pay the same to the State Government as and when demanded.

Dy. Chief Engineer/Construction/ECR in his reply stated (March 2018) that the recovery of VAT at the revised rate was not done, as it was not pointed out by the associate finance. It was also stated that notification regarding revision of rate of VAT was not circulated to their unit by their Headquarter office.

The notification was communicated to Dhanbad Railway Administration by the State Government authority on 9 October 2012. Audit noticed that the order to deduct VAT at revised rate of four *per cent* was implemented in Dhanbad Division (Open Line). However, the same was not implemented in any of the Offices of Construction Department of ECR under Jharkhand State. All these works are still on-going and final account bills are yet to be processed. Thus, there is a scope to recover the amounts short-recovered from the final bills of the contractors before the works are completed.

In reply, Railway Board stated (25 June 2019) that as per the contract agreement, change of rate of statutory taxes of the State Government

[168] Tori-Shivpur, Hazaribagh-Barkakana-Ranchi, Koderma-Giridih and Doubling project between Jarangdih to Gomia
[169] tenders awarded between December 2012 and April 2017

after date of dropping of tender shall be on Railway Account. They further stated that Jharkhand Government (Commercial Taxes Department) did not circulate the order of revised VAT rate to GM/ECR/Principal Chief Engineer or Chief Administrative Officer/ Construction. Sr. DFM/Dhanbad, to whom the revised notification was sent, is one of the unit of ECR of Open Line and not a unit under the control of Construction Organization. Also, the State Government never raised the issue with any authority of ECR in regard to short recovery.

Audit, however, observed that the date of notification of levy of enhanced rate of VAT was earlier than the date of dropping of tender. As such, the rate of VAT should have been revised at the enhanced rate at the time of dropping the tenders itself, which was not done. Sr. DFM/Dhanbad is also part of ECR Administration under the administrative control of GM/ECR. Thus, it was a failure on part of ECR to not circulate the notification of revised VAT rate.

3.4 North Eastern Railway (NER): Construction of sub-standard pit lines leading to delay in development of new coaching terminal at Mau

The work of washing pit line at Mau was delayed due to delay in providing drawings and permanent way material to the contractor. The contractor did not execute the work adhering to RDSO specifications and the work was foreclosed. The work was awarded to another contractor. However, the work was completed without addressing the issue of quality and adherence to RDSO specifications. The pillars in washing pit developed cracks, when the train was placed for maintenance. The expenditure of ₹13.32 crore, which was paid to the first contractor became infructuous. Haulage of coaches between Mau and Gorakhpur for primary maintenance led to avoidable expenditure of ₹3.80 crore, as the coaching terminal was not completed at Mau.

Railway Board has time and again issued instructions emphasizing the need for adopting better contract management practices. Timely

furnishing of detailed drawings to the contractor has also been emphasized to avoid delays in the execution of the work.

Railway Board sanctioned (2013-14) the work of development of a Coaching Terminal at Mau, Uttar Pradesh in NER, at an estimated cost of ₹ 14.60 crore. The work was justified stating that Mau was an important Class A station of the Varanasi Division from the point of view of passenger traffic. There had been a consistent demand by the public to run long distance trains from this station. NER reasoned that a coaching terminal would be required for maintenance of long distance trains.

In October 2014, the Construction Department of NER issued Letter of Acceptance (LOA) to M/s Sunil Kumar Jaiswal (1st contractor) at a cost of ₹ 9.26 crore. The work included construction of a washing pit line and other engineering works[170]. In December 2014, the Contract Agreement was executed with the contractor. The work was scheduled for completion within a year i.e. by November 2015.

Audit observed that the work was started by the contractor only in March 2015, after a lapse of five months from the date of issue of LOA. Three extensions were given to the contractor from 11 October 2015 to 31 March 2017. Two extensions were granted as the railways were not able to provide drawings to the contractor on time. There was also delay in issue of release order for Permanent Way Materials by the railways. Last extension was granted to the contractor without citing any reason. The contractor requested (December 2016) for foreclosure of the work on administrative account, as construction department could not provide the drawings timely. The work was finally foreclosed in November 2017 after paying ₹13.32 crore to the contractor. Subsequently, for undertaking the left over work another contract was executed with M/s Krishna Dubey, Gorakhpur (2nd contractor) in May 2018. The work was awarded at a cost of ₹ 3.58 crore and targeted for completion by November 2018.

[170] Construction of double storied building for Stores and Office, boundary wall, earth work, sick line, blanketing, supply of ballast and other miscellaneous works

Audit further noticed that there were large variations in the quantities as against those mentioned in the Contract Agreement. Variation in quantities beyond 150 *per cent* required approval of General Manager. General Manager's approvals for these variations were not on records. Due to delay in providing designs and frequent changes by the Railway, the work done by the contractor was not as per the required specifications.

Audit further observed that as per the RDSO drawing, the size of rail holding column of terminal should be 520x450 mm. Rails are laid on these columns in the coaching depot. However, 1st contractor constructed rail holding column of size 460x300 mm. He also did not provide holes for fastening of rails on the columns. Dy. Chief Engineer (Construction) intimated (February 2017) the Chief Engineer (Construction) that the prescribed drawing was not being followed since commencement of the construction work. He further stated that the constructed rail holding of 460x300 mm needed to be dismantled to construct rail holding of 520 x450 mm as per RDSO specification. The constructed rail holding of 460x300 mm was not capable of supporting a beam of 520x 320 mm.

However, the work awarded to the 2nd contractor did not include construction of rail holding column as per RDSO approved drawing. Construction department assigned the work relating to drilling holes 32 mm dia, 150 mm depth in existing washable apron/pedestal for fixing rails. Audit noted that drilling holes in columns would impact the strength of the beams built over the column, which were not made as per specifications.

NER administration had introduced a new weekly train Mau-Anand Vihar Express from November 2013. The primary maintenance of this train was being carried out at Gorakhpur, 138 kms away, as washing pit line at Mau was yet to be completed. NER incurred extra expenditure of ₹ 3.80 crore towards cost of haulage of coaches between Mau and Gorakhpur during January 2016 to July 2018.

In their reply (June 2018), Construction Department admitted the delay in approval of the drawings and also excessive variations *vis-à-vis* the contract agreement. They stated that due to gross technical mistake by the railway officials concerned and the agency, the work could not be completed and the contract had to be closed in November 2017. They further stated that disciplinary action was initiated against the responsible officials.

Audit further observed that the washing pit line was inaugurated on 6 March 2019. When the train (no.15071) was placed on this pit for trial, 39

Figure 3.9 – Cracks/damage after placement of train in washing pit at Mau (18 March 2019)

pillars developed serious cracks and the washing pit had to be closed. An inquiry was conducted (17/18 March 2019) by RDSO; report of which was awaited.

Thus, delay in providing drawings in time to the contractor and non-compliance to RDSO specifications led to sub-standard quality of work. This resulted in infructuous expenditure of ₹ 13.32 crore, which was paid to the first contractor. Further, NER incurred avoidable expenditure of ₹ 3.80 crore (up to July 2018) on haulage of coaches between Mau and Gorakhpur for primary maintenance.

The matter was taken up with Railway Board on 15 November 2018; their reply has not been received (30 September 2019).

3.5 North Eastern Railway (NER): Discrepancies in maintenance of Works Registers of track renewal works in Varanasi Division

Audit reviewed the WRs in divisions and construction offices of NER. There was lack of internal controls and the registers were not being maintained properly. There was absence of due diligence in maintaining the Works Registers. Cases of partial entries of vouchers and incorrect entries in WRs were noticed. Vouchers pertaining to other works were recorded in WRs of the track renewal works reviewed in Audit. Discrepancies were also noticed in the amount booked in WRs of works reviewed. Improper review/examination of works expenditure indicated complete dis-regard to the laid down codal provisions by Executive and Accounts officers. In this situation, the possibility of fraudulent payments to suppliers cannot be ruled out.

Rules[171] stipulate maintenance of Register of Works, which is a collective record of expenditure designed for:

a) effecting control of expenditure on works with reference to estimates, by facilitating comparison between the expenditure incurred on each work and the detailed provision made in the estimate for work,

b) effecting budgetary control, by facilitating a comparison between the budget allotment for the work and the actual expenditure,

c) enable any material modification[172] occurring being spotted.

Register of Works should *inter alia* include sanction amount, budget allotment and fund allocation. The register should also include voucher number with amount, detailed estimates, completion date and details of works to be executed. These registers are required to be maintained in the Accounts Office both for open line and construction department.

[171] Para 1472 of Indian Railway Code for Engineering Department
[172] Para 1109 of Indian Railway Code for Engineering Department

Audit reviewed the Work Registers (WRs) being maintained by NER during 2001-02 to 2017-18. Audit observed that these registers were not being maintained properly. Audit examined 21 WRs including 523 works executed by the three Divisions (Varanasi, Lucknow and Izatnagar) and the Construction department of NER. Audit noticed that

- Only in case of 136 works, WRs were found complete,
- In case of 315 works, WRs were partially complete and did not contain all the requisite details, and
- In 72 works, WRs were not maintained at all.

During detailed examination, eight WRs containing 301 works executed by Varanasi Division were reviewed. Audit observed that

- In case of 33 works, the expenditure of ₹ 11.37 crore was exhibited in the register for 2017-18. However, in Appropriation Accounts for 2017-18, the expenditure was mentioned as ₹ 31.49 crore, reflecting difference of ₹ 20.12 crore.
- In case of 222 works, details of vouchers were not available, and
- In case of 109 works, details of detailed estimates were not available.

Rules[173] also stipulate that executive officer should examine the Works Register monthly or at more frequent intervals, and watch the progress of expenditure of each work. Accounts Officer should also watch the progress of expenditure and advise the executive officers as to the need of re-appropriations, whenever such necessity arises. Audit, however, noticed that out of aforesaid 523 works, 448 works (86 *per cent*) had not been examined by the Executive officers (Sr. Divisional Engineer of concerned Division). Further, 460 works (88 *per cent*) had not been reviewed by Accounts Officers of the concerned Division.

[173] Paras 521-30 of Indian Railway Finance Code (Volume I)

Non-maintenance/incomplete maintenance of WRs as well as non-conduct of review of a large number of works was indicative of deficient internal controls.

Audit also undertook a detailed examination (November 2017 and July 2018) of the Works Registers and payment vouchers/adjustment memos of two Track Renewal Works executed by Varanasi Division. Audit observed significant differences between the expenditure booked under Appropriation Accounts and that shown in the Work Registers. Audit also did not find vouchers/adjustment memos worth of ₹ 31.40 crore on record. The discrepancies noticed during review of these two track renewal works[174] were as follows:

- Out of vouchers amounting to ₹ 49.66 crore, 116 vouchers worth ₹ 22.06 crore were not made available to Audit for review.
- Work Registers of the above two works, produced (November 2017) to Audit contained only 78 vouchers of ₹ 17.11 crore for the period 2011-12 to 2016-17. After the issue was raised in audit (July 2018), Accounts Officer made entry of additional 118 vouchers of ₹ 32.55 crore in the Work Registers.
- Only 80 vouchers of ₹ 27.59 crore of the two works were made available to Audit for examination. Audit noticed that only 13 vouchers of ₹ 2.55 crore related to the above works. The other 67 vouchers of ₹ 25.05 crore pertained to Track Renewal Works, procurement of Permanent Way materials for various other sections and revenue expenditure on various maintenance works.
- The work of Track renewal of Gorakhpur Cantt.-Bhatni section was completed in June 2013. However, an amount of ₹ 4.57 crore was debited towards procurement of Permanent Way material through 18 Purchase Orders issued after completion of the work. This clearly

[174] Through Rail Renewal (Primary) work of Gorakhpur Cantonment –Bhatni section and Through Ballast Renewal work of Gorakhpur Cantonment- Paniyahwa section

indicated that the expenditure of ₹ 4.57 crore did not pertain to this work.

- Audit also observed significant discrepancies in the amounts booked in the Works Register of the work of Track renewal of Gorakhpur Cantt.-Bhatni section.
  - Against voucher[175] of ₹ 11,85,073 pertaining to cost of 19.309 MT new rails, an entry of ₹ 1,11,85,073 was made in the Works Register.
  - Similarly, as against the voucher[176] of ₹ 39,50,182, the entry of ₹ 1,39,50,182 was made in the Work Register.
  - Entries of two vouchers amounting ₹ 15 lakh and ₹ 4 lakh related to two Adjustment memos[177] were made twice.

Thus, in respect of these two track renewal works, a difference of ₹ 5.49 crore was being reflected between the expenditure booked in the Appropriation Accounts and the expenditure shown in the Work Register. However, no efforts were made by NER to reconcile these differences. In addition, periodical review of expenditure of these works was not carried out by Engineering and Accounts Departments.

Thus, there was absence of due diligence in maintaining the Works Register in NER. Cases of partial entries of vouchers and incorrect entries in WRs were noticed. Vouchers pertaining to other works were recorded in WRs of the track renewal works reviewed. Discrepancies were also noticed in the amount booked in WRs of works reviewed in Audit. Improper review/examination of works expenditure by Executive and Accounts officers indicated complete dis-regard to the laid down codal provisions. In this situation, the possibility of fraudulent payments to suppliers cannot be ruled out.

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[175] Number No. W/78/2166/4B dated 23/06/2016
[176] No. – Cap. JV No. 5XP Rev. Vrs. No. 24XP, Sep'12, Adjustment memo no. W/39-1/Pt-IX/Track/W-3 dated 12/10/2012
[177] W/FBWP/5-3/2821 dated 21/12/2015 and FCC-VI/03/Sv dated 08/04/2016, DRM/W/55 dated 02/06/2011

There is a need to fix responsibility on officers, responsible negligence in maintaining the Works Register and incorrect entries in the Works Register.

The matter was taken up with Railway Board on 13 February 2019; their reply has not been received (30 September 2019).

3.6 Metro Railway, Kolkata (MR): Duplicate payment to contractors due to inclusion of labour and machine charges in two schedules for procurement of steel and execution of work

In ten contracts awarded by MR, there was double inclusion of cutting and bending charges in two schedules for procurement of steel and execution of work. This resulted in duplicate payment of ₹ 18.42 crore to contractors on this account.

The accepted schedule of items, scope of work including quantities, rates and amount form an integral part of a contract between the Railways and the contractor[178]. The works contracts issued by Metro Railway, Kolkata generally contain five or six schedules. These include schedule on earthwork, foundation and sub-structure works, super-structure works, supply of cement, supply of reinforced steel and miscellaneous works etc. The works contracts are also vetted by Finance wing before finalization.

In ten[179] works contracts, labour and machine charges such as cutting, bending, binding and straightening were included at two places. Labour and machine charges are used for processing of steel to make it reinforced steel. These charges were included in schedule of execution of works (sub-structure and super-structure) in addition to the supply schedule (supply of reinforcement steel). Double inclusion of the labour and machine charges for the same work, in two different schedules, caused duplication of payment of such charges.

[178] Para 1218 of the Indian Railway Code for Engineering Department

[179] Tenders no.1844/2011, 1882/2010, 1885/2010, 1936/2011, 1964/2011, 2071/2013, 2155/2015, 2169/2016, 2199/2016. These tenders pertaining to works related to construction of superstructure, substructure, construction of buildings, pump house, underground water storage, works of ROB, replacement of manned level crossing.

Audit worked out the duplication of payment in the above ten contracts. Audit assessed duplicate payments of ₹ 18.42 crore on the basis of review of on-going bills of these ten contracts. All these ten contracts were on-going and duplicate payments were continued to be made through the running account bills.

In reply, Railway Board stated (15 May 2019) that there was duplication of labour and machine charges only in three contracts[180]. They stated that the same was not duplicated in other contracts. Railway Board's response and audit rebuttal thereto in respect of remaining seven contract cases are given below:

Table 3.1 – Railway Board response and audit rebuttal

Tender no.	Railway Board's remarks	Audit contention
Tender nos. 1882/2010, 1885/2010, 1905/2010, 2071/2013, 2155/2015, 2199/2016	In these contract cases, item of supply steel did not contain item of cutting, bending, binding, straightening etc.	In two tender cases[181], the basic rate for supply of steel was worked out after including the component of cutting, bending, binding etc. These charges were also included in execution of works.[182] In four cases[183], the basic rate was worked out on the basis of rates of two earlier contracts[184]. These contracts also contained double inclusion of labour and machine charges.
Tender no.2169/2016	In this case, cutting, bending, binding, straightening charges were not included in corresponding items of execution of works	In this case, the execution of works included fabrication of reinforcement bars. The fabrication processes consist of cutting and bending the reinforcing steel. As such, these charges were already included in the execution of works. These charges were also provided in the

[180] Tender no.1844/2011, 1964/2011 and 1936/2011
[181] Tender no.1882/2010, 1885/2010
[182] Schedule-E3 – Station finishing works
[183] Tender no.1905/2010, 2071/2013, 2155/2015, 2199/2016
[184] Tender no.1882/2010 and 1936/2011 - In these tender cases, MR Administration has accepted double inclusion of cutting, bending and binding charges, pointed out by Audit.

Table 3.1 – Railway Board response and audit rebuttal		
Tender no.	**Railway Board's remarks**	**Audit contention**
		item of supply of reinforcement steel as stated by Metro Railway.

Thus, Metro Railway, Kolkata made extra payment of ₹ 18.42 crore to the contractors due to duplication of labour and machine charges in two schedules in ten works contracts. There is a need to fix responsibility of the officers preparing the tender documents and vetting the works contracts that resulted in duplicate payment.

3.7 South Eastern Railway (SER) and South East Central Railway (SECR): Delays in completion of yard works and non-achievement of expected benefits

SER executed yard remodelling work in Tatanagar and Adityapur Yard to cope up with incremental traffic and to minimize detention. The detention in Adityapur Yard improved. However, in Tatanagar yard, the situation worsened as the space and other constraints were not addressed despite spending ₹ 21.66 crore. Similarly, in SECR, the works undertaken for remodelling of Bhilai Exchange Yard and construction of a new Exchange Yard at Maroda remained unfruitful. The work could not be completed due to encroachment at the site and poor planning. This resulted in blocking of capital of ₹ 31.15 crore.

A. South Eastern Railway

Inward and outward traffic of M/s Tata Iron and Steel Company (TISCO) are handled in Tatanagar Yard and Adityapur Yard of South Eastern Railway (SER).

TISCO planned to increase their production from 4 Million Tonne Per Annum (MTPA) in 2005 to 10 MTPA by 2010. In view of this, Indian Railways anticipated increase in projected traffic from 14 MT to 35 MT by 2010-11. Accordingly, incremental traffic, SER proposed (October 2005) for yard remodelling of both Tatanagar and Adityapur Yard[185]. The work

[185] In the Works Programme for 2005-06

was justified as absolutely imperative to de-congest the section and to reduce detention to rakes. SER proposed only internal modification for better handling of traffic, as Tatanagar Yard had no scope for expansion. In Adityapur Yard, expansion as well as modification work was proposed. It was decided to develop the requisite facilities in two phases. These were targeted for completion in tune with the expansion programme and traffic growth of TISCO. Construction Organisation/SER took up the work for execution in 2006-07, at an estimated cost of ₹ 39.82 crore[186]. The work was completed only in October 2014[187] against the target of December 2009**.**

Audit observed that the situation has improved in Adityapur Yard[188], the detention at the Tatanagar Yard did not improve even after completing the remodelling work. The yard consists of three parts, Classification Yard, Main Yard and Goods Departure Yard. The average detention of rake at Tatanagar yard during 2012-13 to 2014-15[189] was 17 hours 56 minutes per rake. During 2015-16 to 2017-18 (post remodelling work), average detention per rake increased to 19 hours 18 minutes.

Audit observed that there was no scope of expansion in the Yard due to space constraints. However, Divisional Engineering department of SER undertook works for yard remodelling incurring an expenditure of ₹18.45 crore. This did not bear any fruitful results. Three out of the four new lines constructed were extended to full length in the Classification Yard. However, this did not help as the lines in the Main Yard could not be extended to handle full rake length. The connecting lines between the Main Yard and the sidings were also not electrified. One single diesel loco was being used for placement/drawal of rakes. Non-availability of unloading staff was another reason that led to detentions to the rakes.

[186]Estimate No.1340W/2006 for ₹ 26.11 crore for Tatanagar Yard remodelling and Estimate No.1323W/2006 for ₹13.71 crore for Adityapur Yard remodelling
[187]As recorded in the Indian Railways Projects Sanctions and Management (IRPSM)
[188]Pre-remodeling period detention was 27 hrs 29 mts for BOXN rakes and 11 hrs and 26 mts for BOBSN Rakes and after completion of the work the detention came down to 10.06 hrs and 2.58 hrs respectively in Adityapur Yard.
[189] Before completion of the work

Audit noticed that these were major constraints in the Tatanagar Goods shed which necessitated developing a new Goods Shed in the first place.

Audit further observed that Railway was aware about the space constraints and the fact that there was no further scope to develop the shed. However, they decided to develop a freight terminal at Tatanagar. Detailed Estimate of ₹ 10.19 crore was sanctioned in December 2009. The work was targeted to be completed by December 2012[190]. However, the work was abandoned midway (November 2012) after incurring expenditure of ₹ 3.21 crore, The General Manager decided to shift the shed to another place (Haludpukur[191]) on the ground of congestion, which also did not materialize.

Thus, SER failed to achieve the main purpose of reduction of detention to rakes at Tatanagar yard as there were planning deficiencies/space constraints. As such, the investment of ₹ 21.66 crore[192] remained unfruitful. There is need to fix responsibility on the Officers involved in the planning of the Yards and incurring huge unfruitful expenditure.

B. South East Central Railway

Operating Department/SECR proposed two traffic facility works viz., remodelling of Bhilai Exchange Yard (2009-10) and construction of a new Exchange Yard at Maroda (2010-11). The works were proposed in view of the expansion of Bhilai Steel Plant from 4 to 7 MTPA and to decrease detention of wagon and locos. The new exchange yard at Maroda was aimed to deal with incremental traffic as a result of expansion by Bhilai Steel Plant. The details of the works taken up are as follows:

Table 3.1 – Details for Traffic facility Works

S. no	Name of the work	Year of sanction	Cost (₹ in crore)	Targeted date of completion
1	Remodelling of Bhilai Exchange Yard	2009-10	5.95	31 December 2014
2	Construction of New Exchange Yard at Maroda	2010-11	12.32	31 December 2013

[190]As per Indian Railways Projects Sanctions and Management (IRPSM)
[191] 20 kms away from Tatanager
[192]₹ 18.45 crore on remodelling and ₹ 3.21 crore on development of freight terminal at Tatanagar

In March 2009, Engineering Department/SECR realized that the work of Bhilai Exchange Yard could not be executed. This work required execution of Signalling and Telecommunication works pertaining to two Cabins[193]. Accordingly, they took up a new work[194]in 2010-11 for replacing the signal gear at Cabin K and M at a cost of ₹ 14.98 crore. The target of completion was June 2012. As of May 2018, an amount of ₹ 16.35 crore has already been incurred on this work. The physical progress was just 60 *per cent*. Presently, the work is likely to be completed by March 2020 with an anticipated cost of ₹19.12 crore. Unless this work is completed, the work of remodelling of Bhilai Exchange Yard cannot be executed.

The work of construction of New Exchange Yard at Maroda was targeted for completion by December 2013. Audit observed that as the work site was under encroachment, the progress of the work was not satisfactory. After granting seven extensions, the civil engineering contract was finally short closed in March 2017. Following this, both electrical and signal and telecommunication work contracts also had to be short closed. An expenditure of ₹8.62 crore was incurred and as of June 2018, the physical progress was only 50 *per cent*. The traffic facility work has already been delayed by four and half years.

In reply, Dy. Chief Engineer, Construction (Raipur)/SECR stated (February/ March 2018) that traffic facility work at Bhilai Exchange Yard could not be completed. This could be completed only after installation/commissioning of new Route Relay Interlocking (RRI). In regard delay in traffic facility work at Maroda, SECR stated the reasons as delay removal of encroachment by State Government.

[193] Cabin K and M
[194]Replacement of signal gear by electrical operation of points and signals at 02 stations (K & M cabins) on E route of Raipur Division

It is, however, a fact that delay in execution of traffic facility works led to blocking of capital of ₹ 31.15 crore[195]. This has also resulted in non-achievement of expected savings as anticipated by SECR[196] on account of decrease in detention of wagon and locos. There is need to fix responsibility on the Officers involved in the planning of the Yards that led to blocking up of capital.

The matter was taken up with Railway Board on 13 February 2019; their reply has not been received (30 September 2019).

3.8 East Coast Railway (ECoR): Unproductive expenditure due to execution of work without prior permission of Commissioner of Railway Safety

East Coast Railway Administration executed a work of extension of loop line, with a steeper gradient than prescribed in the Indian Railways Schedule of Dimensions of 2004. However, prior approval of Commissioner of Railway Safety was not taken. Commissioner of Railway Safety did not condone the infringement of steeper gradient. This led to unproductive expenditure of ₹ 6.56 crore. In the absence of Commissioner of Railway Safety's sanction, the chances of completing the work and utilizing the loop line are remote.

A maximum gradient of 1 in 400[197] in station yards for existing works[198] is prescribed in the Indian Railways Schedule of Dimensions of 2004 (SOD-2004). The amendment to the SOD-2004 (May 2013), *inter alia* mentioned that no station yard should be constructed nor any siding should join a passenger line on a grade steeper than 1 in 260. Where it is unavoidable, previous sanction of Railway Board should be obtained through Commissioner of Railway Safety (CRS).

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[195] Expenditure of ₹ 6.18 crore on Remodelling of Bhilai Exchange Yard, expenditure of ₹ 16.35 crore on replacement of signal gear at two stations (K & M) and expenditure of ₹ 8.62 crore on construction of new exchange yard at Maroda

[196] At the time of proposing the works SECR expected net annual saving of ₹ 1.84 crore per year from Bhilai Exchange Yard) and ₹ 3.98 crore per year from Maroda New Exchange Yard) from avoidable detentions of Wagons/ Locomotives.

[197] rise/fall of 1 meter in every 400 meter length

[198] Existing works means the works which were existing before issue of revised Schedule of Dimensions (2004) and would help the field engineers to provide the information about previous dimensions followed at one place.

In the Vizianagaram-Palasa section of ECoR, which had reached beyond saturation point, a need was felt to create capacity to cater to increase in traffic eastern coastal belt. To mitigate section capacity constraint in this section, Waltair Division started running long haul trains on an experimental basis. These were amalgamated two full length rakes, generally known as Python rakes. However, in running such trains a constraint was faced is crossing or precedence with other trains. The conventional yard layouts could not hold the python rakes and trains could not stop in between to give precedence to other trains (both passenger and goods). These trains were thus run through up to destination. This was causing significant time loss to other traffic. To overcome this difficulty, ECoR proposed to modify some station yards, so that these Python rakes could be accommodated.

In January, 2014 Sr. Divisional Engineer/Waltair proposed a work for modification and extension of existing R/4 line in Chipurupalli Yard[199]. For accommodating Python rakes, the loop line was proposed to be extended into a longer loop line, without disturbing the common loop status. Railway Board approved this traffic facility work in April 2014 at a cost of ₹ 8.13 crore. The work was targeted for completion by March 2016. The proposed longer loop line at Chipurupalli Station consisted of steeper gradient (1 in 291) beyond the prescribed safety limit of 1 in 400.

For execution of the works, four contracts[200] of ₹ 5.31 crore were awarded during March 2015 to June 2015. However, the drawings for the same were not approved at that time. The contract was awarded without approved drawings. Previous sanction of Railway Board and CRS was necessary before commencement of a work, as the gradient was steeper than prescribed. Audit observed that Sr. Divisional Engineer/ Waltair approached (December 2015) CRS[201], for condonation of the infringement of steeper gradient, six months after the award of contract.

[199] which was a common loop
[200] Civil Engineering, Electrical and Signal and Telecommunication Department of Waltair Division
[201] South Eastern Circle/Kolkata

Condonation was sought with a justification that achievement of recommended grade of 1 in 400 would involve substantial modifications. This would include earthwork, extension and reconstruction of bridges, major alteration of Over Head Equipment (OHE) and signaling installations at a cost of ₹ 6.07 crore. Besides, there would be traffic block in the busy route. The CRS returned the proposal on 31 December 2015 unsanctioned. CRS stated that extension of loop should be planned at Station yard where it does not lead to Schedule of Dimensions infringement. Chief Bridge Engineer/ECoR reiterated[202] their proposal for condonation citing that providing 1 in 400 gradient was not feasible. CRS however, did not sanction the condonation proposal and stated (March 2018) that sharp change of grade from 1:291 down to 1:200 up was not permitted.

Audit observed that not only ECoR started work without CRS sanction, but also continued the works during this period. As of September 2018, physical progress on the work was 75 *per cent* and an expenditure of ₹ 6.56 crore had been incurred. However, the completion and utilization of the infrastructure was uncertain pending the CRS sanction.

In reply, Railway Board stated (February 2019), that to make the existing gradient to 1 in 400, huge expenditure would be required including several traffic blocks. Hence, it was proposed to provide the gradient 1 in 291 instead of 1 in 400 for which condonation was sought. On receipt of CRS sanction, the work will be resumed and intended facility of longer loop will be brought into use. There will be no unproductive expenditure.

Audit noted that codal provision[203] clearly stipulates that specifications and drawings form a part of the tender document and the same should be embodied to the contract. However, in the instant case, the contracts were awarded without approved drawings. The CRS sanction for condonation was yet be received (December 2018). The work has been stalled after achieving 75 *per cent* physical progress. This has led to

[202] 27 June 2016, 20 September 2017 and 3 November 2017
[203] Para 1219 of the Indian Railway Code for Engineering Department

unproductive expenditure of ₹ 6.56 crore. In the absence of Commissioner of Railway Safety's sanction, the chances of completing the work and utilizing the loop line are remote. Meanwhile, running of Python rakes has also been stopped.

There is a need to fix responsibility of the officers responsible for starting the work without obtaining the sanction of CRS and incurring expenditure which may not bear any results.

3.9 Northeast Frontier Railway (NFR): Infructuous expenditure due to failure in ensuring full availability of clear site before initiating works

A new line project from New Maynaguri to Jogighopa was taken up by NFR to connect New Maynaguri to Guwahati via Jogighopa. However, Railways started construction of the work before completing the entire land acquisition. Subsequently, the land acquisition did not fructify. NFR made an alternate arrangement on an existing land owned by them to join Maynaguri Road to a Special Class Station on Jalpaiguri-Guwahati main line. NFR has now dropped the proposal for land acquisition. The expenditure of ₹ 25.13 crore incurred on construction of major/minor bridges, culverts, waterways, earthwork, etc. on the initially identified route has become infructuous.

Audit has highlighted the issue of non-completion of preliminary works by Railways before awarding of contracts for various works, from time to time. Railway Board in October 2006 reiterated that pre-requisite works such as clearance of site and preparation of plans and drawings may be completed in time and handed over to the contractor, so that the progress of work is not hampered. Railway Board also directed that failure to do so may be viewed seriously and responsibility fixed for any extra expenditure incurred. Further for projects, where land acquisition is an essential component, tenders should be awarded only after land acquisition is completed or it has been entirely tied up[204].

[204] Railway Board's letter dated October 2017

A new line project New Maynaguri–Jogighopa falling under the States of West Bengal and Assam was sanctioned by Railway Board in 2000-01 at a cost of ₹ 733.09 crore. This line was to connect New Maynaguri to Guwahati via Jogighopa station. The new line was intended to serve a sizeable population in remote places of West Bengal and Assam along the Bangladesh border.

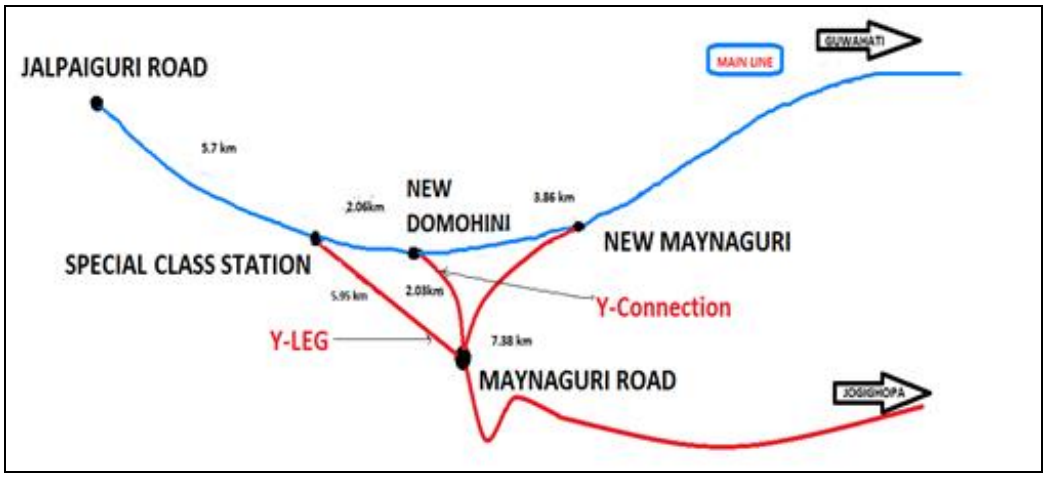

Figure 3.10: Route Map of the project (not to scale)

In June 2004, another line of 2.03 km length was proposed as a Material Modification. This line was to connect New Domohani station on New Jalpaiguri- New Bongaigaon line with Maynaguri Road station on New Maynaguri–Jogighopa line. The project was sanctioned (September 2004) by Railway Board at a cost of ₹ 2.39 crore. This line was named '*Y-connection'* as it formed shape of 'Y' with the stretch of New Maynaguri-Maynaguri Road station of the new line project. Construction of this new line was justified as an alternative route from New Domohani to Guwahati *via* Jogighopa.

For construction of Major/Minor bridges, culverts, waterways, earthwork, track linking etc. in '*Y-connection'* portion, expenditure of ₹ 25.13 crore was incurred (January 2010). However, 62.43 acre land pertaining to '*Y-connection'* remained to be acquired. The land owners were demanding higher compensation than the one decided by the State Government. As such, the entire work of '*Y-connection'* remained incomplete till date. The status quo continued and in June 2015, General Manager/NFR approved

proposal of construction of an alternative route. The alternative route '*Y-leg*' was approved to utilize the already certified portion of track from Maynaguri Road towards Jogighopa by Commissioner of Railway Safety (CRS). This was done for connecting the main line at a point between Jalpaiguri Road and New Domohani which was 2.06 km west of New Domohani station. For utmost utilization of '*Y-leg'*, a new 'Special Class' station was constructed at the designated point. The 5.950 kms long '*Y-leg*' was laid entirely upon a portion of land already under possession of NFR since long. Audit noted that the matter of connecting New Mayanaguri-Jogighopa route to the main line was sorted out. However, the mother project including its Material Modification portion remained incomplete.

Thus, improper planning and failure to adhere to the Railway Board's instructions led to blocking of expenditure of ₹ 25.13 crore. This expenditure was incurred on construction of Major/Minor bridges, culverts, waterways etc. in Maynaguri Road-New Domohani and Maynaguri Road – New Maynaguri portions (*Y-connection)*.

In reply, Railway Board accepted (January 2019) the audit comment and stated that 'Y-connection', which was planned earlier and executed in some portion at the cost of ₹ 26.42 crore, is not required now since an alternative route Y-leg is constructed and commissioned. However, the problem of land acquisition had forced the railway to introduce an additional 'SPL' class station as Y-leg between Jalpaiguri Road and New Domohini to derive the benefit of huge investment on New Maynaguri to Jogighopa project. They stated that land acquisition was being still pursued up to Chief Secretary level. Thereafter, with the permission of General Manager this new alignment had been chosen to connect the entire stretch of the section. They agreed that at present, the expenditure on constructed assets has become infructuous.

There is a need to fix responsibility of the officers responsible for starting the work without ensuring land acquisition and incurring unfruitful expenditure.

3.10 South Eastern Railway (SER): Failure to augment capacity of Electric Loco Shed at Santragachi led to detention of locos

South Eastern Railway proposed to take up the extension work of Electric Loco Shed, Santragachi to accommodate increased holding of locos. They also planned commissioning of a Pit Wheel Lathe for wheel turning at the shed. The work of capacity augmentation could not start as various departments could not come to an agreement. The Pit Wheel Lathe machine was also installed at another location due to inadequate space at Santragachi Loco Shed. However, locos were detained for long hours due to heavy workload resulting in loss of earning capacity of ₹8.33 crore.

Electric Loco Shed, Santragachi (ELS/SRC) of South Eastern Railway (SER) caters to motive power requirement of Mail/Express trains running towards Mumbai and Bhubaneswar. With the available space and infrastructure, the shed was initially planned and equipped for maintaining 35 locos. This was subsequently increased to 50 locos to accommodate increased holding. Subsequently, new trains[205] were introduced and additional locomotives were allotted to the shed. As a result, ELS, Santragachi was unable to meet the maintenance requirement of the additional locomotives.

In December 2009, SER proposed extension of ELS/SRC for smooth running of day to day operations. The site plan for the same was prepared by a Committee of Officers[206] from three departments and approved by the Divisional Railway Manager, Kharagpur. The Committee suggested shifting of Railway Consumer Depot (RCD) tanks of Indian Oil Corporation Ltd. meant for diesel loco fueling at Santragachi. The proposal was also

[205] Like Duronto from Howrah
[206] Area Manager (ARM), Santragachi, Sr. Divisional Electrical Engineer (Sr. DEE)/TRS, Santragachi and Sr. Divisional Engineer (Sr. DEN), Kharagpur

agreed to by the Operating Department. However, the Mechanical Department did not agree to the proposal in view of the objections[207] raised by Indian Oil.

The issue was again deliberated (April 2011) through a Joint Survey by a Committee of representatives from the Electrical, Mechanical and Engineering Department. However, the same could not be settled due to objections of the Mechanical Department. Thereafter, the Electrical Department proposed (August 2011) for augmentation of the holding capacity to 75 locos in first phase and 100 locos in second phase.

In April 2012, Railway Board decided[208] that extension of the shed should be planned at the earliest and all facilities needed to be upgraded. It was also advised (June 2012) shifting of maintenance of diesel locos to Kharagpur, as the numbers of diesel locos had decreased. Railway Board also advised maintaining a few diesel locos at Santragachi. The matter was to be decided by General Manager, SER. Audit observed that this option has not been exercised by SER Administration so far.

At Zonal level, the issue continued to be discussed by the concerned railway departments without any results (December 2015). The matter of augmentation of capacity of the loco shed thus, remained unresolved.

Audit further observed that for wheel turning[209], a Pit Wheel Lathe machine was sanctioned for the shed at Santragachi in July 2012. However, the same could also not be commissioned due to space constraints. Subsequently, this machine was commissioned in Electric

[207] IOCL conducted survey of the area and proposed locations and observed that the proposed locations were surrounded by unauthorized dwelling house, high tension lines were passing through the location thereby posing safety and security hazard. They, therefore, requested railway to maintain the RCD installation at the same location and consider only modification in decantation point.
[208] During discussions in the Conference of Chief Electrical Engineers at Railway Board
[209] Turning is a form of machining, a material removal process, which is used to create rotational parts by cutting away unwanted material. The turning process requires a turning machine or lathe and cutting tool.

Multiple Unit (EMU) Car Shed, Tikiapara[210] in January 2017 which is 5 kms away. Currently, wheel turnings of Electric locos and EMU rakes are mostly done at EMU Car Shed, Tikiapara[211] and other sheds. As against the prescribed time of 16 hours for wheel turning for locos, the average time taken for wheel turning at EMU Car Shed, Tikiapara and other sheds was 51 hours[212]. This was due to heavy workload at these sheds. The possibility of installing the Pit Wheel Lathe Machine in Santragachi was still being explored. A Committee of Subordinate Officers[213] found that suitable space was available for installing the machine at ELS/SRC with some modifications (September 2018).

The matter was taken up with Principal Chief Electric Engineer/SER in July 2018. In reply, they stated (July 2018), that there was no further scope for extension of the shed. They stated that the traffic requirement for coaching locomotives was increasing day by day.

Thus, the capacity augmentation work in the Loco Shed could not be taken up in SER due to lack of co-ordination between various railway departments. Railways sustained avoidable loss of ₹ 8.33 crore due to heavy detention of locos at Tikiapara EMU Car Shed.

The matter was brought to the notice of Railway Board in February 2019. In their reply (September 2019), it has been stated that despite space constraint, the ELS/SRC has been strategically located in Kolkata area to feed the coaching trains in SER. Railway Board further stated that provision of Pit Wheel lathe at Carshed/ Tikiapara was a wise decision in prevailing space constraint. Currently, wheel turnings of electric locos and EMU rakes are being done in this Pit Wheel Lathe. In 2018-19, a Pit Wheel Lathe was sanctioned for Carshed/Tikiapara which is now being

[210] Recently one pit wheel lathe has been sanctioned by Railway Board (2018-19) against replacement of over aged pit wheel lathe at EMU Car Shed, Tikiapara, in addition to the new machine installed in January 2017.
[211] Almost 83 *per cent* of the wheels are sent to Tikiapara for wheel turning, remaining are sent to other sheds at Tatanagar (244 kms), Kharagpur (109 kms), Bokaro (307 kms) and Ramnagar (109 kms)
[212] ranging between 2 hours 30 minutes and 220 hours
[213] from the Engineering, Electrical, Mechanical Departments

commissioned at ELS/SRC by optimizing design of covered shed, modifying RCD complex, etc.

The above reply of Railway Board clearly establishes the fact that the Pit Wheel Lathe which was sanctioned in July 2012 for ELS/SRC could have been commissioned there itself with necessary internal modification, as was done later to install the Pit Wheel lathe sanctioned for Carshed/Tikiapara to ELS/SRC. Installation of the Pit Wheel lathe at ELS/SRC at the very first instance could have avoided haulage of locos as well as their unnecessary detention at other sheds.

3.11 Metro Railway (MR): Injudicious decision taken in construction of third platform/line at Mahanayak Uttam Kumar Station of Metro Railway, Kolkata

Engineering department of Metro Railway/ Kolkata proposed to construct third platform/line at Mahanayak Uttam Kumar station. The objective was to originate/ terminate train services from/to this station. On examination, Operating Department stated that the proposed 3rd platform had limited utility and would not facilitate truncated train services from/to KMUK. However, the third platform/line was constructed without addressing the limitations pointed out by the Operating Department. As such, 3rd platform and line could not be used for originating/terminating trains as planned and the expenditure of ₹11.27 crore was rendered unfruitful.

Engineering Department of Metro Railway, Kolkata proposed (September 2011) construction of the 3rd Platform/line in the Mahanayak Uttam Kumar station (KMUK). The existing two[214] platforms are used for through services between Kabi Subhas and Dum Dum stations. The third line was proposed with the objective of originating/terminating train services from/to KMUK. KMUK is an intermediate station between Kabi Subhas and Dum Dum stations, which are two ends of the metro route in Kolkata.

[214] Down - Kabi Subhas (KKVS) end and UP - Dumdum (KDMI) end

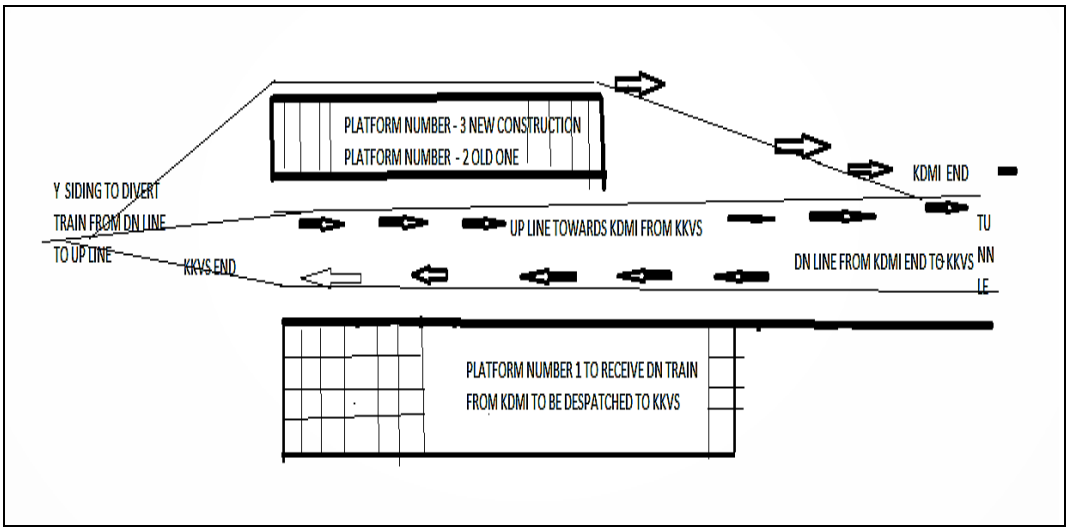

Figure 3.11: Layout of Mahanayak Uttam Kumar Station

The Operating Department of Metro Railway examined the proposal in October 2011 and stated the following:

- The scope of the work only allowed despatch of train towards Dumdum from 3rd platform, which is coming from KMUK car shed (Y siding).
- In case where the train coming from Dumdum is terminated at KMUK station, there was no provision for receiving train directly from Dumdum end to 3rd platform and despatch from 3rd line itself.
- Provision was also not there for receiving train directly from Kabi Subhas end to 3rd platform and go towards Dumdum. The same could go to 3rd Platform only from KMUK car shed.

Audit observed that the above scope of work did not allow originating and terminating services from Platform no.3 of KUMK as envisaged. The Operating Department also stated that in the present scope, the proposed 3rd platform had limited utility and would not facilitate truncated train services from/to KMUK. They suggested dropping the proposal as the same in the present scope did not address the operational constraints.

Audit observed that despite the above suggestion/opinion by Operating Department, Engineering Department undertook the work. The 3rd platform/line was constructed at a total cost of ₹ 11.27 crore and opened

for traffic on 3 July 2016. Eleven pairs of new trains were started/ terminated from/to KMUK from 9 September 2016, by altering service between Dumdum and Kabi Subhas. However, the services were withdrawn with effect from 03 October 2016. No reasons were found on record for withdrawal of truncated services. As such, the 3rd platform/line at KMUK was not used for originating/ terminating trains at KMUK as originally planned. Audit noticed that the trains from Dumdum arriving at Platform no.1 needed to go to the yard before placement at Platform no.3 for starting towards Dumdum. This impacted arrival of trains coming from Kabi Subh as towards Dumdum, which were placed on Platform no.2 of KMUK.

Thus, the limitations pointed out by the Operating Department were not addressed. The Engineering Department constructed the 3rd line without ensuring provision of direct receiving/ dispatch of trains through 3rd line. The expenditure of ₹ 11.27 crore incurred for construction of 3rd line and platform remained unfruitful since October 2016.

In reply, Railway Board stated (May 2019) that at the time of proposal and sanctioning of third line, KMUK carshed was fully operation. But in course of time, the workload of KMUK carshed was shifted to Noapara and Kavi Subhash carsheds. As such, non-availability of additional rakes as well as non-functioning of KMUK shed prevented injection of rakes from KMUK restricting utilisation of third platform. They further stated that revival of KMUK carshed is being placed as part of the upcoming projects. Once the shed is revived the third platform will be productively used for originating services.

The above reply does not indicate the constraints of non-availability of provision for receiving train directly from Down line i.e. from Dum Dum end to third platform and dispatch of same to Up line. Further, due to poor planning of Railway Administration and construction of third line without assessing its efficient utilisation, the expenditure incurred remained unfruitful.

3.12 Central Railway (CR): Non-construction of chord lines leading to haulage of goods trains via longer route and recurring loss of revenue to Railways

Central Railway did not construct chord lines bypassing Panvel station for trains coming from Uran and Roha lines to cross over to Panvel-Karjat line, though the same was provided in the original detailed estimate. In the absence of a chord line, most of the freight traffic originating from Uran and Roha lines was being moved through a 55 kms longer route. The situation became worse, when these goods trains were further detained at Kalyan goods shed. This resulted in loss of ₹68.57 crore during April 2015 to March 2018.

Panvel-Karjat new line was sanctioned in the year 1997 and completed[215] in March 2005. The objectives were to pass the goods, passenger and sub-urban traffic on this line, decongest the busy sections of Kurla-Kalyan and Kalyan-Karjat lines and provide faster transport and utilize the assets optimally. Two chord lines[216]viz. Uran to Apta and Apta to Karjat (total two kms) were also provided in the detailed estimate[217]of the project. The chord lines are constructed on junctions, where the train has to change directions from the junction. If there is no chord line, the engine has to be reversed to join at the other end of the train to change the direction. This is called engine reversal. A chord facilitated change of tracks without reversal of engine. The new line Panvel-Karjat was, however, opened for traffic in 2007 without constructing the chord lines as provided in the detailed estimate. The reasons for not constructing the chord lines were not on record. In this regard, Audit observed the following:

1. With the construction of Panvel-Karjat line, Goods traffic from Uran/JNPT[218] area and Konkan Railway to Pune and beyond was booked

[215] Sanctioned cost ₹106.90 crore, Revised Estimated cost ₹ 137.44 crore
[216] A chord line is a line segment joining two points on a curve. Chord line facilitates change of tracks without reversal of engine.
[217] No work included in an abstract estimate should be commenced till a Detailed Estimate for the same is prepared and sanctioned and adequate funds are allotted by the competent authority. Detailed Estimate will comprise details of estimated cost of work, financial justification and fund allocation.
[218]Jawaharlal Nehru Port Trust

through this shorter route. Audit observed that freight traffic[219] to various locations[220] was booked via shorter route (Panvel-Karjat). However, most of the traffic was carried via longer route (Panvel-Diva-Kalyan-Karjat) and some traffic through shorter route. Movement of traffic through longer route was being done to avoid reversal of engine at Panvel due to non-construction of chord lines.

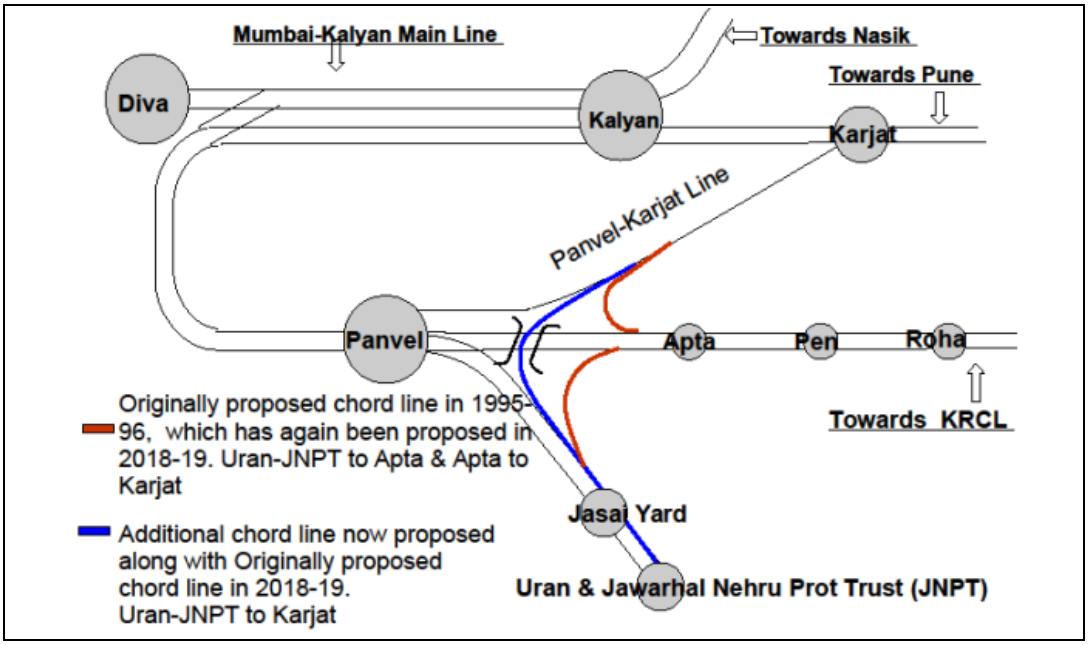

Figure 3.12 – Route map showing Panvel-Karjat line including chord line for bypassing Panvel station

During test check for March 2018, Audit observed that of 254 rakes (trains) which were destined to go beyond Karjat from Panvel, in 148 rakes[221], reversal of engine at Panvel was required. Reversal of engine at Panvel takes 2.42 hours. Eighty-eight of these 148 rakes (59 *per cent*) were moved through longer route (Panvel-Diva-Kalyan-Karjat) and remaining 60 rakes (41 *per cent*) moved through shorter route (Panvel-Karjat). Movement of traffic through longer route (Panvel-Diva-Kalyan-Karjat) entailed extra hauling of trains for 55 kms.

[219] fertilizer from Rashtriya Chemicals & Fertilizers, Thal (Pen), Iron and Steel from PPDP-Dharamtar and imported coal from PPDP-Dharamtar
[220] in Western Maharashtra i.e. Pune, Satara, Sangli, Kolhapur, Solapur and Marathwada i.e. Aurangabad, Jalna, Hingoli, Beed, Parbani, Nanded, Usmanabad and Latur.
[221] In 106 rakes received from Western Railway through Vasai Road, reversal of engine was not required.

This resulted in avoidable expenditure of ₹ 39.15 crore[222] during the period from April 2015 to March 2018 alone.

2. Another constraint was observed at Kalyan station. Kalyan is a very busy station with 780[223] passenger and suburban trains passing through every day. The goods trains cannot pass through Kalyan station. No platform is available for goods trains to pass via passenger yard and, if diverted, it will affect punctuality of passenger and suburban trains. The goods trains being sent through longer route via Kalyan (i.e. Panvel-Diva-Kalyan-Karjat) are invariably detained at Kalyan Goods Yard. Detention to goods trains at Kalyan Goods Yard caused further detention of rakes, being run *via* longer route through Kalyan. Detention of 33,451 wagon days at Kalyan Goods Yard during the period from April 2015 to March 2018 alone resulted in loss of earnings of ₹ 29.42 crore to the Railways.

3. Work for undertaking a Preliminary Engineering-cum-Traffic Survey for Panvel chord line[224] has recently been included in the Detailed Demand for Grants for Railways (2018-19)[225]. As the work is at nascent stage, the traffic will continue to be moved via longer route till construction of the chord line is completed.

Thus, Central Railway did not construct chord lines bypassing Panvel station for trains coming from Uran and Roha lines to cross over to Panvel-Karjat line, though the same was provided in the original detailed estimate. In the absence of a chord line, most of the freight traffic originating from Uran and Roha lines was being moved through a 55 kms longer route. The situation was worse, when these goods trains were further detained at Kalyan goods shed. This led to loss of ₹ 68.57 crore during April 2015 to March 2018.

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[222] Container trains (₹ 24.83 crore) and Goods trains (₹ 14.32 crore)
[223] Number of passenger trains passing through, originating/terminating at Kalyan station every day
[224]Panvel Chord line survey include Chord lines connecting (i) Jasai-Panvelline to Panvel –Roha line by passing Panvel station, (ii) Jasai-Panvelline to Panvel-Karjat line bypassing Panvel station and (iii) Roha-Panvel line to Panvel-Karjat line bypassing Panvel station
[225] Pink Book item No. 40

The matter was taken up with Railway Board on 13 February 2019; their reply has not been received (30 September 2019).

3.13 Northern Railway (NR): Irregular payment of water charges to municipal bodies

NR made irregular payment of ₹ 10.43 crore to municipal bodies without getting water supply in their colonies in New Delhi. They stopped payments in respect of six connections, which did not exist. However, they continue to make payment for another six water connections where no water or little water is being supplied. Defects in water meters in respect of 20 connections were yet to be removed. NR continued to make payment of bills raised by municipal authorities on average basis.

NR Administration has taken water connections from New Delhi Municipal Corporation (NDMC) and Delhi Jal Board (DJB) for supply of water in railway colonies[226]situated in New Delhi. They also have their own water supply arrangements from bore wells. NDMC and DJB raises water bills for each water connection against the Railway Administration. Water bills are to be paid by the Railway Administration after due verification of the bills. Senior Section Engineer (Works)/Hazrat Nizamuddin has been nominated for verification of water bills in respect of water connections in the railways colonies.

Audit observed that Divisional Engineer, Delhi was making payment of water charges in respect of 21 water connections[227]. In a survey conducted by Senior Section Engineer (Works)/Hazrat Nizamuddin in April 2016, only 15 water connections were found to be in existence. Six[228] water connections did not exist. Further, in six[229] water connections

[226]at Sarojini Nagar, Hazrat Nizamuddin, Sewa Nagar, Lajpat Nagar, Gulabi Bagh, Lodhi Road, Delhi Safdarganj Station
[227]Seven water connections taken from NDMC and 14 water connections taken from DJB
[228]NDMC's Water Connection Nos. 36174, 34124, 34039 (Sarojni Nagar colony), DJB's Water Connection Nos.13579-A (Hazrat Nizamuddin colony), 18977, 18978 (Sewa Nagar colony)
[229]DJB's water connection Nos.1910731000, 5910731000 (Sewa Nagar colony), 6300731000, 5300731000, 4300731000, 7300731000 (Hazrat Nizamuddin colony)

there was no water or little water in the pipelines. Details[230] of these 12 connections were not available in the railways' records.

Divisional Engineer, Delhi/NR, informed[231] DJB and NDMC authorities that there was very negligible water in these water connections and these were almost blocked. Bills for water charges were being raised by DJB and NDMC on average basis in 20 water connections as there were no water meter or meter was not working. Only in respect of one connection, bills were raised on the basis of actual meter reading. Divisional Engineer, Delhi/NR, was aware that water connections did not exist at six connections and there was no or little water supply in another six connections. However, he continued to make payment of water charges in respect of all 21 connections. Irregular payment of ₹ 3.87 crore[232] was made in respect of six connections which did not exist during April 2008 to December 2016. The payment was stopped thereafter. Railway is still making payment to DJB for six other connections having no water supply. An amount of ₹ 6.56 crore has been paid on this account till December 2017.

In response, the Engineering Department of NR, stated (July 2017) that

- It was still not clear at ground level whether connections were available or not, as joint inspection carried out partially by NDMC/DJB officials with railway representatives even after regular chasing.
- As an interim measure, water bills for doubtful connections had now been stopped.
- Water connections having defective water meters, bills are being raised on average basis by NDMC/DJB and they have been requested to rectify the defective water meters.

[230] Period for which connection did not exist and no water available
[231] in June 2006, June 2010 and August 2011
[232] Payment made for one connection no. 36174 (up to April 2016), for four connection nos. 34124, 34039, 18977, 18978 (up to June 2016) and one connection no.13579-A (up to December 2016).

Railway Administration continued to make payment of water charges to municipal bodies without any corrective measures to resume water supply or to remove defects in water meters. NR Administration failed to actively pursue the matter with NDMC and DJB for conducting joint inspections to check and remove the obstructions in the water connections/pipelines.

Thus, NR made irregular payment of ₹ 10.43 crore to municipal bodies without receiving water supply during April 2008 to December 2017 in respect of 12 water connections[233].

In reply, Ministry of Railways stated (April 2019) that the basis on which Audit has raised the issue of non-existence of six water connections was the report of SSE Works/HNZM, which he conducted on his own. This was not a joint inspection with DJB/NDMC and Railways. During excavation carried out by the different agencies for various infrastructure development/repair works resulted into damage and these became non traceable. In six other water connections, water supply was found to be intermittent only for a short duration and later on after continued efforts supply of water improved. Out of 21 water connections, water meters are available in 10 water connections. Correspondences were being made at appropriate levels for providing meters/replacement of defective meters.

Ministry in its reply has not given cognizance to survey report of its own official, who is the nominated engineer for verification of water bills. No action was taken on his suggestion for conducting joint inspection with DJB/NDMC. No water or little water and blocked water connections was also reported to DJB/NDMC authorities during June 2006, June 2011 and August 2011 without any results. Only after taking up the matter in audit (June 2016), the Railway Administration stopped the payment of water bills in respect of six water connections which did not exist.

[233] Railway colonies in Sarojini Nagar, Hazrat Nizamuddin, Sewa Nagar and Lajpat Nagar areas in New Delhi

3.14 North Eastern Railway (NER): Execution of substandard bridge work by the contractor

The work for rebuilding of the bridge across the river Ghaghra on Chhapra-Aunrihar section of Varanasi Division in NER was approved in September 2011. During execution of substructure work two wells developed tilts in excess of the permissible limit. However, the work was neither declared sub-standard nor the defects rectified by the contractor. Open Web Bridge Girders fabricated for the super-structure also remained unutilized, as the sub-structure work was yet to be completed. This led to blocking of capital amounting ₹ 67.54 crore.

Railway Board approved (September 2011) the work of rebuilding of bridge[234] across the river Ghaghra on Chhapra-Aunrihar in Varanasi Division, NER at a cost of ₹ 204.68 crore. Rebuilding of bridge included the work of

- sub-structure (including foundation, flooring, bed blocks etc.),
- superstructure (including girders, arch, pipe, slab etc.); and
- track structure above it.

The work of the sub-structure was awarded (March 2012) to M/s AKS-HCIL (JV), Lucknow and was targeted for completion by November 2013. After the completion of the substructure, the work of superstructure was to be started. Eighteen Open Web Bridge Girders (OWBGs)[235] of 4107 MT quantity with a total estimated cost of ₹ 62.07 crore were required for the superstructure. Orders for these OWBGs were placed on Bridge Workshop and a private firm. The foundation work of the bridge was to be completed by November 2013, so that these girders could be utilized.

[234] Bridge No.16 (18x61m), single line BG section

[235] Open Web Girders are used for track bridges over large rivers and valleys; The order for fabrication and supply of girders was placed by Deputy Chief Engineer (Construction)/Bridge) (May 2011) on the Bridge Workshop, Gorakhpur (for eight OWBGs on actual cost basis). For remaining ten OWBGs, the order was placed on a private firm[235] (December 2014) at a total price of ₹ 21.62 crore and these were to be supplied by December 2016. The Bridge Workshop, Gorakhpur completed the fabrication of eight OWBGs by March 2016 at a cost of ₹ 50.25 crore. The firm supplied six OWBGs during October 2016 to September 2017 and two in March 2018.

Audit observed that the construction of the substructure was still incomplete despite granting five extensions to the contractor between November 2013 and May 2018. Four extensions were granted to the contractor on administrative grounds[236]. One extension was granted on contractor's account with a token penalty of ₹ 1 lakh. Audit noticed that during execution of work two wells P-3 (towards Varanasi side) and P-4 (towards Chappra side) developed tilts in excess of the permissible limit. These needed corrections by the contractor. During inspection, Chief Engineer (Construction), Gorakhpur had instructed the contractor to set right the tilts, but the same was not done. As per the Contract Agreement, if the tilts exceeded the permissible limit, the work was to be classified as substandard and liable for rejection. However, NER, instead of taking action against the contractor under the provisions, granted extensions to the contractor.

Audit further observed that there was lack of synchronization between the substructure (foundation work) of the bridge and the fabrication of OWBGs. The foundation work of the bridge remained incomplete, even after four years from the stipulated date (November 2013) of completion. As a result, OWBGs, which were supplied between March 2016 to March 2018 could not be put to use. Of 16 OWBGs supplied, assembling and launching of only four OWBGs could be completed up to 31 May 2018. The remaining OWBGs were lying at the work site of the bridge without any use.

Figure 3.13 Open Web Bridge Girders lying at the workshop of NER

[236] delay in providing drawings and design, shortage of funds, increase in water level, sinking of well due to soil strata clay, blockage of path due to heavy flood and bog in river etc.

In reply, Railway Board stated (November 2018) that all the fabricated girders could not be launched due to unforeseen circumstances encountered during construction of substructure. They also stated that the well sinking of P-3 and P-4 was in intermediate stage. Tilt and shift would be brought down under permissible limits during balance sinking of well and the contractor had already been directed to rectify the problem. They added that all necessary corrective steps were being taken to ensure the safe construction of the bridge.

However, the corrective action was not taken by NER Administration as per the provisions of the Contract Agreement. The work was neither declared as sub-standard nor the defects rectified at the cost of the contractor. This resulted in blocking of capital to the tune of ₹ 67.54 crore besides non-achievement of stated objectives.

There is a need to fix responsibility on officers responsible for execution of sub-standard work. Railways also need to rectify the defects at the cost of the contractor.

3.15 Metro Railway (MR): Blocking up of capital due advance procurement of electric cables and high conductivity rails for Naopara-Barasat metro extension project

Metro Railway, Kolkata made advance procurement of electric cables and high conductivity rails worth ₹ 46.28 crore for Naopara-Barasat metro extension project. These items were required only after completion of civil works of the project. However, the civil works could not be completed even after lapse of seven years of procurement due to encroachment of land. Procured electrical cables and High Conductivity Rails were lying idle since March 2012. This resulted in blocking up of capital of ₹28.90 crore.

Metro Railway (MR) undertook the project of extension of Metro Railway from Noapara to Barasat (*via* Airport) at an estimated cost of ₹ 2582.55 crore. This project also included material modification (MM) of Dum Dum-Tollygunge Metro Project at an estimated cost of ₹ 184.83 crore. The

detailed estimate of the project and its MM were sanctioned in June and November 2010 respectively.

Construction department of MR awarded four contracts for civil works during October 2011 to March 2012, for execution of this project. The civil works[237] were to be completed by October 2013 to March 2014. However, these works could not be completed due to land encroachment in Noapara–Barasat section. Despite being aware of encroachments of land prior to sanction of detailed estimate in November 2010, MR Administration awarded contracts for civil works.

Audit observed that the Noapara to Barasat metro project covers a length of 18.13 km (Noapara-Airport – 6.4 km and Airport–Barasat-11.73 km). Out of this, 10.85 km of the project land was encroached at the time of sanction of the project. As of June 2018, the land acquisition progress was nil. The physical and financial progress of the project was only 15 *per cent* as of March 2018.

Meanwhile, MR went ahead and procured electrical cables (non-stock items) and High Conductivity Rails (HCR) for the Noapara-Barasat extension project in 2011 and 2012. The cables were meant for providing power and connectivity in the section to rolling stock, signalling system etc. besides station electrification. The cables were however, required only after completion of civil works. Similarly, the HCR was required for track linking with two regular track rails for conducting operation of the Metro rakes. These were also to be laid after construction of viaducts through civil contracts.

Audit noticed that MR procured (December 2011 to March 2012) electrical cables worth ₹ 29.09 crore. The civil works of the project could not be completed. Hence, the cables valuing ₹ 15.81 crore were utilized for different purpose (other than the ensuing project) up to March 2018. The remaining cables worth ₹ 13.28 crore remained unutilized since March 2012.

[237] foundations, sub-structure and superstructure and the laying of tracks

Audit further noticed that out of total HCR procured[238] worth ₹ 17.19 crore in March 2012, HCR[239] worth ₹ 15.62 crore remained unutilized. Only a small quantity of 220.222 MT (9.11 *per cent*) of HCR was used for maintenance work. Remaining quantity was lying unprotected in an open area since March 2012. Hence, proper utilization of these HCR was remote.

In reply, Railway Board stated (15 May 2019) that high conductivity steel rails and cable are generally procured in advance through stores. This is to ensure that material is available for commissioning through works contract as soon as site is ready. He added that the cables and rails are being progressively used as per progress of the work[240] and also for O&M and traffic facility works as per requirement. He stated that one round of painting of the rails has already been arranged for better preservation of rails.

Regarding progress of work, Railway Board stated that despite several meetings at higher level, removal of encroachments could not be done. As a result, the contracts of Airport-Barasat section were foreclosed. The works between Noapara and Airport is in full swing.

However, the rails and cable were procured in advance seven years back. MR could use only 54 *per cent* of cables procured and that too in other works. Further, only nine *per cent* of the quantity of HCR could be used in maintenance works.

Thus, due to advance procurement of electric cables and HCRs by MR Administration before completion of civil works, capital worth ₹ 28.90 crore remained blocked since March 2012. Further, deterioration of these items especially cables cannot be ruled out, as they were lying in the open for the last seven years. Preservation by painting of the rails, if done, by Railway will entail additional costs.

[238] 2415.55 MT
[239] 2195.328 MT
[240] for extension of Metro from Naopara to Airport

3.16 Northern Railway (NR): Non-recovery from State Governments/ Defence Authorities towards cost of staff deployed on level crossings

NR failed to execute Agreements with the State Government/Defence Authorities for manning of level crossings (LCs). This resulted in non-recovery of ₹ 97.06 crore towards cost of staff deployed for manning of these LCs.

Rules[241] have been laid down where LCs are provided by Railways at the request of the State Government/Local Bodies. Railway should execute an Agreement incorporating the terms and conditions for manning and maintenance of the LC before the commencement of work. The issue of non-recovery of maintenance charges of LCs from the State Governments/ Local Authorities had been raised by Audit from time to time. In July 1999, Railway Board directed[242] General Manager/NR to execute fresh Agreements in all cases where agreements were not executed or not traceable. NR was also instructed to realize the outstanding dues.

Ministry of Railways, in its Action Taken Note[243], stated (January 2011) that

(i) continuous efforts were being made for realizing the outstanding dues for the maintenance charges and cost of staff from State Government, and

(ii) copies of agreement had been sent to concerned State Governments for signing, as the same could not be signed during meeting with them.

Audit reviewed the status of execution of fresh agreements with the State Government/ Local Authorities by Divisional Authorities (Ambala and Ferozepur). Audit also checked the status of recovery dues towards cost

[241] Paras 1819 and 1851 of Indian Railway Code for the Engineering Department
[242] Member Engineering/ Railway Board's D.O. letter No.92-BC-Audit/ 33 (Reconstructed) dated 19 July 1999
[243] Audit Para No.5.1.6 of Audit Report No. CA 6 of 2008 (Railways) on 'Non-realization of maintenance charges and cost of staff for LCs from State Government'

of staff deployed in LCs. Audit noticed that fresh agreements were yet to be executed with the State Governments (Punjab and Haryana) and the dues were also not recovered. Further, the issue of execution of fresh agreements and payment of outstanding dues on LCs were not included in the agenda of the meetings[244]. Audit noted that Engineering Department contacted the State Governments for signing of fresh agreements and to accept the debits. However, they did not agree to sign the fresh agreements at this stage indicating the absence of any record that LCs opened at the request of State Government. Audit observed that as of March 2018, ₹ 52.84 crore was pending for recovery with State Governments for 51 LCs[245] in Ambala Division. In Ferozepur Division, ₹ 39.27 crore was yet to be recovered from the State Governments[246] towards cost of staff deployed on 53 LCs. Further, ₹ 4.95 crore from Ministry of Defence[247] towards cost of staff deployed on six LCs. State Governments/ Defence Authorities were not paying dues to the Railways in absence of execution of agreements on these LCs.

In reply, Sr. Divisional Engineer (Construction), Ambala stated (August 2017/May 2018) that they had no records available regarding State Government request for construction of LCs, estimate and plan. In absence of the same, State Government/Authorities were not willing to sign fresh Agreements.

Thus, Sr. Divisonal Engineer (Construction)/Ambala failed to execute fresh Agreements and realize the dues from the State Governments. As such, chances of realization of Railway's dues amounting to ₹ 97.06 crore are remote. The dues would accumulate further, as the State

[244] between General Manager/Northern Railway and Chief Secretary of the State Governments (Punjab, Haryana and Himachal Pradesh) during 2015-16 and 2016-17
[245] No. of LCs falling under jurisdiction of Permanent Way Inspectors-RPAR-23, SIR-18, BNN-01, PTA-02, BTI-01, DUI-03, RPJ-03. 50 LCs were under State Government of Punjab and one LC under State Government of Haryana.
[246]Jammu and Kashmir (for 01 LC, ₹ 0.74 crore pertaining to period April 1998 to March 2018), Punjab (for 47 LCs, ₹ 30.63 crore pertaining to period April 1997 to March 2018), Himachal Pradesh (for 11 LCs, ₹ 7.90 crore pertaining to period March 2004 to March 2018)
[247] CDA Western Command, Meerut for 06 LCs

Governments/Local Authorities were continuing to not pay their dues. There was a need to take up the matter at the highest level by the Zonal Railway so as to address this issue.

The matter was taken up with Railway Board on 21 August 2018; their reply has not been received (30 September 2019).

3.17 Central Railway (CR): Non-realization of license fee for railway land licensed to private siding owners

In December 2010, Railway Board instructed General Manager/ CR to launch a drive for signing of all pending License Agreements. However, CR did not execute land license agreements in respect of 14 sidings and no siding charges were levied and collected. In other nine sidings, where agreement was executed, no bills were raised by CR. Audit assessed an amount at ₹ 127.15 crore of license fee outstanding for recovery from these 23 sidings till 31 March 2018.

The Public Accounts Committee (7th Lok Sabha) recommended execution of agreement with concerned parties in all cases of land given on license basis. Accordingly, Railway Board issued (November 1982) direction to Zonal Railways. It was stated that under no circumstances, land should be licensed without executing proper agreement. They further stated that in cases of land already licensed to the outsiders, where no agreements were signed, agreements should be executed without further delay. In February 2005, Railway Board reiterated that proper agreement must be executed between Railway Administration and licensees before the licensee is given possession of land/plot.

As per existing provisions[248] and Railway Board's instructions of February 2005, railway land can be licensed to lay private sidings. Railway Board reviewed the position of execution of license agreements for licensing of land and realization of dues. They noted that the position of signing of agreements had not improved. There were large arrears of land license fee due for realization. In December 2010, Chairman Railway Board

[248] Para 821 of Indian Railway Works Manual, Para 1023, 1024 and 1025 of Indian Railway Code for Engineering Department

instructed General Manager/CR to launch a drive for signing of all pending License Agreements. They were also directed to ensure signing of all pending agreements by 31 March 2011.

Audit reviewed the records of land license agreements in Nagpur Division of CR. Audit noticed that land license agreements in respect of 14 sidings were yet to be executed. Of these, Western Coalfields Limited (WCL)[249] is the owner of 11 sidings and three sidings are owned by the Defence Department. For Defence sidings, Memorandum of Understanding was signed between the CR Administration and Defence Department. The land licensing agreements were not executed and land license fee was not collected from these sidings since handing over the land.

In respect of nine other sidings, the agreements for land licensing were entered into. However, no bills were raised and no license fee was recovered from the parties by the railway administration. The license fee outstanding for recovery from these 23 sidings[250] was assessed at ₹ 127.15 crore till 31 March 2018 **(Annexure 3.1)**.

In reply, Sr. Divisional Engineer/Nagpur, stated (December 2016) that in respect of some sidings, no land licensing clause was included in the siding agreement. As a result, land licensing agreement could not be executed by the Engineering Department. Divisional Authorities further stated (September 2017) that all private siding agreements over Nagpur Division were executed except for the WCL owned sidings. WCL authorities did not agree to sign the agreements and the matter was referred to Railway Board. Railway Administration did not furnish reply in respect of nine cases, where land licensing agreements were executed, but bills for license fee were not preferred.

Thus, failure on the part of CR Administration in entering into land license agreements with the siding owners and non-preferring the bills for land license fee resulted in non-recovery of ₹ 127.15 crore.

[249] A subsidiary company of Coal India Limited
[250] Railway land handed over during years 1908 to 2007

There is a need to fix responsibility of the officers for non-realization of fee for railway land licensed to private siding owners. Railways also need to expedite the process of recovery of dues on this account.

The matter was referred to Ministry of Railways in October 2018. Ministry, in its reply, stated (August 2019) that

- In Nagpur Division, land license agreements in respect of 11 WCL sidings, mostly of British era, could not be executed in absence of main siding agreement. The matter has already been referred to Coal India Limited for directing their subsidiary coal companies to execute land license agreements with railway and payment of outstanding charges. A special drive has been conducted to initiate the land license agreement.
- In respect of three Defence sidings, process for executing land license agreement has been initiated by Railway Administration. Land license fee is being worked out and bills will be raised against the parties.
- In respect of nine other sidings in Nagpur Division, bills have been raised and payments have been received in some cases.
- Monitoring of execution of siding agreements and dues towards license fee is being done at Zonal Railway Headquarters and Railway Board levels.

Thus, despite Railway Boards' directives (December 2010) for launching a drive for signing of pending Licensing Agreements, a number of land license agreements are yet to be executed even after eight years. Failure of Railway Administration in executing the license agreements resulted into non-recovery of ₹ 127.15 crore of license fee.

3.18 South East Central Railway (SECR): Delay in construction of Electric Loco Shed (ELS) and consequent cost overrun

SECR did not give cognizance to the constraints identified by the Committee set up for suggesting locations of construction of ELS. They constructed ELS at Bilaspur, where the Committee had apprehended operational constraints. Due to these constraints, despite a cost overrun of ₹ 27.95 crore and a delay of five years, SECR was yet to operationalize the ELS. As of December 2018, the ELS was able to attend to just 10-15 per cent of its holding capacity of 100 locos.

In August 2006, Electrical Department of SECR formed a Committee of Engineers for identifying suitable location for construction of Electric Loco Shed (ELS). The Committee's Report (October 2007), identified five locations for construction of ELS viz. Bhilai Marshalling Yard, Bilaspur, Anuppur, Raigarh and Korba-Gevra Road. Out of these, only two locations viz., Korba and Raigarh were found to be fit for construction of ELS. The Committee recommended constructing the ELS at Raigarh. Detailed estimate of ₹ 36.86 crore was sanctioned by General Manager, SECR in October 2009 with the target date of completion of 31 March 2013. However, the land could not be acquired, as it was part of notified tribal area of Raigarh and villagers opposed the proposed land acquisition. In July 2010, SECR proposed shifting the location of ELS to Bilaspur on the ground of operational requirement. The land was available at Bilaspur. The proposal was agreed to by the Railway Board in August 2010.

Audit found that while the Committee had considered Bilaspur as a possible location, but did not recommend it due to some operational constraints. The Committee had opined that the location was not proper, as it was a junction of Main Line and Central Industrial Coalfield section. About 90 goods trains were passing (45 in each direction), but few goods trains were originating at Bilaspur. As such, smooth withdrawal and induction of locos was not possible. The Committee also stated that

Bilaspur Loco Shed would require connection with yard. This requirement would further worsen the serious bottleneck already faced at Bilaspur Yard.

Audit observed that the Committee's views were not taken into account and Chief Administrative Officer (Construction) was entrusted with the work of construction of the ELS at Bilaspur. The tender for civil works was awarded to a contractor in January 2011 for ₹ 13.79 crore with completion period of 12 months. However, the progress of the work was very slow due to encroachment of land at site of ELS/Bilaspur. The contract was finally terminated in August 2015 after incurring an expenditure of ₹ 8.55 crore. The balance work was awarded to another contractor in January 2016 at ₹ 9.74 crore which was yet to be completed. Thereafter, in February 2018, SECR engineers surveyed the site (Bilaspur Yard) for connectivity of the ELS with main railway track. They found that original plan for connecting the loco shed with Bilaspur yard was not possible because of various issues as also envisaged by the Committee. They then proposed to undertake the work in two phases and extended the target date of completion to 31 December 2018.

Audit observed that shifting of the project to Bilaspur without giving cognizance to the Committee's views was not prudent. Besides encroachment of land, the operational constraints continued to affect the progress of work. Between October to December 2018, only 15 locos could be inspected at Electric Loco Shed at Bilaspur as against the holding capacity of 100. Only Phase 1 of the work was completed and the ELS was attending to goods locos only. The ELS could not maintain passenger locos until S&T work of replacement of route relay was completed. The work of construction of ELS was delayed by more than five years with a cost overrun of ₹ 27.95 crore.

In reply, Railway Board accepted (April 2019) that civil tender for the portion of Electric Loco Shed had been finalized only after the availability of encroachment free land. They further stated that the change of location

of new electric loco shed from Raigarh to Bilaspur was agreed by Head of Departments (HODs) of technical and finance department. They further stated that the signaling movement is planned in replacement work of route relay interlocking for which tender has already been invited.

Audit, however, observed that the Committee of JAG officers did not recommend (October 2007) Bilaspur as a suitable site for ELS due to operational constraints. These apprehensions became true when SECR had to face difficulties for connectivity of ELS with main track. As such, huge investment in construction of new ELS did not achieve the intended benefits.

3.19 Eastern Railway (ER): Failure of Internal Control mechanism resulted in non-realization of license fee from Hindustan Cables Limited

In 1987, Railway provided 15.66 acre land to Hindustan Cables Limited at Rupnarayanpur for laying a private siding. Since then, neither Eastern Railway Administration preferred bills for license fee nor Hindustan Cables Limited paid the same. In 2016, consequent to the approval of Cabinet Committee of Economic Affairs, Hindustan Cables Limited was closed down. Railways, however, failed to claim their dues within the prescribed time limits. License fee of ₹39.47 crore could not be recovered from Hindustan Cables Limited.

Engineering Department is responsible for the management of all Railway Land by its utilization to the best advantage through leasing or licensing[251]. Accordingly, they grant rights and facilities in respect of available land to outsiders or other departments under a lease or license. The agreement with the private party was signed by the Engineering Department.

In all cases of licensing of Railway land, the license agreement should provide recovery of occupation fees[252]. Correct billing and its prompt issue

[251] Para 1009, 1010 and 1013 of Indian Railways Code for Engineering Department
[252] Para 1025 of Indian Railway Code for the Engineering Department

to the concerned parties are the duty of the Accounts Officer. There should be no delay in preparation of bills and timely realization of dues should be ensured. The executive officers are responsible for rendering all possible assistance in securing promptly realization of sums due to Railways. The Accounts Officer should advise the Executive Head of the office the position of the outstanding bills every month. He should also report the position every quarter to the Financial Adviser and Chief Accounts Officer[253].

In 1987, Engineering department/ ER leased 15.66 acres of land to Hindustan Cables Limited (HCL) at Rupnarayanpur, District Burdwan, West Bengal for laying a private siding. A private siding agreement was signed with HCL in May 1987. Consequent to the decision of Cabinet Committee of Economic Affairs to close down HCL, in September 2016, HCL authorities organized a meeting with all their creditors for settlement of their dues. Representative of ER also attended the meeting, wherein 15 days' time was allowed to them to work out the recoverable amount and submit the same to HCL. ER initiated the process of taking back the land and other assets at the siding and settle the outstanding dues.

Audit observed that Engineering department of Asansol Division had never raised any bills against HCL since the inception of the siding. Sr. Divisional Engineer, Asansol stated that as no documents related to HCL were available with them, no license fee could be claimed from HCL authorities. After, the above mentioned meeting, the process of assessment of outstanding dues was started. Sr. Divisional Engineer, Asansol assessed an outstanding amount of ₹ 39.47 crore[254] against HCL. The details of assessment of the dues were forwarded to the Zonal Accounts Department only after expiry of 15 days' time granted for preferring the bills. Zonal Accounts Department, subsequently, sent the concerned bills to the Chief General Engineer with request for taking

[253] Para 1141 of Indian Railway Code for the Accounts Department (Part 1)
[254] land licence fee of ₹ 38.20 crore for 29 years from 1988 to 2016 and ₹1.27 crore as cost of track (scrap) in the assisted siding of HCL.

necessary action to realize all dues against HCL. They also requested them to take back the land and other assets at the siding, which were still in possession of HCL.

In November 2017, HCL called their creditors to come forward and submit their claims along with necessary supporting documents for full and final settlement. They gave all their creditors a time up to 1 January 2018 and claims received after this date has not been admitted. Audit observed that, ER Administration again failed to produce their claims.

In reply, Sr. Divisional Engineer/ Asansol replied (May 2018) that they worked out the dues from HCL for the period from 1988 to 2016. The same had been forwarded the same to the Divisional Accounts office for recovery. They could not claim the license fee as no relevant documents were available with them. On the other hand, Accounts Department intimated that in practice, the bills for license fee were raised and claimed by the Executive office. The Accounts department only maintained the records of the realization. As such, Accounts Office had no information regarding any dues from HCL as no bill was raised by Engineering Department.

Thus, Engineering department failed to raise bills towards license fee for leasing the land to HCL since 1987. Requisite documents were also not available with them. As a result, they could not avail the opportunity provided by HCL to its creditors to facilitate the final closure of dues. Railways thus, lost the opportunity to recover the unclaimed license fees of ₹ 39.47 crore from HCL.

There is a need to fix responsibility of the officers who failed to raise bills for license fees and produce claims for recovery of dues.

The matter was taken up with Railway Board on 8 November 2018; their reply has not been received (30 September 2019).

Chapter 4 - Rolling Stock

At Railway Board level, Member, Rolling Stock is overall in-charge of Mechanical Department, including Workshops and Production Units (other than locomotives). The works related to Electric Multiple Unit/Mainline Electric Multiple Unit (EMU/MEMU), and electrical maintenance of all coaching stock is also the responsibility of the Member Rolling Stock.

At Zonal level, the Chief Mechanical Engineer (CME) is responsible for overall supervision and maintenance of all coaches, wagons etc. Chief Workshop Engineer (CWE) is overall in-charge of the workshops which undertake maintenance of rolling stock and related items. Production Units are managed independently by General Managers reporting to Member, Rolling Stock at Railway Board.

The total revenue expenditure on repair and maintenance of rolling stock[255] in workshop during 2017-18 was ₹ 15396.25 crore[256]. Operating expenses on rolling stock and equipment was ₹ 12690.96 crore[257] during 2017-18. Further, capital expenditure on Production Units of coaches during 2017-18 was ₹ 10,795.27 crore[258]. During the year, apart from regular audit of vouchers and tenders, 811 offices of the Mechanical Department were inspected.

This chapter includes one all-India long paragraph on Status of Commissioning and Utilization of Major Machineries and Plants procured by Central Organization for Modernization of Workshops (COFMOW) in Indian Railways. In addition, there are three individual paragraphs related to Working of Rail Wheel Plant (RWP), Bela and non-commissioning and underutilization of machines.

[255] including Carriage & Wagons, Plant & Equipment
[256] Sub head 3002-3003 (4) – Repair and maintenance of carriages and wagons for 2017-18 and Minor head 300 of sub head 3002-3003 (5)– Repair and maintenance of Plant and Equipment
[257] Sub head 3002-3003 (6) – Operating expenses – Rolling stock and equipment for 2017-18
[258] ICF/Chennai, RCF/Kapurthala and MCF/Rae Bareli, RWP/ Bela, RWF/Yelhanka

4.1 All Zonal Railways: Status of Commissioning and Utilization of Major Machineries and Plants procured by COFMOW in Indian Railways

4.1.1 Introduction

Central Organization for Modernization of Workshops (COFMOW) was set up in 1978 as a centralized agency of Indian Railways. It is responsible for modernization of Railway Workshops and Production Units. Based on the indents received from Zonal Railways/ Production Units, COFMOW prepare specification and procured Machinery and Plant (M&P). It also carries out procurement of specialized M&P and responsible for induction of modern workshop technologies. COFMOW's responsibilities include procurement of M&Ps by selecting manufacturing technologies, prepare detailed technical specification and consultancy for on-site commissioning. It was also responsible for co-ordination of warranty services with manufacturers and purchasing special purpose M&Ps meant for transfer of technology (ToT) etc. Inspection of M&Ps procured by COFMOW is normally done by Rail India Technical and Economic Service (RITES). For imported items, these inspections are carried out by Indian Railway representatives in Indian High Commissions/ Embassies in London, Berlin and Paris.

Audit, in its earlier Reports, had brought out instances of significant delays at various stages[259]. Earlier reports also include issues such as defects in machines, non-utilization/under-utilization of costly M&Ps etc.

COFMOW is headed by Chief Administrative Officer (CAO), who reports to the Member (Rolling Stock) at Railway Board. The CAO is assisted by three Chief Mechanical Engineers (CMEs), one Chief Electrical Engineer (CEE), two Controller of Stores (COS), two Financial Advisors & Chief Accounts Officers (FA&CAOs). Technical evaluations of proposals are carried out by CME/Deputy CMEs and CEE/Deputy CEE for their

[259] submission of indents by the users to COFMOW, finalization of specifications, calling and finalization of tenders.

respective departments. CME/Post Contract Management (PCM) is responsible for coordinating with consignees and supplier firms to ensure timely supply, installation, commissioning of machines.

In Zonal Railways, Chief Mechanical Engineer (Planning) coordinates procurement of M&Ps with COFMOW. At Production Units, Chief Plant Engineer (CPE) is responsible for preparing justification, placing indent, making arrangement for installation/ commissioning. He is also responsible for coordinating with COFMOW and the supplier firms to ensure timely supply, installation, commissioning and performance of M&Ps. The users/consignees are responsible for making arrangements for their timely commissioning and proper utilization for the M&Ps procured.

4.1.2 Audit objectives

This review was undertaken to assess whether

- Installation and commissioning of M&Ps was as per schedule?
- Effective co-ordination mechanism between COFMOW and ZRs/PUs was in place to timely rectify defects in M&Ps?
- M&Ps were utilized optimally and their performance was satisfactory?

4.1.3 Audit scope, methodology and criteria

The present audit covered the M&Ps procured by COFMOW and received by ZRs/PUs during the period from 2014-15 to 2017-18 (up to November 2017[260]). Records available at ZRs/PUs in respect of installation, commissioning and utilization of M&Ps were examined. Instructions, circulars issued by Railway Board and agreements entered into between suppliers and COFMOW were also looked into. Rules and provisional laid down in the relevant Codes and Manuals[261] were used as audit criteria.

[260]Generally, three to four months are provided for commissioning of the machines. Hence, in 2017-18, machines received up to November 2017 have been covered in the present study.

[261] Indian Railways Code for Mechanical Department, Indian Railways Code for Stores Department, Material Procurement Manual, Indian Railway Financial Code, Indian Railways Code for Accounts Department

Standard Conditions of Contracts, General Conditions of Contracts, Bid Documents were also used as sources for audit criteria.

4.1.4 Sample size

Indian Railways procured 2,299 machines costing ₹ 1,675.41 crore through COFMOW during 2014-15 to 2017-18. Out of 2,299 machines, 2,041 machines costing ₹ 1,552.89 crore were received during April 2014 to November 2017. Criteria for selection of sample and number of machines selected for detailed review in sample are given below:

Table 4.1 - Criteria and details of sample selected

S. no.	Cost of M&P	Total number of M&Ps procured by COFMOW during 2014-18 (Up to November 2017)	Selection percentage	Number of M&Ps selected
1.	Above ₹ 5 crore	102	100	102
2.	More than or equal to ₹ one crore but less than or equal to ₹ five crore	163	75	138
3.	Below ₹ one crore	1,776	10	258*
	Total	**2,041**		**498**

**Number of machines is higher as minimum 20 machines (or actual no. of machines if the total machines procured during the review period are less than 20) were selected in each ZRs/PUs.*

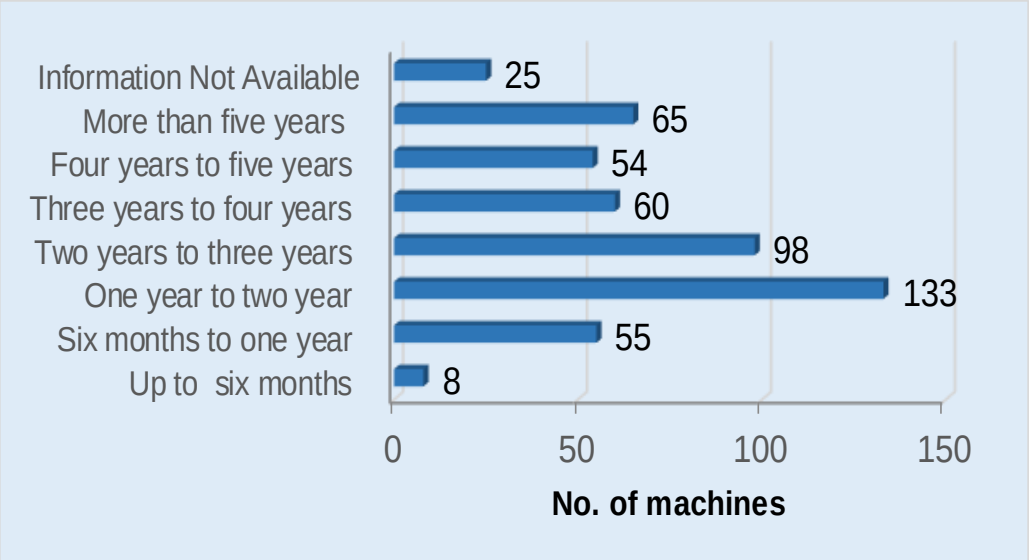
Out of 2,041 numbers of M&Ps, 498 numbers of M&Ps (24.40 *per cent*) costing ₹ 1,130.99 crore was selected for test check in Audit. ZRs/PUs wise details of total machines procured and selected for study are given in **Annexure 4.1**. Audit observed that out of above 498 machines, 70 machines (14 *per cent*) were procured through import and 428 machines (86 *per cent*) were procured from indigenous sources.

Audit findings

4.1.5 Installation and commissioning of M&Ps in Zonal Railways and Production Units

The M&P should be installed/commissioned within the prescribed time (three to four months) after its receipt. Thereafter, Proven Test Certificate (PTC) is issued by the Railways for each machine commissioned verifying that the machine is capable of working as per the defined capacity.

Audit reviewed the time taken in receipt of machines by Zonal Railways/PUs against the indents placed by them to COFMOW. The data showed that only 12.65 *per cent* (63 out of 498) machines could be received by the users within one year from the date of placing indents. Remaining machines were received after one to five years or more from the date of placement of indents by the users. Significant delays in receipt



Graph 4.1: Time taken from date of indent to receipt of machine

of machines by the users/consignee was indicative of the long drawn process being followed by COFMOW in processing of indents.

During Exit Conference (30 April 2019), the Ministry agreed that there were cases of delay in procurement of machines. They stated that a number of machines purchased by the COFMOW were highly sophisticated and needed detailed market research for preparing specifications. Also, due to lack of readiness of sites by the consignees, in some cases the firms have to put on hold the supply of the machine and reschedule delivery.

Ministry of Railways needs to direct COFMOW and Zonal Railways/Production Units (Consignees) to streamline their activities involved in preparation of specifications, market research and vendor development. Consignees also need to ensure readiness of sites for expeditious installation, commissioning and utilization of machines.

Audit reviewed the status of installation and commissioning of 498 machines in Zonal Railways/Production Units. Audit observed that a number of machines could not be utilized optimally due to non/delay in installation/ commissioning after receipt. Delays in proving out of machines after commissioning was also noticed. This resulted in unproductive/ infructuous expenditure or blocking of capital. Status of installation, commissioning and proving out of the machines is as follows:

Table 4.2 - Status of installation, commissioning and proving out of the machines

Particulars	Number	Cost (₹ in crore)
Total number of machines reviewed in Audit	498	1130.99
Machines received but not installed/commissioned[262]	16	97.81
Machines installed but not commissioned[263]	8	54.88
Delay in installation of machines	39	178.14
Delay in commissioning of machines	154	358.81
Non-proving out of machines	14	25.50
Delay in proving out of machines	275	538.52

Details of these machines are given in the following paragraphs:

4.1.6 Machines received but could not be installed/ commissioned

Out of 498 selected machines,16 machines valuing ₹ 97.81 crore could not be installed/commissioned even after lapse of four to 27 months of its receipt by the users. These machines included wheel lathe machines, painting systems, Electric Overhead Travel (EOT) crane, simulator-in-motion etc. The reasons for delay in installation/commissioning were

- non-availability of funds for construction of infrastructure,
- delay in initiating the process of getting No Objection Certificate (NOC) from civil authorities,
- delay in permission from forest department for cutting trees,
- non-availability of clear site,
- non-providing of material for track linkage etc.

[262] Machines which were to be installed and commissioned *on the same date* but were not installed and commissioned.
[263] Machines which were to be installed and commissioned *at different dates* but were not installed and commissioned.

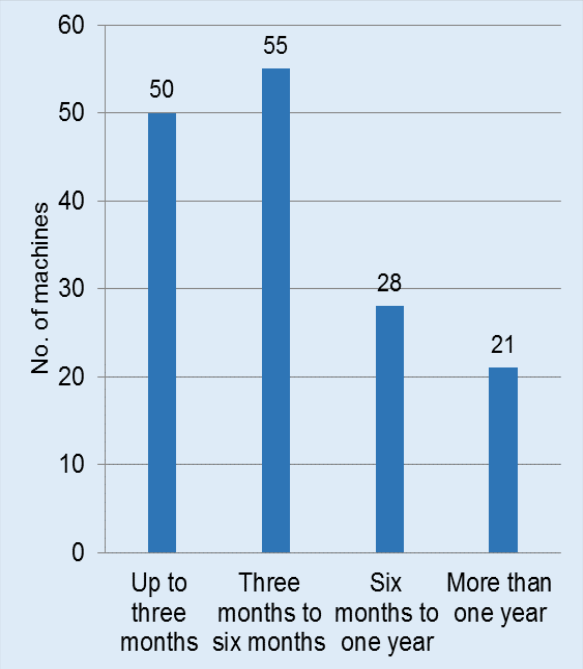
All these reasons were mainly on account of railways and impacted timely installation/commissioning of such high value machines. Audit observed that eight[264] out of 498 selected machines costing ₹ 54.88 crore were installed, but could not be commissioned. The delays ranged from one month (27 days) to 37 months from the date of installation. The reasons were non-proving out of machine during trials as per tender conditions, incomplete fitment of machine parts by the firm, non-completion of infrastructure work etc.

Out of 498 selected machines, in 39 machines (7.83 *per cent*) costing ₹ 178.14 crore, there was delay in installation ranging from 34 days to 19 months.

- In 15 cases, firms were responsible for delay in installation of the machines. The main reasons included non-providing equipment, non-arrival of engineers, slow progress of work and delay in preparation of sites.
- In 12 cases, installation of machines was delayed on the Railway's accounts. Railways failed to provide the site, power supply arrangements and material/infrastructure required for installation of machines.
- In six cases, firms and railways both were responsible for delay in installation of machines.
- In six cases, reasons for delay in installation of machines were not found on records.

Further, after installation of machines there was delay of one to 38 months in commissioning of 154 machines (30.92 *per cent*) costing ₹ 358.81 crore. The delay was more than six months for 49 machines, as can be seen from ***Graph 4.2***.

[264] DMW-1, DLW-1, RCF-2, SECR-2, SER-1 and WR-1



Graph 4.2: Delay in commissioning of machines

Audit observed that there is no online or regular monitoring mechanism at COFMOW to track the progress of installation and commissioning of the machines. Delay/non-installation/non-commissioning of machines is known to them only on receipt of the reports from the users concerned.

Review of reasons for the delays in commissioning of 154 machines showed that

- In 70 cases, firms were responsible for delay in commissioning of the machines. The main reasons included delay in preparation of sites, defects in machines, delay in attending the defects, non-arrival of engineers.
- In 40 cases, commissioning of machines was delayed on the Railway's accounts. Railways failed to handover the clear sites in time; delay in construction of shed, delay in power supply, non-providing material for trials.
- In 30 cases, firms and railways both were responsible for delay in commissioning of machines.
- In 14 cases, reasons for delay in commissioning of machines were not found on records.

During Exit Conference (30 April 2019), Ministry stated that most of the machines pointed out by Audit have now been commissioned. They added that more and more machines were now being procured on turnkey basis with annual maintenance contract. This would avoid delays in future. Financial Commissioner (Railways) commented that whole purpose of procuring the machine is defeated if the same is not installed,

commissioned and proved out in scheduled time. Hence, stage-wise proper monitoring of machine is required and should be ensured through e-procurement system (IREPS). It was stated that for monitoring various stages from indenting to commissioning and utilization of machines, a computerized system is being developed and will start functioning by the end of 2019.

4.1.7 Non-issue/delay in issue of Proven Test Certificate

Proven Test Certificate (PTC) is required to be issued by the consignee for each machine commissioned and working satisfactorily. Audit observed that 14 machines costing ₹ 25.50 crore were commissioned one month to 21 months back, but PTC was not issued (31 March 2018). Further, in almost 55 *per cent* machines (275 machines out of 498 selected machines reviewed), PTC was issued after a period of delay of one month to 23 months. Reasons were frequent failure of components and delay in attending defects/ repair works by the firm. In a number of cases, Railway could not provide clear site/complete infrastructural works or kept machine under observations/monitoring performance before issuing the PTC etc.

As a result of delay in all stages viz. installation, commissioning and issuance of PTC, machineries could not be put to use effectively. Firms/suppliers also did not adhere to their responsibilities. COFMOW took up the issues related to delay/non-installation/non-commissioning and rectification of defects of machines. However, no concrete penal action such as recovery of liquidated damages or black listing the defaulter firms was taken.

In reply, Ministry of Railways stated (8 April 2019) that some of machines had already been successfully proved out and PTCs issued. In some cases, PTCs were kept pending to deliver the stipulated requirements for which firms had already been advised. In case of delays attributable to the firm, the delay was endorsed in PTCs appropriately and LD invariably levied as per the terms and conditions of Contract.

In ER, Audit observed that stage wise delay was not properly recorded in the PTC. Delays were observed[265] in respect of 10 machines, but the same was not recorded in all the machines. Proper recording of delays on the part of supplier is essential for recovery of LD. In the absence of appropriate record, LD could not be levied.

4.1.8 Rectification of defects in machines installed/ commissioned

4.1.8.1 Detection of defects at the time of commissioning or immediately thereafter

As per the terms and conditions[266], the contractor shall replace or repair the goods (machine) or such portion thereof as is rejected by the purchaser free of cost. The defects should be brought to the notice of the contractor within three months of their being first discovered during the warranty period.

Audit noticed that as on 31 March 2019

- 85 out of 498 selected machines (17.07 *per cent*) costing ₹ 227.96 crore developed defects immediately after and up to six months from the date of commissioning.
- In 11 cases, machines costing ₹ 16.03 crore, remained out of order for a month to three and a half years due to non-rectification of defects (up to March 2018).
- Co-ordination mechanism between consignee and COFMOW was not effective to ensure timely rectification of the defects.
- 65 out of 498 selected machines (13.05 *per cent*) costing ₹ 290.88 crore developed defects on a number of occasions during the period of review. These machines had frequent breakdowns (ranging from two to 18 times[267]) after their commissioning

[265] ranging from one to 201 days in completion of foundation work, , delays of seven to 753 days in the commissioning of 14 Machines

[266] Clauses 3401 to 3410 of General Conditions of Contract of Bid Document (Part I)

[267]The machines, where break downs occurred on ten or more times, included Wheel Lathe Surface CAMC in JUDW/NR (18 times), CNC Surface Wheel Lathe in Jamalpur Workshop/ER (14 times), Two Spindle Fine Boring Machine in DMW/NR (14 times) and Guillotine Shearing Machine Double Column in Coach Rehabilitation Workshop, Bhopal/WCR (10 times).

Audit examined the role of COFMOW in cases of failure of the firms in timely and proper installation/commissioning of machines and also non/delay in rectification of defects. Audit, noticed that no concrete penal action such as levy of liquidated damages or getting the defaulter firms black listed etc. was taken. Firms did not respond to the above issues/ requests of the COFMOW/Railways after supply of machines. 80 *per cent*[268] of the cost of machines had already been paid to the firm on receipt of machine by the user/consignee.

4.1.8.2 Non-rectification of defects within the stipulated time

Rules[269] stipulate that the supplier shall cover all replacement and repairs of new M&P under warranty within two weeks[270]. Audit observed that

- Out of 498 selected machines, in 124 instances in respect of 74 machines, defects were not rectified within stipulated period of two weeks.
- In 30 instances, the rectification was done beyond three months from the date of communicating the defects to the firms.

In reply, Ministry of Railways stated (8 April 2019) that defects noticed at the time of commissioning or immediately thereafter are teething problems, which do occur when machines are put into operation. COFMOW approaches the firms to attend/rectify the machines. Penal action as per terms and conditions of the contract is invariably initiated against the firms for failing to rectify the defects. Instructions were also issued to the consignees to get rectify the defects by the outside sources and deducting the cost from the suppliers' 20 *per cent* dues lying with the Railways.

4.1.9 Rejection of plant and machinery

Rules provide for rejection, if any, within 90 days of commissioning of the machine[271]. Further, the contractor shall refund any advance/part

[268]Clause 1801 and 1802 of General Conditions of Contracts of Bid Documents (Part I)
[269] Para of 3405 of the General Conditions of Contract
[270] One week in certain contracts
[271] Clause 2102 of the Bid Document (Part I) of Accepted Tender

payment received by him in respect of the rejected stores within 21 days of the receipt of the intimation from the consignee about the rejection of the stores[272]. In default, the Purchaser may take steps against the contractor for recovery of such price.

Audit observed that

- A large number of machines (almost 17 *per cent*) developing defects immediately or soon after commissioning. However, Railways did not resort to the option of rejection of machine in many cases.
- Three CNC Vertical Turning Lathe machines[273] costing ₹ 4.70 crore failed to clear proving out tests at the time of commissioning. Finally, the machines were rejected by the consignees after 15 to 31 months from the date of commissioning and lying at premises of consignee without replacement. As such, by not taking timely action to reject the machines, Railways have lost the opportunity to recover the amount from the supplier firm except recovering performance bank guarantee.

Defects in a significant number of newly commissioned machines immediately after commissioning indicated lack of proper inspection on part of Inspecting Authorities. No representative from the user/consignees is present while the inspection is being done. As such, they are able to identify the defects/problems only when the machine reaches their premises and is installed and commissioned. Due to lack of diligence on part of Railways to enforce the penal clause, the firm/supplier did not honor their responsibility of attending to the defects.

As a result, a large number of machines are put to use after significant delays caused by the firm's/supplier's inability to rectify the defects. COFMOW/Railway Administration also failed to timely reject the machines as a result of which the cost could not be recovered from the suppliers.

[272] Clause 2105 of the Bid Document (Part I)
[273] DLW-1, WCR-1 and DMW-1

During Exit Conference (30 April 2019), Ministry stated that, specification, components etc. are mainly checked during RITES inspection. However, actual functioning of machine at firm's premises is not possible without installation. For inclusion of consignee's representative in the Inspection team, the Ministry stated that the same is not possible as users may not possess the required technical expertise. However, users are sent for inspection in some specific cases.

However, it is felt that defects arising immediately after installation and commissioning raises a question on the quality of inspection done. Railways need to ensure that such cases do not arise due to lack of proper inspection by a qualified person. The Ministry also needs to impress upon the consignees to take timely action for rejection of machines and recover cost thereof as per the conditions of the bid documents.

4.1.10 Utilization and performance of machines procured

Audit assessed whether the machine was properly utilized for the intended purpose. Audit findings are given below:

4.1.10.1 M&Ps lying idle after its commissioning - Of 498 machines checked, 61 machines costing ₹ 222.20 crore had been lying idle after commissioning. During 2014-18, these 61 machines were kept idle for 2,75,793 hours. The reasons for keeping these machines idle were mainly

- non-availability of adequate workload (58.94 *per cent* of total idling hours);
- non-availability of skilled manpower to operate the machine (three *per cent* of total idling hours);
- other reasons such as non-availability of power, machine breakdown, incomplete site etc.

4.1.10.2 Shortfall in outturn with respect to rated capacity of machine - Out of 498 selected machines, 122 machines (24.50 *per cent*) were meant for production purposes, the outturn of which could be quantified with respect to their rated capacity. Audit observed that most of the newly

procured machines were being utilized below their rated capacity. Loss due to shortfall in production worked out in 81[274] out of 122 machines during 2014-18 was ₹ 37.49 crore. In 89[275] out of 122 cases, reason for shortfall with reference to the rated capacity was non-availability of required workload. Other reasons for shortfall in production were frequent breakdown of machines, parallel running of old machines, inadequate training for operating the new machines and other reasons.

Thus, a large number of machines were procured without having adequate justification of workload for them. As a result, these were kept idle for long periods and were not used for the purpose for which these were procured.

Thus, a large number of machines could not be utilized optimally due to non-availability of adequate workload. There was shortfall in outturn of the newly installed machines with reference to the rated capacity as the machines were not being utilized optimally. Many machines were also lying idle for various other reasons such as non-procurement of ancillary machines in time, shortage of material, non-availability of skilled man powers/operators etc.

In reply, Ministry of Railways stated (8 April 2019) that working hours of the machines depend on many factors like availability of specified raw material, manpower, availability of power supply, adequate load, breakdown period etc. Thus, there was under-utilization of a majority of machines due to non-availability of workload. This also proves that while preparing the justification for procurement of the machines, scale of workload to be catered to was not assessed properly.

During Exit Conference (30 April 2019), Ministry accepted that non-availability of raw material for the sophisticated machines was an area of

[274] In 41 cases, loss could not be worked out as utilization of machines was for different nature of jobs.

[275] Some of these machines included Broad Gauge CNC Surface Wheel Lathe (ER), CNC surface wheel lathe (SR), CNC Vertical Turning Lathe (SCR), CNC Axle Turning Lathe (ECoR), Wheel Press -500T (WR), Coil Spring Scragging and Load Deflection Test Machine (WCR)

concern. They stated that special emphasis would be given to the quality and specification of input raw material for optimal utilization of sophisticated machines like robotic machines.

4.1.11 Conclusion

There were significant delays in receipt of machines by the users/consignee from the date of placing of indents for the same. The delay in all stages viz. installation, commissioning and issuance of PTC caused machineries could not be put to use effectively. Railways did not ensure availability of necessary site and infrastructure. As a result, the machines could not be installed and commissioned timely in many cases. Firms/suppliers also did not adhere to their responsibilities and installation and commissioning of machines was delayed.

COFMOW does not have any mechanism to track the progress of installation and commissioning of the machines. The delays are known to them only when the users inform them so. Further, no representative from the user/consignees is present while the inspection is being done. As a result, Railways are able to identify the defects/problems only when the machine reaches their premises and were installed/ commissioned. Defects in a significant number of newly commissioned machines were noticed immediately after commissioning. Railways did not take appropriate action to get the defects addressed by the firms/suppliers in compliance to the bid conditions. They also did not enforce/ invoke the penal clause. As 80 *per cent* of the payment was already made by the railways to suppliers on receipt of machines by the users/consignees, the firm/supplier did not show interest in attending to the defects. As a result, a large number of machines were put to use after significant delays caused by the firm's/supplier's inability to rectify the defects. COFMOW/ Railway Administration also did not take action to reject the machines in a timely manner and failed to recover the cost from the suppliers.

A large number of machines could not be utilized optimally due to non-availability of adequate workload. There was shortfall in outturn of the

newly installed machines with reference to the rated capacity as the machines were not being utilized optimally. Many machines were also lying idle for various other reasons such as non-procurement of ancillary machines in time, shortage of material and non-availability of skilled man powers/operators.

4.1.12 Recommendations

1. ***The Centralized procurement agency, COFMOW, failed to procure/install/commission machines timely. Railways need to analyze whether the system of centralized procurement for major machineries and plants is working.***
2. ***Railways may decentralize the process of procurement of plant and machinery to some selected field offices on a pilot basis. Railways may compare costs to assess whether de-centralized procurement has price advantage vis-à-vis COFMOW.***

4.2 Working of Rail Wheel Plant (RWP), Bela

4.2.1 Introduction

Rail Wheel Plant (RWP), Bela was established to meet the growing demand of wheels for rolling stock in the Railways. The plant is situated at Bela in Saran district of Bihar and is spread over a land area of 295 acres. The plant was set up at an approximate cost of ₹ 1417.23 crore. With a capacity to manufacture 1,00,000 cast steel BOX'N wagon wheel discs per annum, the plant was declared as a production unit from 1 August 2014.

Indents for loose wheels were sent to Railway Board by Zonal Railways. Based on this, instructions for supply of the same received at RWP. Accordingly, loose wheels manufactured in RWP/Bela were sent to Workshops of these Zonal Railways. RWP has no Axle Shop and Wheel Set Assembly Shop. Loose wheels in excess of requirement of Workshop of Indian Railway produced from Bela are dispatched to Rail Wheel Factory, Yelehanka (RWF) for assembly of wheel sets.

Railway Board fixes annual targets for production of wheel. This was based on capacity of the plant, manpower available and requirement received from Production Units and Zonal Railways. In addition, Durgapur Steel Plant (DSP), a unit of Steel Authority of India Ltd. (SAIL), a Government Public Sector Undertaking also manufactures and sell wheels to Indian Railways. RWP is under the administrative control of Member Mechanical at Railway Board Level and is headed by Chief Administrative Officer.

Against the projection in the DPR of 801[276] Group C category staff, Men-in-Position at RWP as of March 2018 was 708[277] staff. The total staff cost incurred during the last three years was ₹ 137.44 crore.

Audit assessed the planning for setting up the plant at Bela, achievement of targets of production and efficiency of working of the plant during the three-year period of 2015-16 to 2017-18. For this purpose, Audit reviewed

- Detailed Project Report (DPR) for establishment of RWP prepared by RITES;
- minutes of the Wheel Tyre Axle (WTA) quarterly meetings held at Railway Board;
- various instructions/guidelines related to planning and execution of the Plant issued by Railway Boards.

Audit Findings

4.2.2 Justification for setting up of RWP

Rail Wheel Plant, Bela was planned (July 2005) to setup at an estimated cost of ₹ 470.09 crore at Bela in Chappra (Bihar). Initially, the plant was meant for producing 50,000 loose BOX'N wheels annually. The DPR for this plant was prepared (October 2004) by RITES. The DPR assessed requirement of 51,226 cast BOX'N loose wheels for maintenance purpose by the year 2011-12. For setting up of this plant, RWF was to provide necessary technological and managerial support. They were to impart

[276] 641 direct staff and 160 indirect staff
[277] 541 direct staff and 167 indirect staff

initial training to the staff. Envisaging shortages in supply of wheels, the plant capacity was proposed to be increased to 1,00,000 wheels per annum in January 2006.

At the planning stage, the main thrust in support of setting up of the RWP was saving in cost by avoiding import of BOXN loose wheels. Audit, however, noticed that there had been no import of BOXN wheels since the Plant project was planned. RWP also started production of coaching BG wheels from 2016-17 onwards.

Audit analysed the supply of loose wheels (BOXN and BG Coaching) through RWP and other two production units (RWF and DSP) during 2015-16 to 2017-18 to Zonal Railways.

Table 4.3 – Indent and supply of wheels by RWF, DSP and RWP

Unit	2015-16			2016-17			2017-18		
	Indented	*Supplied*	*Perce-ntage of Excess/ short supply*	*Indented*	*Supplied*	*Perce-ntage of Excess/ short supply*	*Indented*	*Supplied*	*Percentage of Excess/ short supply*
RWF	61107	63789	4.39	35299	36462	3.29	45535	45937	0.88
DSP	28545	20442	-28.39	30975	27522	-11.15	34261	26583	-22.41
RWP	14590	12071	-17.27	14261	12593	-11.70	5453	5523	1.28
Total	**104242**	**96302**	**-7.62**	**80535**	**76577**	**-4.91**	**85249**	**78043**	**-8.45**

The above data shows that

- The then existing Production Unit, RWF was able to meet the demand for Indian Railways as a whole.
- During the three years, DSP had short supplied by 11 to 28 *per cent* against the indented quantity. On the other hand, RWF made excess supply of one to four *per cent*.
- Railway Board decides the share to be produced by each wheel plant by distributing the indented quantity amongst them. Audit observed that the share of wheels to be produced by RWF was reduced significantly during 2016-17 (42 *per cent*) and 2017-18 (25 *per cent*) in comparison to 2015-16. The production capacity of RWF was two lakh

wheels per annum. However, the indented quantity was 69 *per cent* to 82 *per cent* below than its capacity.

Thus, requirement of Indian Railways for loose wheels would easily be fulfilled by the existing production units (RWF). As such, justification for setting up of new wheel plant was not adequate.

4.2.3 Setting up of RWP

The setting up of the plant was planned on Turnkey/ Engineering, Procurement and Construction (EPC) basis. The contract for setting up of plant was awarded (August 2008) to M/s Larsen and Toubro (L&T) at a total cost of ₹ 1047.59 crore[278]. The firm was required to set up the plant within the period of 24 months (i.e. by July 2010) from the date of award of contract. However, there were delays in completion of the work by the firm. Nine extensions were given to the firm till September 2018, out of which eight extensions were given on railway account.

The firm was required to give Performance Guarantee Test (PGT) of the plant as a whole. This was to be proved out in an integrated manner for six consecutive days. As per the condition of contract executed with L&T, any defects/ deficiencies observed during PGT would be completed before Final Acceptance Certification. For PGT, maximum three chances were to be given to the contractor failing which liquidated damage was to be imposed.

Audit observed that the first PGT, held in July 2012, failed due to non-functioning of some machines. However, no attempt was made by the L&T for next PGT. Audit further observed that for carrying out PGT, RWP hired M/s MECON[279] and PGT was held in September 2013. No reasons for hiring the third party for PGT were found on record. Railways communicated acceptance of the PGT conducted by MECON to L&T and made payment of ₹ 1092.73 crore. Further, the Final Acceptance

[278] revised to ₹ 1133.09 crore
[279] A PSUs of Government of India under Ministry of Steel

Certification of the plant was not issued by railways. RWP/Bela was declared as production unit from August 2014.

Thus, RWP was declared Production Unit without issuing Final Acceptance Certification.

In reply, RWP Administration stated (April 2019) that the justification for setting up of RWP was a decision taken at Railway Board level and implementing agency was Workshop Project/ Patna. They further stated that RWP has no role in this regard. Railway Board has not given any response in this regard as of 20 June 2019.

4.2.4 Procurement of Machinery and Plants

Audit observed that instead of the getting the Performance Test done by the original firm, RWP got the same done through MECON. Further, without issue of Final Acceptance Certification, the plant was declared as Production Unit. This indicated that the work of setting of the plant was not completed comprehensively. The plant was declared operational without ensuring required Plant and Machinery in proper working condition. In this regard, Audit observed the following:

(i) Warranty of M&P expired even before commissioning of the plant

The commissioning certificate of the machines was given as and when the machines had been installed in the Plant. Warranty of the machines started from the date of issue of commissioning certificate. Audit found that warranty of 114 out of 136 Plant and Machinery expired, even before commissioning of the plant. The warranty of 19 Plant and Machinery expired between August 2014 and December 2014. The details of remaining three M&Ps were not found on record.

As such, production of wheel was started in RWP from 2015-16 and the warranty of all the machines had expired before 2015-16.

In reply (April 2019), no specific response has been given by RWP Administration in regard to expiry of warranty of M&P before the commissioning of the Plant.

(ii) Machines procured in excess of requirement

Four Spruce Grinding (SPG) machines were procured and commissioned (March 2013) from HYT Engineering company private limited, Pune. The cost of the machine was ₹ 80.39 crore and warranty was till March 2014. The machine was to be used for grinding the plate, spruce and riser pads on cast steel wheel. The working efficiency of an SPG machine was 90 seconds/wheel. With a plant installed capacity of 1,00,000 wheels, machine hours required for SPG would have been 2,500 hours[280] based on its rated capacity. However, total yearly machine hours available as per availability of machines were found as 2,64,00 hours[281]. As such, one SPG machine with one standby machine would have been sufficient to carry out the production target of the plant as per installed capacity. Thus, purchase of two additional SPG machines was not warranted. The expenditure of ₹ 40.19[282] crore on these machines was unfruitful.

(iii) Underperformance of M&P

Audit observed that one SPG machine was continuously under breakdown since July 2015. During 2017-18, the break down period of three SPG machines was 2042 out of total 17760 hours (11.49 *per cent*) of working. Audit, however, found that no AMC was finalized for maintenance of these machines. RWP stated (June 2018) that due to high rate offered by OEM, the AMC had not been initiated. Absence of product specification drawing and design of spare parts and lack of interest by OEM to provide spares, were the main reasons for frequent break down of machines.

[280] 100000 wheels x 90 sec /3600 per wheels
[281] 275 days x 24 hrs x 4 machines
[282] ₹ 80.39 crore/4 x 2

Audit also noticed that two machines, viz., SPG and CNC Hub-cutting machines[283] did not perform as per the benchmarks and rework was required on the wheels processed. This resulted in excess expenditure of ₹ 1.63 crore on rework of 19017[284] wheels during 2015-16 to 2017-18.

In reply, RWP Administration stated (April 2019) that Workshop Project/ Patna was the procuring agency of SPG machines. No AMC could be finalized for these machines. RWP/ Bela, was itself managing the maintenance and all four machines were functional. RWP accepted that reliability of SPG machines was not satisfactory. They stated that they planned to procure Sprue Wash as available in RWF, Yehlanka.

However, RWP Administration did not respond the procurement of excess SPG machines than its requirement. They also did not provide the reasons for underperformance of SPG and CNC Hub-cutting machine.

(iv) Purchase of system without assessing its requirement

An Automatic Storage and Retrieval System (ASRS) consist of a variety of computer-controlled systems for automatically placing and retrieving loads from defined storage locations. The purchase order of ASRS was issued in April 2012 at a cost of ₹ 2.43 crore. The same was delivered in November 2012. After completion of more than 90 *per cent* of the installation work, RWP/Bela decided (November 2015) that the ASRS facility would not be very effective for RWP.

RWP/Bela stated (November 2015) that purchase of ASRS was finalized by Workshop Project Organisation/Patna. They stated that attempts were being made to transfer the machine to other production units of Railways. However, the transfer did not materialize. The system remained uninstalled/ unutilized till date (July 2018).

[283] used in Mould Room for finishing the wheel at post stage of good chemistry wheel machines/ equipment

[284] Cost of rework on wheel @ ₹ 857.60 and 3323, 6368 and 9326 wheels were reworked upon in 2015-16, 2016-17 and 2017-18 respectively

In reply, RWP Administration stated (April 2019) that the ASRS was commissioned in June 2018. However, it was not clarified whether the same was being utilized for the purpose.

4.2.5 Excess consumption of electricity

For the purpose of Preliminary Acceptance Tests (PAT), L&T had to prove the running of full plant in an integrated manner. Accordingly, they requested Chief Administrative Officer (CAO)/ Workshop Project for arrangement of power through Bihar State Electricity Board (BSEB). They agreed to reimburse the cost of actual power consumed through KWH meter already installed in all LT panels of unit substation.

Audit noticed that RWP had not assessed the actual need/requirement of power. They entered (June 2011) into an agreement with BSEB for supply of electricity to the Plant for 26.67 MVA maximum contract demand under HTS (III) category (132 KVA). The firm (M/s L&T) was demanding power supply for testing some Plant and Machinery. However, the connection obtained by RWP from BSEB was sufficient to run plant on almost full capacity. During July 2011 and December 2012, Railway paid a sum of ₹ 51.17 crore to BSEB for electricity consumption. Against this, only a sum of ₹ 4.70 crore was received from M/s L&T for actual unit consumed[285]. Thus, during July 2011 to December 2012 RWP incurred a loss of ₹ 46.48 crore[286] by taking excess electricity without any actual requirement.

In reply, RWP Administration stated (April 2019) the excess consumption of electricity was due to

- Running of Plant below the installed capacity due to less target allotment by Railway Board,
- Two shifts working at the plant,
- Availability of less skilled staff

[285] As per the contract agreement the power consumed in the plant during PAT should be debited to M/s L&T.
[286] Difference of amount paid to BSEB and amount recovered from L&T (` 51.17 - ` 4.70 crore)

This indicates that allotment of targets much less than the installed capacity and production of wheels accordingly was one of the main reasons for underutilization of plant and excess consumption of electricity. This also raises a question on the justification of setting up of the plant.

4.2.6 Delay in starting production of BG wheels

Initially, RWP was planned (September 2005) as a single product factory for manufacture of BOX'N wheel. There was no demand for BOX'N wheels beyond 25,000 to 30,000 per year. Accordingly, during the meeting of Wheel Tyre Axel (WTA), Railway Board advised (August 2012) RWP/Bela to explore the possibilities to produce BG coaching wheels.

Audit noticed that RWP was capable of starting production of BG coaching wheels with the existing equipment merely by purchasing some tools and tackles. However, RWP started the process of purchasing tools and tackles for the production of BG coaching wheels in January 2016. These were received in RWP from June 2016 onwards and casting of BG coaching wheels started from September 2016.

Audit observed that

(i) There was drastic reduction in yearly requirement of BOXN loose wheels at plant installation stages. This indicated that assessment made at DPR stage and at the time of enhancement of installed capacity were not justified.

(ii) WTA have given repeated advices to switch over to produce BG coaching wheels due to low demand for BOXN wheels. However, RWP initiated the process for the same after abnormal delays.

In reply, RWP Administration stated (April 2019) that allotment for BG coaching wheels was made by Railway Board only in 2nd quarter of 2016-17. RWP started manufacturing BG wheels in 2015-16 and started dispatching in September 2016.

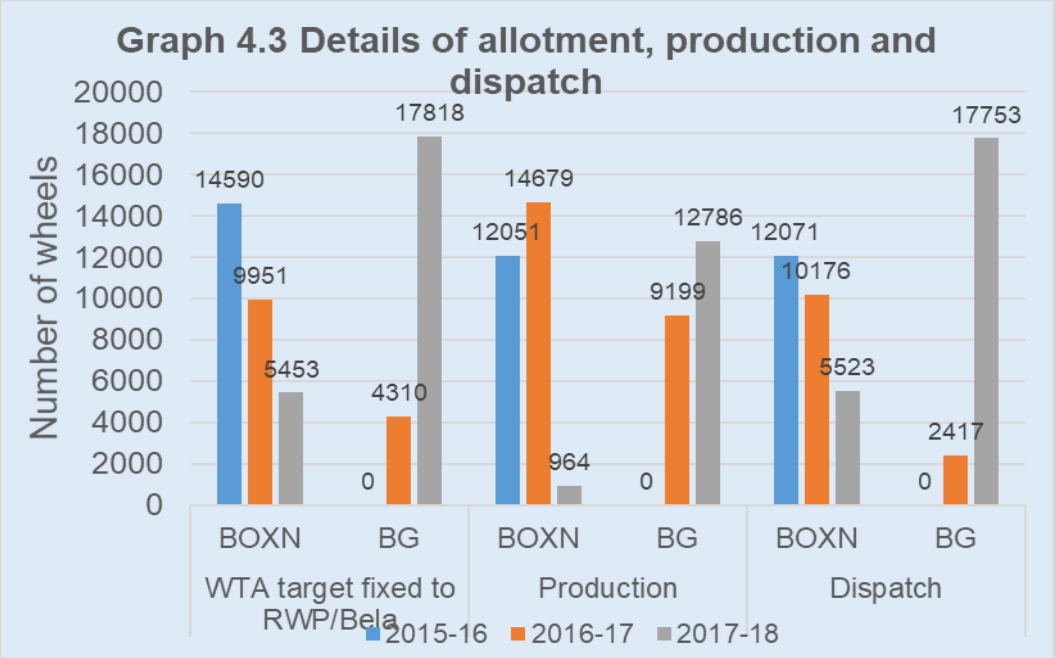
The above clearly indicates that though Railway Board advised RWP/Bela to explore the possibilities to produce BG coaching wheels way back in August 2012, the allotment for production was done only in 2016-17.

RWP also delayed their preparation in the absence of an allotment by the Railway Board.

4.2.7 Production Targets and Achievements

Zonal Railways sent the demand to Stores Directorate of Railway Board by 31st July of the previous year for wheels. Based on this, production target of RWP was fixed every year by Railway Board. Wheel Type Axle (WTA) allotment meetings are held every quarter by Additional Member/Production Unit (Railway Board) with the representation by RWP. The requirements of the RWP along with constraints faced by RWP in the product process are highlighted during the meeting.

The year wise position of WTA allotment and target and achievements during 2015-16 to 2017-18 was as follows:



From above data Audit observed that

i) The target as per production plan of the plant was 25,000 wheels. However, in WTA meeting, the target was reduced by 42 *per cent* (14590 wheels) during 2015-16. The plant failed to achieve the reduced target by 17 *per cent* and the actual production of wheels remained 12,051.

ii) During 2016-17 also, the target of the plant was reduced to 9,951 BOXN and 4,310 BG wheels against the production plan (12,500 BOXN wheels and 10,000 BG wheels). The reduction of target in BOXN wheels was done due to poor demand. This time, RWP manufactured excess BOXN wheels by 48 *per cent* (14,679 wheels). This resulted in piling up of stock of 4503 BOXN wheels after actual dispatch of 10,176 wheels for use. Similarly, the production of BG wheels was excess against the reduced target of 4,310 wheels by 113 *per cent*. This also resulted in piling up of stock of 6,782 BG wheels after actual dispatch of 2,417 wheels for use.

iii) During 2017-18, the plant produced 13,750 wheels (lower by 41 *per cent*) against the WTA allotment of 23,271 wheels (both BOXN & BG). For BOXN and BG wheels, the same was lower by 82 *per cent* and 28 *per cent* respectively.

Thus, the plant did not adhere to the target/ allotment fixed by WTA. This resulted in piling up of stock in one year and low production in subsequent year. Further, the target fixed for production of wheels by RWP was 70 *per cent* to 89 *per cent* lower than its production capacity (50,000 wheels per year). As such the installed capacity of the plant remained grossly underutilized. On the other hand, wheels were continuously being procured from outside agencies (DSP) and also produced in existing plant (RWF).

In reply, RWP stated (June 2018 and November 2018) that the existing manpower is sufficient to cast 50,000 wheels. However, production of wheels depends completely on allotment by Railway Board. Reasons for less allotment by WTA despite demand for more allotments were not available in records of RWP/ Bela. Less allotment of wheels in WTA meetings in comparison to the capacity would be the reason for under-utilization of manpower.

4.2.8 Excess consumption of input material and electricity for production of wheels

a) In the DPR of the RWP prepared in 2004, quantity to be used of different materials during the production of wheels were estimated. This included scrap steel, Graphite Mould Blanks, Liquid Oxygen, Liquefied Petroleum Gas etc. The estimated quantity of these materials was based on production data of RWF/Yehalanka. Audit analyzed the quantity of consumption of these materials during the production of wheels in RWP during 2015-16 to 2017-18. Audit noticed that the materials were generally used in excess of the estimated quantities as detailed below:

Table 4.4 – Excess consumption of material during casting of wheels

Material	Required as per norms/DPR	Actual consumption	Excess consumption	Remarks
Scrap Steel	Each heat requires 21 MT scrap steel for casting 27 wheels. As such, for casting of 75940 wheels during the three years period, 41848 MT steel scrap required	49608 MT	6922 MT	This excess scrap steel consumed could produce additional 14596 wheels.
Graphite Mould Blanks (GMB)	1.88 GMB (48.5" GMBs) required for casting of 1000 BOXN wheels	2.60 to 3.03 GMB per 1000 BOXN wheels	0.72 to 1.15 GMB per 1000 BOXN wheels	Cost of excess GMB consumed - ₹ 1.53 crore
	3.60 GMB (43.5" GMBs) required for casting of 1000 BG coaching wheels	3.80 to 4.37 GMB per 1000 BG coaching wheels	0.20 to 0.77 GMB per 1000 BG coaching wheels	Cost of excess GMB consumed - ₹ 1.02 crore
Liquid Oxygen (LOX)	20 litres i.e. 22.8 kg of LOX per wheel. As such, for casting of 75940 wheels during the three years period, 1731 MT LOX required	2936 MT	1205 MT	Cost of excess LOX consumed - ₹ 1.65 crore
Liquefied Petroleum Gas (LPG)	24 kg of LPG per wheel. As such, for casting of 75940 wheels during the three years period, 1822.560 MT LPG required	5007.355 MT	3184.795 MT	Cost of excess LPG consumed - ₹ 17.49 crore

Excess consumption of input material in the production indicated inefficiencies in the processes being followed by RWP. This also led to blocking of capital.

b) In the DPR, it was assessed[287] that RWP would require 385 lakh KWH of power to manufacture 50,000 wheels yearly. Of this, 80 *per cent* was to be consumed in Wheel Processing Shop and rest 20 *per cent* for allied services/facilities. Furnace of Wheel Shop alone contributed to 60 *per cent* i.e. 231 lakh KWH of the consumption. It was further estimated that for casting each wheel, 463[288] KWH of electricity would be required in furnace.

Audit noticed that records for energy consumption for wheel production purpose (shop-wise) and non-production purposes were not maintained by RWP. Actual consumption of electricity of all the three furnaces at RWP/Bela during the period 2015-16 to 2017-18 was 500.73 lakh KWH in comparison to the norms of 351.6[289] lakh KWH. Thus, 149.13 lakh KWH of energy was consumed in excess in these furnaces during the last three years. The financial implication for this excess consumption was ₹ 11.79 crore**.**

c) The norms of power consumption was 108.45[290] KWH per wheel consumption on ancillary services. However, the actual consumption per wheel at RWP/Bela varied from 110 KWH to 212 KWH during 2015-16 to 2017-18[291]. Audit observed that the average consumption of energy per wheel during this period was 883.80 KWH per wheel, which was also much above the norms of 108.45 KWH per wheel. The financial implication of this excess consumption of electricity was ₹ 35.68 crore during 2015-16 to 2017-18. Audit further assessed that even if RWP had produced 1,00,000 wheels per annum consuming the same amount of electricity, the consumption per wheel would still be 171 KWH. This is much higher than the norms of 108.45 KWH per wheel worked out on the

[287] based on trend of consumption of electricity at RWF/Yelahanka, Bangalore,
[288] 23140019.4 KWH/50000 wheels
[289] @ 463 KWH per wheel during the three years period
[290] Reference Detailed Project Report (Table 8.3.4). Rate calculated based on 110000 projected production of wheel during the three years period.
[291] At RWP/Bela separate meter was provided for furnace but no meter reading for consumption of electricity in other shops (other than furnace) was recorded. Thus, taking into consideration the 20 *per cent* (100-80) of norms as stated in DPR, audit worked out the consumption of electricity in wheel shop (excluding furnace).

basis of actual consumption pattern on ancillary services at RWF/Yelahanka**.**

RWP produced 47,901 wheels during the period of review, but consumed all major input material as well as electric way above the norms. This indicated, inefficiencies in the systems and processes being followed by RWP. There is a need to review the processes and procedures being followed by RWP. RWP need to analyse reasons for consuming excess quantities of input material and electricity for production of wheels and address the same. The cost of production of wheels in-house should always be less than cost of wheels procured from the market.

In reply, RWP Administration stated (April 2019) the reasons of excess consumption of materials was rejection on higher side at the initial stage of this nascent plant. They stated that with increase in production target, staff expertise, this will show downward trend. They also stated that the rejected wheels were sent for re-cutting and used as scrap in electric arc furnaces. During 2015-16 to 2017-18, about 17 *per cent* of the total wheel casted were rejected and sent for re-cutting. Audit, however, noted that the rejection rate in RWP was on higher side as audit seen that in similar type of wheel plant (Rail Wheel Factory, Yelhanka), the average rejection rate was only 5.80 *per cent* during the last three years.

4.2.9 Environmental issues

A. Clearances from State Pollution Control Board

RWP had obtained all the statutory clearances needed in respect of environment from the competent authorities. However, authorization for collection, reception, treatment, storage, transport and disposal of hazardous waste expired on 26 June 2017. RWP was yet to renew the same. Audit further noticed that RWP was yet to take action on the following issues:

(i) The furnace emits fumes which creates pollution. To contain the same a fume extraction system was to be installed at a cost of ₹ 21.48 crore. The same was yet to be installed (July 2018).

(ii) Sewage Treatment Plant (STP) of 500 m^3/day capacity was constructed and installed by M/s L & T and trial run of the same was also done. However, the same remained defunct due to not having full load capacity as residential quarters were yet to be constructed. Recycle and reuse of waste water after adequate treatment was not being done at RWP/Bela. Plant/shop floor was not connected with STP and no arrangement was made for effluent treatment of the effluent released from the plant.

B. Non-disposal of Hazardous Waste

RWP was to operate a facility for collection, storage, transport, reception offering for sale and disposal of hazardous waste. They were required to store the hazardous waste for a period not exceeding 90 days. They were also required to maintain records of sale transport, storage, recycling and reprocessing of such waste and makes records for inspection.

Audit noticed that RWP did not take any action to dispose of hazardous waste since commissioning of the plant. Hazardous waste like hydraulic oil, engine oil, gear oil measuring 2580 litre and asbestos measuring 136 kg were lying undisposed since commissioning of the plant in 2010-11. This was against the provision of pollution norms authorized by Bihar State Pollution Control Board (BSPCB).

In reply, RWP Administration stated (April 2019) that the installation of fume extraction system was in the proposal stage (April 2019). They further stated that the hazardous material remained un-disposed as no agency was available in Bihar. The issue has been taken up with BSPCB by RWP Administration during November 2016 to January 2019. However, no response has been received from BSPCB. Railway Board need to intervene and resolve the issue to avoid storage of hazardous waste material at the plant.

4.2.10 Conclusion

Before setting up RWP, the requirement of Indian Railways for loose wheels were being fulfilled by the then existing production unit, RWF and Durgapur Steel Plant. RWF itself was capable of handling production of wheels for Indian Railway requirements as a whole. RWP, Bela was however set up without adequate justification. During the past three years, the quantity for production assigned by the Railway Board to RWP, was much less than its installed capacity. In view of this, RWP was asked to start production of coaching BG wheels in 2012. They started production of BG wheels in 2016 only.

L&T was awarded the work of setting up of the plant. However, they could not complete the work on time. RWP got the Performance Test done through MECON instead of the original firm. The Plant was declared as Production Unit without issue of Final Acceptance Certificate. Thus, the work of setting up the plant was not completed comprehensively. The plant was declared operational without ensuring required Plant and Machinery were in proper working condition. By the time production of wheel was started in RWP from 2015-16, the warranty of all the machines had expired.

RWP produced 47901 wheels during the 2015-16 to 2017-18, but consumed all major input material as well as electricity above the prescribed norms. This indicated, inefficiencies in the systems and processes being followed by RWP. It also did not take adequate action to address air, water and land pollution and disposal of hazardous waste.

4.2.11 Recommendations

1. ***Optimal utilization of capacity of RWP need to be ensured keeping in view the expenditure incurred in setting up of the plant.***
2. ***RWP needs to analyse reasons for consuming excess quantities of input material (scrap steel, Graphite Mould Blanks, Liquid oxygen, LPG) and electricity for production of***

wheels. Corrective action to address the same need to be taken.

3. ***RWP should take necessary action to address environmental pollution including disposal of hazardous waste as per prescribed norms.***

The matter was taken up with Railway Board on 9 January 2019; their reply has not been received (30 September 2019).

4.3 COFMOW and RCF: Infructuous expenditure due to non-commissioning of cut to length machine

Rail Coach Factory imported a cut-to-length machine through COFMOW in October 2012. The machine was installed in May 2013. Thereafter trials were conducted. However, the trials for commissioning were not successful as the machines was not capable to cut the coils to accuracy set out as per the bid and did not meet the standards set in the contract. In March 2014, RCF proposed to COFMOW to reject the machine. However, COFMOW chose to have protracted correspondence with the firm and did not follow the contractual provisions to reject the machine in a timely manner. They lost the opportunity to recover the cost of machine supplied by the firm. There is no legal remedy available with the Railways except for encashing the bank guarantee. The expenditure of ₹12.05 crore spent on purchase of the machine has thus become infructuous.

Rail Coach Factory (RCF), Kapurthala placed an indent (March 2008) for procurement of a Cut to Length machine[292] on replacement account with Centre for Modernisation of Workshops (COFMOW). Railway Board approved the procurement proposal in May 2008. Global tenders invited by COFMOW were opened in July 2010. The letter of acceptance was issued (October 2011) on Dimeco Alipresse, France through their Indian

[292] The machine is meant for cutting metal sheets which are used in fabrication of coaches

agent, at a cost of Euro 16,91,000 plus ₹ 1.44 crore towards indigenous costs.

Terms and conditions of the contract for imported items stipulated 80 *per cent* payment of net FOB value through irrevocable Letter of Credit against submission of inspection certificate and dispatch document. The shipment was to be done within 30 days of receipt of shipping documents. The balance 20 *per cent* payment was to be done through bank transfer after installation, commissioning and issue of Proven Test Certificate.

The machine was received in October 2012 and RCF paid ₹ 12.05 crore to the firm. Installation and commissioning of the machine was to be done within 120 days of its receipt in RCF i.e. by February 2013. However, the machine was installed in May 2013. Thereafter trials were conducted. However, the trials for commissioning were not successful. The machine was not capable to cut the coils to accuracy set out as per the bid and did not meet the standards set in the contract. In March 2014, RCF proposed to COFMOW to reject the machine. However, COFMOW arranged for a tripartite meeting (June 2014) and continued further trials till June 2016 without any successful results. Finally, RCF rejected (September 2016) the machine and sent the rejection advice to the firm, their Indian agent and COFMOW. COFMOW again tried to organise a joint inspection (January 2017 and April 2017). The same was not successful, as the firm did not come forward to take remedial action.

Clause 2102 (Bid Document Part I) of Accepted Tender deals with consignees right of rejection. The clause stipulated that rejection, if any, should be made within 90 days of commissioning of the machine. The trials for the machine (which should have been installed and commissioned by February 2013) commenced only by May 2013. In terms of the contract, Railways should have rejected the machine by this date (May 2013). However, COFMOW chose to have protracted correspondence with the firm. The machine did not meet the required

standards set out in the contract documents. As such, the machine could not be commissioned till date.

In April 2013, Railway Board issued instructions regarding the procedure to be followed in handling cases of rejection of machine after supply. Even this could not be enforced by COFMOW and RCF, as the due dates as per the contract had already elapsed. At present, Railways do not have a legal ground for rejecting the machine. Now rejecting the machine after a lapse of five years at this late stage is legally not tenable. COFMOW unilaterally declared the machine as commissioned in August 2017, despite the same being rejected by RCF, the end user. As verified by Audit in September 2018, the machine was yet to be commissioned.

Clause 2105 (Bid Document Part I) stipulated the rules for refund of advance/part payment received by the contractor in respect of the rejected stores. As per the clause, the contractor shall within 21 days of the receipt of the intimation from the consignee about the rejection of the stores refund the amount to the Purchaser. In default, the Purchaser may take steps against the contractor for recovery of such price. Audit observed that Railways have not resorted to such course of action. Therefore, they have lost the opportunity to recover the amount from the supplier firm. The only remedial course for the Railways is to encash the Bank Guarantee for Euro 169,100 plus ₹ 14.4 lakh, which is valid till 30 June 2019.

In response, Chief Plant Engineer/RCF agreed (July 2016 and April 2017) that the machine was yet to be commissioned. Railways have lost the opportunity to recover the cost of machine supplied by the firm, as they did not reject the same in a timely manner. The machine is yet to be commissioned and no legal remedy is available with the Railways except for encashing the bank guarantee. The expenditure of ₹ 12.05 crore spent on purchase of cut-to-length machine has thus become infructuous.

There is a need to fix responsibility on the officers responsible for non-commissioning of machines. Also, for failure of timely rejection of the machine, responsibility may also be fixed.

In reply, no specific remarks have been furnished (June 2019) by Railway Board in response to the audit observations. They stated that efforts were being made to commission the machine. The fact remains that the machine is yet to be commissioned even after six years of its receipt.

4.4 Northern Railway (NR): Infructuous expenditure on purchase of special purpose machine for Bogie Bolster and Bogie Frame Welding

Special Purpose Machine for robotic welding of Bogie Bolster and Bogie Frames was received in Mechanical Workshop/ Amritsar (NR) in April 2013. The same was commissioned in March 2015. Audit noticed that the machine was utilized for only 211 working days (21.25 per cent) out of available 993 days. The machine was meant for robotic welding of the bogie side frame, body bolsters sub-assemblies. However, as the input material was not as per the required specification, most of the welding work was being performed manually. As a result, expenditure of ₹ 4.81 crore on procurement of the Special Purpose Machine was rendered infructuous.

Bogies are critical part of coaches and wagons. Mechanical Amritsar Workshop, Northern Railway manufactures wagons (BOXNHL and BVCM), bogie frames of wagons and coaches, Centre Buffer Couplers, Head Stocks and side walls of coaches etc. In September 2006, the Workshop proposed to procure one Special Purpose Robotic Machine for welding of Bogie Bolster and Bogie Frame. The machine was meant to cater to the increased requirement of ICF bogie frames for manufacturing of coaches and wagons.

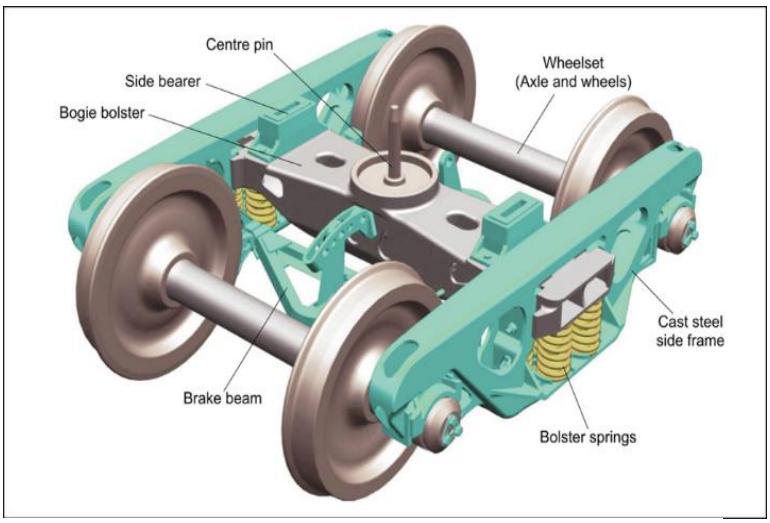


Figure 4.1: Bogie Bolster frame

The proposal was sanctioned in the Machinery and Plant Programme for the year 2007-08[293]. Amritsar Workshop placed an indent (May 2007) on Central Organization for Modernization of Workshops (COFMOW). In May 2010, COFMOW placed an order on an Indian firm[294] for supply of the machine. The machine was received in Mechanical Workshop/Amritsar in April 2013 and commissioned in March 2015. The Proven Test Certificate was issued in July 2015. Audit observed a delay of 436 days in commissioning of the machine. Of this, delay of 408 days was on account of the Railways. They did not complete the flooring on time. They also added circular welding in Brake Beam Assembly and LHB Bogie Frame subsequently in the scope.

The machine has four work stations[295] and can robotically weld five different types of items. Log Book of the Machine showed that during April 2015 to July 2018, the machine was utilized for only 211 working days (21.25 *per cent*) out of available 993 days. Comparison of output of the machine with the total work done in the Workshop indicated that work carried out on the machine was very significantly low. The machine was meant for robotic welding of the bogie side frame, body bolsters sub-assemblies. However, most of the welding work was carried out manually.

[293]Item No. 1001 of 2007-08 for ₹ 3.55 crore
[294]M/s Precision Automation and Robotics Industries/Pune
[295]Welding works of Bogie Bolster for 13 Ton Non-AC, Bogie Bolster arrangement for Air Spring Bogie, Linke Hofmann Busch (LHB) Bogie Side Frame (LH and RH), Bogie Side Frame (of 13 Ton ICF Bogie) and Bogie Bolster of Stainless Steel BOXNHL wagons can be done on the four work stations.

Utilization of the machine for various welding works was negligible, as can be seen from the Table below:

Table 4.5

Item of work	Period	Total Output of the Workshop (in numbers)	Output through Special Purpose Machine (in numbers)	Percentage to the Total
Bogie Side Frame (of 13 Ton ICF Bogie)	April 2015 to July 2018	4044	66	1.63
Bolster for BOXNHL wagons	April 2015 to July 2018	2728	05	0.18
Bogie Bolster for Linke Hofmann Busch (LHB) Coaches	August 2017 to July 2018	30	07	23.33

The main reasons for under-utilization of the machine were as follows:

a. The input tack welded[296] material offered for welding by the railways was not as per the required specification. Against the tolerance limit of ± 1 mm, the input tack welded components were found out of tolerance by 4 to 5 mm. This impacted the productivity of the machine and components were not getting proved out in given time.
b. Railways added circular welding in Brake Beam Assembly and LHB Bogie Frame subsequently in the scope. The firm did not complete programming for the same and these were being done manually.
c. Gas sensors check the pressure of the gases used for welding the components. The sensor was yet to be installed;
d. For operating the machine in three shifts, at least three operators are required. However, only one operator was available for operating the machine.

The issue of underutilization of machine was taken up with the Chief Works Manager, Amritsar Workshop in January 2017. In reply, Railways stated (July 2017) that the machine would be utilized for fabrication of complete LHB bogie frame and LHB bogie bolster for RCF. Audit reviewed the Log Book of the Machine after July 2017 and did not notice any improvement in its utilization. A total of 30 LHB bogie bolsters for LHB

[296]After items to be welded together have been positioned as required, generally by clamping them on suitable fixtures, tack welds are used as a temporary means to hold the components in the proper location, alignment, and distance apart, until final welding can be completed.

Coaches turned out in the Workshop between July 2017 and July 2018. Of these, only seven bogie bolsters and four LHB side frames were welded on this robotic welding machine.

The matter was referred to Ministry of Railways in November 2018. Ministry, in its reply, stated (July 2019) that

- Touch sensing programme, which was not available in the robotic welding, has now been added by the firm. This will resolve the problem of tolerance during tack welding of material components.
- Gas sensor, which was not provisioned in accepted tender, has now been installed.
- Presently, only one shift is working on the Robotic welding. More staff is being trained to operate the machine in three shifts.
- Outturn of the machine is on increasing trend. Most of the ICF bogie frames and all the LHB frames are being welded on this machine. Utilization of the machine is being monitored and efforts are being made for its full utilization.

However, Audit observed that from August 2018 to April 2019, only 19 per cent of the capacity of the machine was utilized in welding of 13 Ton Bogie Side Frames, LHB Side Frames and LHB Bogie Bolster. Thus, the machine procured at a cost of ₹ 4.81 crore is still being grossly underutilized.

Chapter 5 – Signalling and Telecommunications

At Railway Board level, Director General (S&T) is overall in-charge of Signalling & Telecommunication (S&T). The post has been re-designated as Member (S&T) in April 2019. He reports to Chairman Railway Board. At Zonal level, the Chief Signalling and Telecom Engineer (CSTE) is responsible for overall supervision and maintenance of S&T assets.

For enhancing efficiency and safety in train operation, modern signaling plays a very vital role. The Signalling Department handles induction and maintenance of signalling systems. The Telecom Department is responsible for telecommunication services in Railways.

The expenditure on repair and maintenance of plant and equipment of S&T department during the year 2017-18 was ₹ 2879.56 crore[297]. A capital expenditure of ₹ 1256.82 crore was incurred on creation of S&T assets. During the year, apart from regular audit of vouchers and tenders, 183 offices of the Department were inspected.

This chapter includes a review on 'Implementation of Train Protection Warning System (TPWS) in Indian Railways'. In this paragraph, Audit reviewed planning, implementation assessment of results of trials of TPWS. The present performance of the trains nominated for working with TPWS was also studied.

[297] Minor Head 500, 600 and 700 of Sub head 3002 and 03 (5) – Repair and maintenance of plant and equipment

5. Implementation of Train Protection Warning System (TPWS) in Indian Railways

5.1 Introduction

Safety measures on Indian Railways is a continuous process which envisage accident prevention and mitigation directed towards continuous reduction in risk level to its customers. This is done by adopting new technologies and bringing improvement in asset reliability by reducing dependency on humans. A new technology, Train Protection Warning System (TPWS) has been introduced to prevent accidents due to over speeding and passing signal at danger.

TPWS aims to ensure safety of rolling stock, rail infrastructure and passengers. The system is based on European standards of European Train Control System (ETCS)[298]. It is a variant of Auxiliary Warning System (AWS), i.e. a train protection system prevalent in European countries especially in United Kingdom (UK) Rail Network. The system has components installed in locomotives as well as alongside the tracks. It provides automatic protection measures for running trains. It activates brakes on any train that passes a signal at more than the prescribed speed. It is assessed to be in situation of danger. The purpose of the TPWS is to reduce the number of accidents and minimize the incidents of Signals Passed at Danger (SPADs) by providing the facilities of Over-Speed Sensor and Train Stop. The sensors provided in the system gets activated in unusual circumstances when train passes a signal at danger or is over-speeding and brakes are applied. This helps avoid accidents and derailments. The system has two main components:

a) Track side equipment, which are installed alongside the tracks and includes

[298] The European Train Control System (ETCS) is the signalling and control component of the European Rail Traffic Management System (ERTMS). It is a replacement for legacy train protection systems and designed to replace the many incompatible safety systems currently used by European Railways.

- Balise[299]; and
- Line side Electronic Unit (LEU)

b) On-Board equipment, which are installed on the locos and include

- On Board Computer (OBC)
- Man Machine Interface (MMI) provided to the driver of the loco, which includes switches, push buttons, indication lamps and horn/hooter fitted on control panel for use in emergency.
- Antenna and its Balise Transmission Module fitted to receive/transmit signals from the equipment fitted alongside the tracks.
- Speed and distance measurement unit (sensors); and
- Brake interface

ETCS Level I – In ETCS level I, the track side equipment is interfaced with the signal. Details such as gradient, permanent speed restriction, distance of next stop signal are coded in the signal. These are transmitted through data cable to balise fitted on the sleeper at the center of the track. When any locomotive fitted with the antenna travel over the balise, it starts transmitting the coded message. The coded message is picked by the antenna fitted at the bottom of the loco through radio frequency link. The message is then sent through Balise Transmission Module to onboard computer for processing the data. The speed profile derived from the coded message is displayed at MMI in the form of permission speed and distance to travel. In case, the driver exceeds the permissible speed, an audio visual warning is given by the system advising driver to control the speed. The TPWS intervenes by application of emergency brakes. The system continuously calculates the safe maximum speed for each train with cab signaling for the driver. The train is necessarily brought to halt when the driver exceeds the permissible speed by a predetermined value.

[299] A Balise is an electronic beacon or transponder placed between rails of a railway as a part of automatic train protection system.

ETCS Level II – In ETCS Level II, continuous data transmission is done by Global system for Mobile communication – Railways (GSM-R) i.e. digital mobile radio communication to provide protection. It is a radio-based system which displays signaling and movement authorities in the cab. The train continuously sends data to the Radio Block Centre (RBC) to report its position and direction. Euro balises are used as passive positioning beacons. Trains refine their position with additional sensors such as accelerometers, odometers or radar. RBC controls all train movements in the covered area for the purpose on the trackside.

5.2 Audit Objectives

The audit objective was to evaluate the steps taken by the Railways to assess the appropriateness of TPWS as system for train protection. Audit reviewed planning, implementation assessment of results of trials of TPWS. The present performance of the trains nominated for working with TPWS was also studied.

5.3 Audit criteria

Audit used the following source as audit criteria for the review:

- Railway Board and RDSO instructions, letters and circulars relating to TPWS issued from time to time.
- Recommendation of High level committee issued by RDSO (Report on issues relating to introduction of Train Protection Warning System on electric locomotives).
- Annual Works Programme of Indian Railway for concerned Zonal Railways for TPWS work.
- Action Plan 2022 (Signal and Telecom) issued by Railway Board.

5.4 Audit Findings

Train Protection and Warning System (TPWS) was implemented in North Central and Southern Railways (NCR and SR) on a trial basis after being sanctioned during 1999 to 2005. Audit findings on the same are discussed below:

5.4.1 Planning and implementation of trials of TPWS

Following a spate of serious train accidents in Delhi - Mathura section, Commissioner of Rail Safety (CSR) recommended to provide safety devices in high density routes to prevent accidents. In 1998, a Committee of three Heads of Department examined the reasons for these accidents and recommended provision of safety devices to be installed in the section. Accordingly, based on ETCS system, Railway Board sanctioned the work for the implementation of TPWS in North Central Railway (NCR) and Southern Railway (SR) in the following sections:

Table 5.1 – Details of sections where TPWS trials were undertaken

S. no	Name of the section	Route kms
North Central Railway		
1	Delhi - Mathura (work done Hazrat Nizamuddin - Agra Cantonment)	188
2	Ghaziabad - Tundla-Kanpur	414
3	Kanpur - Mughalsarai	351
4	Agra - Gwalior	125
Southern Railway		
5	Chennai Central -Gummidipundi section	**50**

In the four sections of NCR, the works of implementation of TPWS were sanctioned during 1999-2012 at a total cost of ₹ 47.88 crore. In Delhi-Mathura, the work was physically completed in January 2018 and the system is under AMC. However, in other three sections, the work is yet to start, as the tenders have not been finalized. Indian Railway Project Management Unit (IRPMU)[300] was the nominated agency for execution of TPWS in selected locos and track side equipment in these sections. In respect of Chennai Central – Gummidipundi section of SR, the contract was awarded in February 2005 and TPWS was commissioned in May 2008.

[300] IRPMU (Indian Railway Project Management Unit) changed its name to NCRPU (North Central Railway Project Unit)

The status of implementation of TPWS in the two sections[301], where the work has been completed, was analyzed by Audit. The results are given in subsequent paragraphs.

5.4.1.1 Delhi-Mathura section

a) Change in scope of work leading to increase in estimated cost and frequent change in timelines

Audit reviewed the records related to implementation of TPWS in Delhi-Mathura section. Audit noticed that during June 1998 to August 2017, Railway Board revised the scope of the work a number of times. This increased the cost from ₹ 48.98 crore to ₹ 87.44 crore and also shifted the timelines for the implementation of the system from June 2006 to January 2018. There were delays on part of the Railways in freezing the scope of the work. These delays were avoidable and well within their control. Audit observed that

- In June 1998, Railway Board conveyed their decision for trial of TPWS with ETCS level II[302] system. The work[303] was included in the Works Programme for the year 1999-2000 of Central Railway with an anticipated cost of ₹ 48.98 crore. The scope of the work included provision of ETCS level II, preferably with GPS based system fitted equipment. The system was to be installed in 30 electric and five diesel locomotives for trial on Delhi-Mathura section.
- In January/February 2004, Railway Board revised its decision. It directed that the work of TPWS may be taken up with ETCS Level I[304] system and extended up to Agra. However, the reasons for revision from ETCS level II to ETCS level I were not found on record. The new work with a revised scope was included in the Works Programme of

[301]Delhi – Mathura section of NCR and Chennai Central – Gummidipundi section of SR
[302] ETCS Level 2 is a radio-based system which displays signalling and movement authorities in the cab. The train is continuously sending data to the Radio Block Centre (RBC) to report its exact position and direction.
[303] Delhi-Mathura-Trial of European Train Control System
[304] ETCS Level 1 can be easily superimposed on the existing national signalling system and provides cab signalling. Movement authorities can be granted through fixed and switchable Euro Balises

2003-04 of NCR. Against the proposed estimate of ₹ 67.14 crore given by NCR in May 2005, Railway Board in June 2005, approved an estimate of ₹ 60.44 crore. The agreement was executed with IRPMU in March 2006. As per the agreement, the date of commissioning of the work was June 2006.

- IRPMU awarded (June 2005) the comprehensive work[305] in New Delhi – Agra Cantonment section to M/s Union Switch and Signal Pvt. Limited[306] at a cost of ₹ 51.17 crore. The work was scheduled for completion in one-year time. However, 16 extensions were given and the timelines were extended up to September 2016. These extensions were given as there were a number of changes in the scope of the work. TPWS component were de-installed from WAP 7 locos and re-installed in WAP 5 locos. The trackside equipment was shifted due to conversion of interlocking system in the section. There were changes in drawings and design and delay in their approval by Railways. There was also delay in training of crew members.
- In July 2010, Railway Board further revised the scope of the work and decided to provide infill balises[307] on Hazrat Nizamuddin-Agra Cantonment section for improvement of the system. The detailed estimate was revised to ₹ 80.23 crore in October 2010.
- The work[308] for providing infill balises was awarded (May 2012) to the sole bidder[309]. The completion period was of eight months. The work was completed in August 2015 after giving six extensions to the contractor. The extensions were granted to the contractor as there were delays in signing the contract agreement and delay in approvals

[305] Survey, design, supply, installation and commissioning of loco borne equipment and line side equipment for TPWS system in Delhi- Agra Cantonment section of NR and NCR
[306] later name changed to M/s Ansaldo STS Transportation System India Private Limited
[307] Infill balises are interfaced to signal through line side equipment. These are provided in advance of the signal to update the movement authority in advance. These baliese cannot effect change of mode of On Board system.
[308] Survey, Design, Supply, Installation, Testing and commissioning of Infill balise for Agra Cantonment –Hazrat Nizamuddin section
[309] M/s Ansaldo STS Transportation System India Pvt. Ltd.

of track crossing. Railways also changed the infill balise layout and cable route plan.

- In January 2015, the detailed estimate was once again revised from ₹ 80.23 crore to ₹ 87.44 crore. The speed for the trials were to be done was increased from 130 kmph to 160 kmph. There was also a change in the signaling system from Absolute to Automatic for the 3rd line between Palwal and Mathura section. This led to increase in number of track side equipment. Railways also decided to set up a repair lab for track side equipment at Agra.

Frequent changes in scope of work led to increase in cost of the work. It also shifted the date of completion from June 2006 to January 2018.

b) De-installation of TPWS equipment from WAP 7 locos and their re-installation in WAP 5 locos

The trials were to be conducted on WAP 7 electric locos, which have a maximum speed of 130 kmph. Audit observed that Railways did not analyse the success or otherwise of the trials undertaken. However, RDSO, in December 2014 decided to undertake fresh trials on WAP 5 locos having a maximum speed of 160 kmph. These were to be done for a newly introduced Gatiman Express between New Delhi – Agra Cantonment section. In August 2017, New Delhi – Mumbai special train was also identified for trials at the speed of 160 kmph.

In October 2011, Railway Board identified the 35[310] WAP 7, locos in which TPWS equipment (ETCS Level I) were to be provided. TPWS equipment were fitted in these 35 WAP 7 locos up to April 2017. For undertaking trials on trains at the speed of 160 kmph, RDSO and Railway Board advised to install TPWS equipment in WAP 5 locos.

Audit noticed that NCR did not provide TPWS component in WAP 5 locos. They de-installed (from October 2014 onwards) TPWS component from eight WAP7 locos and re-installed them in WAP5 locos. As of March

[310]Ghaziabad/NR-17, Lalaguda/SCR-14, Ajni/CR-4

2018, they have completed de-installation and re-installation work in seven locos at a cost of ₹ 2.11 crore.

Audit observed that the decision of Railway Board and RDSO to undertake trial in New Delhi- Mumbai Special Train was not justifiable. The Special Train was to be run between New Delhi and Mumbai (1354 kms). TPWS enabled portion on this section was however, restricted to Hazrat Nizammuddin to Agra Cantonment (187 kms) only.

Thus, the decision of Railway Board and RDSO to undertake trials in WAP 5 locos without conclusion of successful trials on WAP7 locos was not prudent. The decision entailed expenditure on de-installation and re-installation of equipment. Further, undertaking trials only on a part of the section (New Delhi-Mumbai) limited its utility.

c) Issue of acceptance certificate without taking the final acceptance from the users

IRPMU is an implementing agency for the work with users being divisional formations of NCR and NR. The analysis of the trials was the responsibility of RDSO. Based on inputs from divisional formations, users and RDSO Railway Board was the final authority to determine success of trial. The work of commissioning of TPWS in the section was to be completed by June 2006, which was extended up to September 2016.

Audit observed that Provisional Acceptance Certificate (PAC) was issued by IRPMU in March 2016. However, no documents were found on record which could indicate the date of successful commissioning of TPWS. In reply to Audit, IRPMU stated (February 2018) that PAC has been issued as per contract agreement on completion of successful installation. The commissioning of the system was in various phases. Audit, however, could not find evidence that indicate that Railway Board or RDSO had considered the trials to be successful. No assessment of success or otherwise of the trials conducted was carried out at the level of the users (NR and NCR) as well. IRPMU also issued the Final Acceptance

Certificate (FAC) on 17 January 2018 without obtaining acceptance certificates from the concerned DRMs and GMs i.e. the users. IRPMU thus, unilaterally considered the trials as successful, without taking into consideration inputs/feedback from the users.

The trials were being going on for so many years. However, the technology/ product envisaged for train protection was yet to reach operationalization stage. No evidence was found on record to prove that the commissioning of the TPWS on this section has been successful.

d) Observations of Electrical department on TPWS trials

Sr. Divisional Electrical Engineer/ Operations, Agra Cantonment, NCR conveyed (August 2016) the following observations to Chief Electrical Engineer, NCR on trials of TPWS on the nominated trains over this section:

- Starting up procedure of TPWS was too complicated and needed simplification.
- Nearly 50 *per cent* of the time of loco pilot was spent in looking towards the Braking Curve Area (BCA) of the display unit in the locos. The design needed a change so that loco pilot is not required to look into the BCA at all.
- TPWS did not responded when a train was passing in a signal BLANK condition. This feature needed to be added.
- No tolerance was available in speed, while negotiating the signal in one yellow/Permanent Speed Restriction/entry/exit in loop line etc. In case of over speeding by even 0.1 kmph, the system applied Emergency Break to stop the train.
- When the signal changed from Red to Yellow/Double Yellow/Green, the system did not permit the loco pilots to pick up speed until loco passed the infill balise or switchable balise ahead. This caused loss of time. Similarly, when signal changed from Green/Double

Yellow/Yellow to Red, the system was not updating till it passed infill balise or switchable balise.

- A speed of 30 kmph is permitted while entering the loop line in a movement of through train via loop line. TPWS permitted only 25 kmph while exiting the loop line. Also at the time of passing an Automatic signal at ON, TPWS permitted only 10 kmph. Even when the weather was clear and in day time also. However, as per General Rules (GR) speed is permitted up to 15 kmph in such conditions. There is, therefore, a mismatch between existing operational instructions and technologically operated conditions.

These issues/constraints needed to be addressed before assessing the success of the TPWS trials.

e) Joint inspection by Audit along with loco pilots in NCR

Audit also conducted joint inspection during February 2018 in three trains[311], running in Hazrat Nizamuddin - Agra Cantonment section, where TPWS had been installed. Audit noticed that

- In loco (WAP 5 – 30007) of Gatiman Express (Train no.12049), TPWS did not protect from SPAD during speed of less than 30 kmph.
- In the loco of Gatiman Express (Train no.12050) Do's & Don'ts regarding TPWS were not provided to and carried by the loco pilots. The attention of loco pilots was fixed on display unit of TPWS and attention to the track and signal ahead was affected.
- In the loco of Goa Express (Train no.12780) and Taj Express (Train no.12280), the locomotives were in the list of TPWS fitted locomotives. However, on the date of Joint Inspection (12 and 14 February respectively), no TPWS equipment was found fitted in these locos.
- In the loco of Goa Express, on the date of joint inspection (13.02.2018), the on-board TPWS equipment was not found working.

[311]12049/12050 – Gatiman Express, 12780 – Goa Express, 12280 – Taj Express

The joint inspection by Audit also corroborate the issues highlighted by Electrical department of NCR. This needed to be addressed.

f) Trial performance of TPWS

Audit analysed the information regarding the performance of TPWS prepared by the Electrical Department and sent to their Zonal headquarters. Nominated 30 nominated trains during May 2016 to October 2017 and 28 trains during November 2017 to January 2018 were run with TPWS fitted locos. This involved run of these trains on 14028 occasions.

- Out of this, on 4403 occasions (31.39 *per cent*), the locos fitted with TPWS were provided in the trains. Only on 2406 (54.65 *per cent*) occasions the TPWS fitted in the locos were found in working condition. Thus, locomotives fitted with TPWS, were found in working condition only in 17.15 *per cent* of the total run of the trains during the trials.
- Of 2406, on 255 occasions, TPWS was in working condition. However, it could not be utilized due to non-availability of trained Loco pilot/Assistant Loco Pilot during May 2016 to January 2018.
- Performance of track side equipment in April 2016 to January 2018[312] was reviewed. 3726 track side failures took place in 426 days, which worked out to nine failures per day.

Audit found no benchmark against which this trial performance could be rated. As such, there was no conclusive assessment done by the Railways to judge the success or otherwise of the trials. Railway Board decided to implement TPWS in nine HDN sections in August 2016 without judging the success of the trials.

Further, when any loco not fitted with TPWS is running on the same track along with TPWS fitted loco, the ultimate goal of installing TPWS for protection cannot fulfilled. This would happen because on

[312] Information for the month of July 2016, September 2016 to November 2016 and May 2017 to August 2017 was not found on record

occurrence of Signals Passed at Danger, the TPWS fitted loco will stop, but the other loco will not and they may collide.

5.4.1.2 Chennai Central – Gummidipundi section

The contract for provision of TPWS in of Southern Railway was awarded in February 2005 and the work was completed and commissioned in May 2008. Onboard equipment was provided in 82 motor coaches (77 Electric Multiple Units (EMU) and 5 Mainline Electric Multiple Units (MEMU)). The 'Track side' equipment and 'Onboard' equipment were in operation since May 2008. Provisional Acceptance Certificate for the track side equipment was issued in May 2008 and for onboard equipment was issued in May 2009. On completion of warranty obligations by the supplier the system was handed over to Chennai Division during February 2013.

Audit noticed that for analyzing the performance of the TPWS system in the section, SR Administration test checked 26 motor coaches in which onboard equipment was provided. During their check (1 March 2013 to 7 March 2013), they found that the requirement was met by the system. Consequently, final acceptance certificate was issued on 19 May 2014. An expenditure of ₹ 54.55 crore was incurred till March 2017.

Audit analysed the results of trials of TPWS (April 2018) in the section (Chennai Central-Gummidipundi section) and noticed that

- 50 EMU/MEMU rakes are in service in Chennai Central – Gummidipundi section which also caters to the Chennai Central – Arakkonam section. Out of 79 motor coaches, fitted with TPWS, in 57 motor coaches only TPWS was in working condition. The failure rate of TPWS component onboard was 28 *per cent*.
- Three of the track side equipment out of 113 installed in the section were not in working condition and under repair. This indicated a 97 *per cent* functionality.
- The use of TPWS is not mentioned in the General and Subsidiary Rules (GSR). However, operating instructions for TPWS for EMUs has been issued separately by Southern Railway.

- Annual Maintenance Contract (AMC) by OEM ended on 18 May 2017. Renewal of the AMC was not done and at present no AMC exists. Comprehensive maintenance contract for TPWS for two years for both onboard and trackside equipment was under finalization (April 2018).

Thus, the overall functionality of TPWS components was nearly 70 per cent[313] against a prescribed functionality of 99 per cent. The work was completed five years back, However, the decision to operationalize the same on other suburban sections was taken only in August 2016.

During Exit Conference (30 April 2019), Railway Board stated that AMC has now been awarded for the section and that they had also improved upon the success rate.

5.4.2 Other sanctioned works of TPWS over various Zonal Railways

Railway Board sanctioned (August 2016) TPWS works over nine[314] suburban sections of seven[315] Zonal Railways. These works covered 1245 RKM and nine[316] HDN routes over six[317] Zonal Railways covering 2086 RKM. Audit observed that Railway Board decided to implement TPWS in these sections in August 2016, before analyzing the results of trials over Delhi-Mathura section (extended up to Agra) of NCR. As on 30 September 2018, ₹ 49.35 crore has been incurred for implementation of TPWS on these sections/routes. However, in none of the sections/routes, the work has been completed. Audit further noticed that in November 2017, Railway Board has decided to implement TPWS with ETCS level II in six routes. All these works, however, continued to be undertaken under

[313] {(100-28)/100} x {(97/100) x 100}
[314] Pune-Lonavala, Sealdah-Howrah-Khana and Automatic Section of Sealdah and Howrah Divisions, Balance Automatic/EMU routes of Sealdah and Howrah Divisions, Delhi Area up to Ghaziabad and Nizamuddin, Delhi-Panipat, Chennai Beach-Tambaram-Chhengalpattu, Secundrabad Division-Automatic section, Howrah-Kharagpur, Mumbai Central-Virar
[315] CR, ER, NR, SR, SCR, SER, WR
[316] Lonavala-Karjat, Panipat-Ambala-Amritsar, Arrakkonam-Jolarpattai, Kharagpur-Tatanagar, Tatanagar-Chakradharpur, Virar-Vadodara-Ahmedabad, Ghaziabad-Tundla-Kanpur, Kanpur-Mughalsarai, Agra-Gwalior
[317] CR, ER, NR, SR, SER, WR

ETCS level I for another six months, before being put on hold with effect from May 2018.

The expenditure of ₹ 49.35 crore incurred on TPWS ETCS Level I on the nine suburban and nine HDN routes did not yield any results and rendered unfruitful.

During Exit Conference (30 April 2019), Railway Board stated that they had decided to implement ETCS Level II across all Zonal Railways. They stated that care would be taken to ensure dedicated ETCS Level II fitted (on Board equipment) locos are run on selected section for successful trials.

5.5 Conclusion

Nineteen years since its conceptualization and 12 years from issue of letter of acceptance in the original contract, TPWS (ETCS level I) in Delhi – Agra section continues to be in trial stage. There was no evidence on record to prove that the commissioning of the TPWS on this section has been successful.

Railway Board revised the scope of the work a number of times. This resulted in increased the cost and also shifted the timelines for the implementation of the system. Locomotives fitted with TPWS, were found in working condition only in 17.15 *per cent* of the total run of the trains during May 2016 to January 2018. The failure rate in track side equipment was also significantly high. Audit also noticed that TPWS was not provided in the nominated trains. TPWS equipment on loco was also not found to be in working condition. Non-availability of trained loco pilots was another reasons for ineffective TPWS trials. Further, when any loco not fitted with TPWS is running on the same track along with TPWS fitted loco, the ultimate goal of installing TPWS for protection cannot fulfilled. This would happen because on occurrence of SPAD, the TPWS fitted loco will stop, but the other loco will not and they may collide. Thus, the purpose of installation of TPWS in Delhi - Agra section was not achieved. The expenditure of ₹ 81.98 crore incurred on the section has not given

any fruitful results. In Chennai Central – Gummidipundi sub-urban section, the overall success rate was 70 *per cent* against a prescribed functionality of 99 *per cent*.

The success of the trails was not assessed/judged by Railways. However, Railway Board decided to implement TPWS in nine HDN and nine suburban sections in August 2016. There was expenditure of ₹ 136.53 crore incurred on Delhi - Agra and Chennai Central - Gummidipundi sections, which remained unfruitful. In addition, expenditure of ₹ 49.35 crore incurred on these works was also rendered unfruitful. In November 2017, Railway Board has once again decided to implement TPWS under ETCS level II and all the works under progress have been put on hold since May 2018.

5.6 Recommendations

1) ***Railway Board has decided to implement Automatic Train Protection ETCS Level II in Indian Railways. The lessons learnt from the trials for implementation of ETCS level I, need to be kept in mind during execution of works of TPWS ETCS level II.***
2) ***TPWS works relating to the new systems (ETCS Level II) should be undertaken on a complete section and not in piecemeal parts of section (as was done for ETCS level I). This would help in comprehensive implementation of the system and achieve intended benefit for providing train protection.***
3) ***Railways need to devise a Standard Operating Procedure (SOP), clearly defining step-by-step process for undertaking and documenting trials for induction of technologies.***

During Exit Conference (30 April 2019), Railway Board noted the audit recommendations and stated that these would be implemented while implementing ETCS Level II. They stated that they have given the overall responsibility for implementation and monitoring of ETCS Level II trials in

four selected sections to REL[318]. They added that the trials were expected to be completed in two to three years' time.

[318] A 100 *per cent* subsidiary of RailTel.

Chapter 6 - Traction

Member Traction at Railway Board is overall in charge of the Electrical department of Indian Railway. He is also responsible for Railway Electrification Workshops (exclusively for locomotives) and Energy/Fuel Management.

At Zonal level, Chief Electrical Engineer (CEE) is responsible for operation and maintenance of all electrical assets and equipment. Maintenance of Diesel locomotives is supervised by Chief Motive Power (Diesel). Loco Production Units[319] are managed independently by General Managers reporting to Member Traction at Railway Board.

The total expenditure of Indian Railways on repair and maintenance of Motive Power (including plant and equipment) during the year 2017-18 was ₹ 16,144.44 crore[320]. During 2017-18, expenditure on fuel (diesel and electricity) was ₹ 28,011.27 crore[321]. An expenditure of ₹ 10,102.96 crore[322] was incurred in production units of locomotives during the year 2017-18. During the year, apart from regular audit of vouchers and tenders, 683 offices of Electrical department including CLW and DLW were audited.

This chapter includes one review on 'Installation and commissioning of Solar Power Plants in Indian Railways'. The chapter also includes five individual paragraphs. These relate to non-mixing of bio-diesel into HSD oil, procurement of readymade Traction Motors at higher rate by CLW, delay in completion of work of Traction Sub Station etc.

[319] Chittaranjan Locomotive Works (CLW) and Diesel Locomotive Works (DLW)
[320] Sub head 3002-3003 (03) & (05) – Repairs & Maintenance of Motive Power and Plant & Equipment and Minor Head 400 of Sub head 3002-3003 (05) – Plant and Equipment – Electrical
[321] Sub head 3002-3003 (08) – Operating expenses – Fuel
[322] DLW/Varanasi, DMW/Patiala and CLW/Chittaranjan

6.1 Installation and commissioning of Solar Power Plants in Indian Railways

6.1.1 Introduction

Indian Railways (IR) is the single largest consumer of electricity in India, consuming about 1.8 crore MWh[323] per year. This is approximately two *per cent* of country's total power generation[324]. Electricity is consumed both for traction (hauling of trains) and non-traction purpose (domestic, industrial and commercial purposes). A small saving on part of IR in electricity consumption can significantly impact its operating ratio. Railways have set a target of meeting 10 *per cent* of its total energy demand through "Renewable" energy sources by year 2020. These include solar power and biomass. As part of IR Solar Mission, Railways have planned (2015-16) setting up of 1000 MW[325] solar plants. This was planned with funding support of Ministry of New and Renewable Energy (MNRE) by 2020.

Railway Energy Management Company Limited (REMCL)[326] is the nodal agency to call for tenders and finalize the solar plant installation. This was to be done through Public Private Partnership (PPP) mode on Design, Build, Finance, Operate and Transfer (DBFOT) basis. As per capacity allocated to Zonal Railways by Railway Board, REMCL has to collect inputs such as availability of rooftop space and vacant land from them. REMCL also has to finalize the tenders and coordinate with the MNRE regarding Central Financial Assistance and Viability Gap Funding.

Audit examined the policy and planning initiatives as part of the Solar Mission and its implementation. Audit review covered Solar Plants

[323] 1MWh =1 thousand kWh

[324] Source: Climate Policy Initiative Report on De-carbonization of Indian Railways (March 2017)

[325] 1 MW=1000 kW (Kilowatt)

[326] REMCL was incorporated in August 2013 under the Companies Act, 1956 (No. 1 of 1956), as a Joint Venture Company of Ministry of Railways with equity participation of Indian Railways: 49*per cent* and RITES Limited: 51*per cent.* It was formed to tap the business potential in the energy sector including green energy, power trading etc. by setting up of renewable energy wind power projects.

installed in the Zonal Railways and Production Units through Power Purchase Agreements (PPAs)[327] and Railways internal resources[328].

Audit Findings

6.1.2 Progress of installation of solar plants

Ministry of Railways has set a target of 1000 MW of solar power plants to be installed through PPA model by 2020. The year-wise capacity of solar power plants planned was as follows:

Table 6.1 - Year-wise capacity planned

Year	Rooftop (MW)		Land based (MW)	
	Planned	achieved	planned	achieved
2016-17	05	22.453	0	0
2017-18	50		240	
2018-19	450		150	
2019-20	0		100	
Total	**505**		**490**	

Audit reviewed the progress of installation of solar plants in the Railways and noticed that

- There was no progress in respect of ground mounted/land based solar plants against the target of 240 MW. Most the works were still at conceptual stage and surveys were yet to be conducted at identified locations (March 2018).
- IR decided to set up 10KW/5KW Solar Photovoltaic (SPV) plants on the rooftops. It was decided to cover 810 stations[329] of D and E category stations[330] in 14 Zonal Railways[331]. This was included in the Works Programme of 2017-18. The work was still at tendering stage as on 31 March 2018.

[327]CR(3), ECoR(2), ECR(3), ER(4), NCR(2), NER(4), NR(1), NWR(2), SCR(5), SECR(2), SER(2), SR(2), SWR(3), WCR(6), WR(8), CLW(2), ICF(2), DLW(3)
[328]ER (2), ECR(5), ECoR(1), NCR(1), NFR(4), NER(2), SER(3), SECR(2), SWR(1),Metro Railway/Kolkata (5), CLW(1), DLW(8)
[329]‘ 133 Category ‘D’ stations and 677 Category ‘E’ stations with a total capacity of 4.72 MW at cost of₹ 25 crore
[330] D’ Category stations-Non suburban stations with passenger earnings between ₹ 50 lakhs and ₹ 3 crore, ‘E’ Category stations - Non suburban stations with passenger earnings less than ₹ 50 lakhs
[331]NR, NCR, NWR, WR, CR, WCR, SR, SCR, SECR, SWR, NER, ECR, SER, ECoR

- As per the time schedule given in the Agreements, the work of installation of solar plants should be completed in 270 days from date of Letter of Acceptance (LOA). There were inordinate delays ranging from 21 to 734 days in commissioning of Solar Plants in the Zonal Railways. As a result, Railways had to purchase power worth ₹ 27.63 crore at comparatively higher rates from the State Electricity Boards.
- The power consumption by the Railways far exceeded the generation of solar power. The deficiency could have been met to some extent by planning land based solar plants alongside railway tracks. There were 293 Traction Substations (TSS[332]) exceeding 33 KV (meant for traction purposes) in IR. However, IR was yet to explore the option for installation of solar plants on land alongside track feeding these TSS.

In reply, Ministry stated (July 2019) that the work on Category 'D' and 'E' stations was sanctioned to be done at Railway's cost. However, with solar market evolving, there was no point in spending Railway's capital on setting up of solar power plant. Instead, all solar projects presently in Railways and also across the country are being done in PPP mode with agreement of 25 years. It was further stated that despite floating of tenders by NR (nodal office) for five times, no suitable offer was received. NR has now proposed (June 2019) for dropping this work.

Ministry's reply seems to be an afterthought as conscious decision was taken for setting up of solar plants on rooftops of Category 'D' and 'E' stations in 14 Zonal Railways. This proposal was in line with Indian Railways commitment to set up 1000 MW solar plants and accordingly works were included in the Works Programme (2017-18).

Regarding delay in commissioning of solar plants, Ministry stated that delays in commissioning was due to policy issues pertaining to Ministry of Power, MNRE and various State Governments viz., developer mode not being allowed in Gujarat and Maharashtra, lengthy approval process of net-metering in many States, cap on net-metering of one MW in many

[332]A Traction Substation is an electrical substation that converts electric power for public utility service to an appropriate voltage, current type and frequency to supply railways.

States (Punjab, Uttar Pradesh, Gujarat, Andhra Pradesh, Telangana, Karnataka, Maharashtra), net metering not being allowed in Tamilnadu and Damodar Valley Corporation area, solar plants not allowed for more than contract demand (50 *per cent* in Gujarat, 64 *per cent* in Rajasthan, 80 *per cent* in Punjab), changes in the taxation regime etc. They further stated that reference was made (August 2018) to Secretary/Ministry of Power for issuing suitable directions to the State Governments to review their policies to facilitate large scale proliferation of solar and wind power.

The reply of the Ministry indicates that due diligence was not completed before framing the Solar Mission policy of Indian Railways. As a result, the implementation of the policy ran into many hurdles.

6.1.3 Review of Power Purchase Agreements (PPAs) for installation of solar plants

Ministry of Railways prepared (November 2015) a policy framework, with an aim to harness solar energy on rooftop of Railways buildings. As per this policy, solar power plants should be installed on the rooftops available in Railways premises from investment by developers. Railways would consume electricity so generated for its own uses through long-term PPAs for 25 years with Solar Power Developers (SPDs). The tariff would be fixed as arrived through open bidding process. Such solar plants should be put only in States having net metering regulation issued by the State Regulatory Commission.

6.1.3.1 Delay in signing of PPAs

As per the timelines mentioned in the Agreements[333], PPAs should be signed within 15 days of LOA. Out of 56 PPAs examined in audit, three PPAs were yet to be signed. In two PPAs, dates of signing of PPAs were not available. There were delays ranging from 13 to 372 days in signing of PPAs after issue of LOA. Of which, 20 PPAs (39 *per cent)* were signed

[333]Schedule-N of PPA

more than 100 days after issue of LOA. 17 PPAs (33 *per cent)* were signed between 30 and 100 days after issue of LOA.

In reply, Ministry stated (July 2019) that as per provisions of Bid Document, the successful bidder may implement the project through SPV, formation of which takes significant time after award of LOA. They further stated that delay in submission of various compliance documents regarding formation of SPV by the successful bidder affects timey signing of PPA.

Delay in signing of PPAs was worked out on the basis of time line fixed by the Ministry. Ministry needs to revisit the time line given for signing of PPAs based on the experience gained and ensure adherence of the same by the SPDs.

6.1.4 Policy implementation and monitoring of works

6.1.4.1 Identification of potential area for generation of solar energy

Railway Board in November 2014 directed[334] Zonal Railways to identify the rooftop spaces and non-encroached vacant land for harnessing solar energy. Audit observed that 29.98 lakh sqm of rooftop space was identified by various Zonal Railways and Production Units. As per Indian Railway Organization for Alternate Fuel (IROAF[335]) guidelines, rooftop space of 10 sqm is required for installation of 1 KW. Based on this criteria, the available rooftop space could install only 299.8 MW as against 505 MW planned. Thus, the planning to install solar plants on rooftop was not on realistic basis.

In reply, Ministry stated (July 2019) that the figures of rooftop and land were based on initial assessments. Railways is exploring provision of rooftop solar plants on stations, service buildings, hospitals, workshops, railway schools, platform shelters, training institutes, production units,

[334] Letter No. 2012/Elect (G)/150/4/Pt. IV, dated 05.11.2014

[335] IROAF is a single window entity for knowledge and database on technologies, Clean Development Mechanism (CDM), suppliers, business partners and consultants. IROAF will emerge as the leader IR in introduction of Alternate Energy, Fuel Efficient and Emission Control Technologies, advice and implement these across the Network.

RPF barracks, railway land by side of track, vacant railway land parcels etc.

Ministry's reply indicates that no proper assessment for rooftop solar plants was made by the Railways to optimally utilize the available rooftop spaces for installation of solar plants.

Railway Board instructed (December 2016)[336] Zonal Railways to identify land for Solar Photovoltaic (SPV) Plants for traction with 30 minutes storage back-up in high visibility areas. In Phase I, it was decided that M/s Solar Energy Corporation of India Ltd. (SECI) would set up solar plants of 25 MW capacity in Maharashtra, Chhattisgarh, Jharkhand and Karnataka[337]. M/s SECI was to carry out joint survey of the identified locations with Railway officials and provide detailed Action Plan for completion of Phase I.

Audit observed that land required for SPV plants was identified in only three Zonal Railways (CR, ECR and SECR). The status of identification of land was not on records in SWR. Identification of land in other Zonal Railways was yet to be completed. In nine Zonal Railways[338], locations initially identified for setting up of solar plants were subsequently found unsuitable for installation of power plants by the SPDs. Against the originally planned capacity of 5.99 MW, the solar plant capacity was reduced to 0.793 MW. This was only 13.26 *per cent* of original targeted capacity.

In reply, Ministry stated (July 2019) that Railway is exploring most optimal solutions and doing course correction as per the requirements. The reply is silent on progress of work of identification of land for setting of solar plants in the Zonal Railways.

6.1.4.2 Adherence to technical specifications

[336] Letter No. 2012/Elect (G)/150/4/Vol. I (Solar Mission) of 28.12.2016 addressed to Managing Director, Solar Energy Corporation of India (SECI)
[337] Maharashtra (10 MW), Chhattisgarh (5 MW), Jharkhand (5 MW) and Karnataka (5 MW)
[338] CR, ER, NWR, SR, SCR, SER, SECR, WR and MR/Kolkata

Audit checked the installation of solar plants at 127 locations through joint inspections with railway officials (Senior Section Engineer-Electrical) with reference to prescribed technical specifications. The deviations/non-compliance to the prescribed specifications noticed during joint inspection was as under:

Figure 6.1: (clockwise) Bilaspur English Medium School (SECR), Rail Nilayam building in Secunderabad (SCR) and Godavari Hostel building in Zonal Railway Training Centre (SCR)

a) Trees/tall buildings in close proximity to solar panels

In two Zonal Railways (SCR and SECR), the solar panels were obstructed by trees or tall buildings casting a shadow on the panels. SCR Administration, in its reply, stated that firm had been advised to shift the panels (ZRTC). In respect of Railnilayam, SCR Administration stated that the shadow covers the panels from 16:30 hours.

Figure 6.2: (clockwise) Ratlam station in WR, Hazrat Nizamuddin station in NR and EMU Shed, Sanpada in CR

b) Tilt/angle and direction of solar panels

As per the guidelines[339], the following are to be kept in mind while installing solar panels:

- Solar panels should be installed at an angle of '(Latitude of the place+10) degree' from horizontal.
- Solar panels should be installed south facing in the Northern Hemisphere and north facing in the Southern Hemisphere. Since India is in the Northern Hemisphere, Solar panels will be installed always south facing in the country.

Audit examined 127 locations. At 84 locations[340], the RDSO guidelines to garner maximum benefit of daylight were not adhered to. Further, at 122 locations[341] over IR, IRCAMT guidelines on tilt were not complied with. At 24 locations in eight Zonal Railways[342], solar panels were not aligned to south direction. At these locations, solar panels were mounted on fixed frames without any provision or scope for angular adjustment contrary to the extant instructions.

c) Provision of adequate space between roof and solar panels

As per RDSO Guidelines[343], the clearance between lowest part of the module structure and the developed ground level shall normally not be less than 500 mm. However, in exceptional cases, lower clearances may be allowed on case to case basis. Audit, noticed that at 32 locations in 11 Zonal Railways[344], the clearance or space varied between 0 mm (SWR) to 125 mm (WR). The inadequate space/clearance would prevent effective dissipation of heat and impact the functioning of solar panels.

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[339]Para 3.3.1 of Mounting the Solar Modules of Handbook on Installation and Maintenance of Solar Panel (RDSO/IRCAMT Guidelines)

[340]in 16 Zonal Railways and one Production Unit - CR, ECR, ECoR, NCR, NER, NFR, NWR, SR, SCR, SER, SECR, SWR, WR, WCR, CLW, DLW, Metro Railway/Kolkata.

[341]CR-4, ER-3, ECR-6, ECOR-4, NR-4, NCR-4, NER-13, NEFR-4, NWR-8, SR-1, SCR-10, SER-8, SECR-11, SWR-3, WR-16, WCR-5, Metro Railway/Kolkata-6, ICF-3, CLW-1, DLW-8

[342]CR-1, ECR-3, NFR-1, NWR-2, SR-1, SCR-5, WR-10 and ICF-1

[343]Para 6.10.6 of RDSO Specification No. RDSO/PE/SPEC/PS/0092-2008 (Rev.'O'). Amendment 5

[344]DLW-3, ECR-1, ECOR-4, NR-4, NWR-4, SCR-2, SER-1, SWR-1, SECR-1, WR-10, ICF-1

In reply, Ministry stated (July 2019) that SPDs does the survey before providing survey panels. All care is taken by SPDs to avoid such locations otherwise energy generated would be less and lessen his remuneration. Contract permits change of location within the same Zonal Railway and SPD has to utilize the space in an optimal fashion to get maximum generation. However, the shadows which may come up at later stages due to new buildings, trees etc. are unavoidable.

Ministry's reply is not acceptable as instances pointed out by Audit were existing adverse conditions at the time of installation of solar plants and not due to developments which came up at later stages.

6.1.5 Conclusion

IR has been able to implement projects only to extent of 22.453 MW out of 295 MW planned till March 2018. No works of ground mounted solar plants were commissioned. Instructions of RDSO and IRCAMT for setting up of solar plants were not complied with. There were change of locations, reduction in original capacity planned and installation of solar plants at unsuitable locations. This hindered Railway's ability to harness solar power.

6.1.6 Recommendation

Railways may revisit and fix the target of installation and commissioning of solar plants in the Zonal Railways and Production Units on a realistic basis.

6.2 West Central, Northern, North Western, North Central, North Eastern, and East Central Railways (WCR, NR, NWR, NCR, NER and ECR): Non-mixing/ blending of bio-diesel into HSD oil by Zonal Railways and non-achievement of Environmental objectives

Railway Board issued directions for blending/mixing bio-diesel into HSD oil consumed by Diesel Locomotives in the prescribed extent. The same was not complied by Zonal Railways. This led to avoidable extra expenditure of ₹ 103.67 crore during the period 2015-16 to 2017-18 on consumption of HSD oil. This also impacted Railways efforts towards a cleaner and pollution free environment.

Indian Railway Organisation for Alternate Fuels (IROAF) has emphasized (May 2013) on bio-diesel as a concept on alternate fuels for Indian Railways. Bio-diesel[345] is a green fuel and can be produced from resources within the country. It is also cost effective. Even low level blending with bio-diesel can bring about substantial reduction in Green House Gases (GHG) and polluting emissions. This in turn contribute in minimizing the effects of global warming.

Railway Board directed (March 2015)[346] Zonal Railways for blending of bio-diesel at the rate of 5 *per cent* of HSD oil consumed by the locomotives. Six[347] Zonal Railways were advised to blend bio-diesel with HSD oil only during the months of March to October of the year[348]. Railway Board also directed (July 2015) Zonal Railways to enter into contracts for purchase of bio-diesel for longer periods to ensure sustained blending. IROAF further reiterated[349] that mandate of blending of bio-

[345] Bio-diesel (B-100) is a renewable, cleaner-burning diesel fuel replacement for any diesel engine made from an increasingly diverse mix of resources such as recycled cooking oil, agricultural oils, fatty acids, animal fats and algae. It is also cheaper than HSD oil.
[346] letter No. 2010/Fuel/282/2 Pt.I (DVP) dated. 02 March 2015
[347] NR, NWR, NCR, NER, WCR and ECR
[348] These six ZRs were to stop blending during winter months to avoid the issues due to relatively inferior low-temperature properties of B-100
[349] June 2016 and September 2016

diesel in HSD oil was a Swatch Bharat Mission agenda and needed to be implemented in both letter and spirit.

Audit reviewed the records of six Zonal Railways, where Railway Board advised (March 2015) blending bio-diesel with HSD oil. Audit observed that bio-diesel was not mixed to the desired extent of 5 *per cent* of HSD oil consumption during the period 2015-16 to 2017-18. These six Zonal Railways procured only 27.11 lakh litres of bio-diesel against the requirement of 875.94 lakh litres as per Railway Board's advice.

Audit analyzed the reasons for non-compliance by the six Zonal Railways. Audit found that indents placed by Sr. Divisional Mechanical Engineer (Diesel or Operation) were not adequate for taking care of the requirements. Therefore, purchase orders were issued by Principal Chief Material Manager for supply of bio-diesel for a lesser quantity. Adequate funds were also found to be a constraint during the last two years. In NCR, procurement of bio-diesel could not be finalized. In NR no procurement of bio-diesel was made by its Mechanical department. In other three zones (NWR, NER, ECR), reasons were not found on record. Bio-diesel is cheaper than HSD oil. These Zonal Railways thus, incurred an extra expenditure of ₹ 103.67 crore[350] during the period 2015-16 to 2017-18 **(Annexure 6.1).**

In reply, Railway Board stated (27 February 2019) that Railways processed for procurement of 50000 KL of bio-diesel. However, the same could not be finalized due to non-availability of price variation clause for bio-diesel. They further stated that Zonal Railway also faced difficulty in procurement due to higher price of bio-diesel than HSD oil. This was due to higher cost of import of raw material and taxes. Railway Board, however, advised (September/October 2018) Zonal Railway to initiate procurement process of B-100 bio-diesel in compliance with National Bio-fuel Policy.

[350] differential cost of HSD oil and bio-diesel

6.3 Chittaranjan Locomotives Works (CLW): Procurement of readymade Traction Motors at higher rate

CLW purchased Traction Motors from trade at higher price as compared to the rates of in-house assembling of Traction Motors with readymade procured Rotor and Stators. CLW purchased 1647 Traction Motors during year 2012-13 to 2018-19 (up to June 2018 except 2014-15 and 2015-16) from trade and incurred extra expenditure of ₹57.74 crore.

Chittaranjan Locomotive Works (CLW) produces 3-phase locomotives for Indian Railways. To produce one 3-phase locomotive (Version WAG-9 or WAP-7), six Traction Motors (TM)[351] are required. Traction Motor is an assembled item of a Stator and a Rotor[352]. CLW has production facility for manufacturing of complete TM with manufacturing of Rotors and Stators. It can also assemble TM with readymade procured stators and rotors along with other accessories of TM. For additional requirement beyond their in-house production, readymade TM is purchased from trade.

Audit reviewed the records of tender case files of 2012-13 to 2017-18 for procurement of complete TM from trade by CLW. Audit noticed that

- In the process of finalising the tender cases, rate analysis or market survey was not conducted by CLW. CLW instead awarded contract to trade by comparison of the current offer rate with the last purchase rate (LPR). CLW assembles complete TM with procured readymade Stator and Rotor along with the accessories. Further, the cost of assembled TM was readily available with it. As such, CLW could have undertaken rate analysis.

[351] type 6FRA6068

[352] Traction motor refers to a type of electric motor. A traction motor is used to make rotation torque on a machine. It is usually changed into a straight line motion. Traction motors are used in electrically powered rail vehicles such as electric multiple units and electric locomotives. The stator is the stationary part of the motor. The rotor is the rotating electrical component.

- The cost of complete TM procured from trade was very high in comparison to the assembled TM.

Audit compared the expenditure in procurement of complete TM from trade[353] with the cost of TM assembled by CLW with readymade procured rotors and stators. Audit noticed that CLW incurred and extra expenditure of ₹ 57.74 crore on procurement of 1647 TMs as detailed below:

Table 6.3 – Cost comparison of Traction Motors purchased from trade and assembled in-house by CLW

Year	Cost of TM procured from trade (in ₹)	Cost of assembled TM	Difference of rates (₹ in lakh)	Quantity procured from trade	Total extra expenditure (₹ in crore)
2012-13	28,66,747	21,94,307	6.72	175	11.76
2013-14	26,99,000	22,20,824	4.78	154	7.36
2016-17	21,14,625	18,14,470	2.99	377	11.27
2017-18	19,86,641	17,05,978	2.81	243	6.83
2018-19 (up to June 2018)	20,59,100	17,65,074	2.94	698	20.52
Total				**1647**	**57.74**

In reply, Ministry stated (October 2017) that readymade complete TM was procured to meet the demand of production of locomotives. Further, due to manpower constraints, the demand could not be met by in-house production of TM. They also stated that assembly of TM with readymade rotors and stators could not be done due to non-availability of adequate trained manpower. They stated that utilizing manpower from other department may impact productivity of that department.

Audit is of the view that in the absence of trained manpower, CLW may explore the possibility of assembling of TM by procuring readymade rotors and stators. This will be cost effective in comparison to procuring readymade traction motors from trade.

[353] during the year 2012-13 to 2018-19 (up to June 2018) except 2014-15 as no procurement of rotors and stators was made this year

6.4 Chittaranjan Locomotives Works (CLW): Delay in Commissioning of Electric Arc Furnace leading to blockage of fund

Chittaranjan Locomotive Works procured an Electric Arc Furnace on replacement account. However, they failed to provide a clear site for commissioning of the furnace. This resulted in blockage of capital as the machine procured in March 2012 was yet to be made operational. The chances of obsolescence of machine procured six years back also cannot be ruled out.

Steel Foundry in CLW had procured and installed three Electric Arc furnaces (EAF) over a period of time. One EAF was of 15 Metric Tonne (MT) capacity and installed in the year 2000. Other two EAFs were of 7 MT capacities, were installed in the year 1987 and 1990 respectively. These two furnaces were condemned in August 1997 and December 2008 respectively. Since then, CLW has been functioning with only one EAF of 15MT capacity, in which ferrous metal was melted. Molten metal was then cast, moulded and these moulded steel casting products were finally supplied to the loco shops of CLW. Zonal Railways and other Production Units are the end users for these products.

In August 2011, Deputy Chief Material Manager/CLW placed a purchase order for one 10 MT EAF on a firm[354] at the cost of ₹ 6.16 crore. The EAF was to be received by January 2012 and commissioned by July 2012.

Audit observed that the EAF was supplied to CLW in February 2013. The delay occurred as Chief Mechanical Engineer (Production), Steel foundry/CLW, could not provide clear site for its installation. The same was finally provided in November 2012. Audit further noticed that six years after the date of receipt, the EAF was yet to be commissioned (December 2018). A payment of ₹ 4.10 crore was made to the supplier on this account. Audit noted that the said machine could not be commissioned as the mechanical and electrical works required for commissioning were not completed.

[354] M/s Megatherm Electronics Private Limited, Kolkata

Audit observed that CLW is managing its function with the existing EAF of 15 MT. The average daily production of CLW has increased to 6.61 MT in 2017-18 from 6.26 MT in 2015-16. Further, CLW stated (31 August 2018) that Railway Board enhanced (March 2018) order quantity for Casnub Bogies from 600 to 1100. They were also advised (July 2018) to develop coupler items for Railway wagons. CLW stated that due to these orders, target of steel foundry will further increase in coming years. As such, non-commissioning of new EAF will impact the production of CLW. Further, the chances of obsolescence of machine procured six years back cannot be ruled out. Besides, enforcing the warranty obligations would also be difficult for CLW. The warranty was for 24 months from the date of successful installation and commissioning and the delay in commissioning is on the part of CLW.

Thus, failure of CLW in timely commissioning of Electric Arc Furnace has led to blockage of capital of ₹ 4.10 crore. This may also impact production work at CLW in view of the increase in work in coming years.

The matter was taken up with Railway Board on 12 March 2019; their reply has not been received (30 September 2019).

6.5 Western Railway (WR): Avoidable extra expenditure due to delay in completion of work of Traction Sub Station at Limkheda in Ratlam Division

WR Administration delayed completion of work at Traction Sub-station at Limkheda in Ratlam division for receiving power supply from Madhya Gujarat Vij Company Limited (MGVCL). As a result, they had to pay ₹ 4.21 crore towards minimum guarantee charges and extension charges to MGVCL. An amount of ₹ 12.40 crore remained blocked for a period of three years due to delay in completion of works.

Railway Board sanctioned a work for providing a new Traction Sub Station (TSS) at Limkheda between Dahod and Godhra in 2010-11. The

estimated cost of the work was ₹14.90 crore. The main objective of the work was to avoid overloading on TSS at Dahod by sharing the load of Dahod and Godhra feeding points. Accordingly, the work[355] was awarded to a firm[356] in April 2012 at a cost of ₹ 4.00 crore. The work was required to be completed within six months (October 2012). Meanwhile, WR also placed (November 2011) order for supply of two transformers of 21.6 MVA capacities for TSS/ Limkheda. The cost of the transformers was ₹ 3.26 crore and these were to be delivered on or before 02 June 2012.

Western Railway entered into an agreement (February 2012) with MGVCL for supply of 10,000 KVA on HTP I tariff at TSS/Limkheda. They deposited ₹ 3.15 crore (January 2012) with MGVCL towards charges for transmission and service connection arrangements. As per the agreement, WR had to complete all the arrangements[357] for receiving supply at least 60 days prior to the date initially indicated for taking supply. They were liable to pay minimum guarantee charges in case they were not ready to receive reply, unless allowed extension by MGVCL.

Audit noticed that the work related to supply of power at LMK/TSS was completed by MGVCL on 16 September 2013. However, the of supply, erection, commissioning of associated equipment for TSS could not be completed by that time. The reasons were delay in finalization of drawings. Audit further noticed that a total of 26 extensions were granted to the firm on Railway Account. This was mainly due to deficient planning and poor coordination between engineering and open line departments. These included

- additional work as per RDSO's revised directives of January 2013[358],
- delay in supply of spare items,
- delay in finalisation of designs and drawings by Open Line (Division),

[355] of design, supply, erection, testing and commissioning of associated equipment
[356] M/s Narmada Transmission Pvt. Ltd.
[357] To make available suitable accommodation for housing the Distribution Licensee equipment and apparatus
[358] Provision of PTFE neutral section in front of TSS in place of Insulated overlap

- provision of additional protection system for parallel operation of LMK/TSS and Dahod/TSS (November 2013), and
- provision of additional 132 KV points (January 2015) etc.

The work was finally completed in November 2016 after a delay of four years. Further, at the time of granting extensions, WR certified that the delay will not cause loss or damage to Railway. However, delay in completion of the work caused losses to Railways, as they had to pay minimum guarantee amount to MGVCL. Audit also observed that WR did not seek timely extension from MGVCL though necessary arrangements were not in place. They requested (December 2013) MGVCL for extension after a considerable delay of 77 days, which was not accepted by MGVCL.

Deputy Chief Electrical Engineer (Construction), Ratlam stated (June 2017) that the delay was due to implementation of RDSO's guidelines of January 2013 involving technical improvements. Audit, however, observed that the target date of completion was October 2012 i.e. much before the issue of guidelines by RDSO. Further, railways were liable to be penalized in case of non-completion of works related to receiving the power supply. As such, they should have completed the work as early as possible.

Thus, Railway could not achieve energization of supply at LMK/TSS even though MGVCL was ready to commence supply. MGVCL commenced billing for the minimum guarantee charges from November 2013 after expiry of 60 days from the date of intimation[359] of ready for commencement of power supply. WR withheld payment on the plea that work related to TSS was not completed. The issue was also taken up by Sr. Divisional Electrical Engineer, Ratlam with the Consumer Grievances Redressal Forum MGVCL. However, this was ruled (December 2015) against the Railways. As a result, Sr. Divisional Electrical Engineer,

[359] 17 September 2013

Ratlam had to make a payment of ₹ 3.75 crore towards minimum guarantee charges for the period from November 2013 to November 2015. The amount also included Delayed Payment Charges (DPC) for the period. Payment of ₹ 0.46 crore was also made towards three months' extension from 16 November 2015 to 15 February 2016 to avoid permanent disconnection. The delay resulted in blocking up of capital amounting to ₹ 12.40 crore for a period of three years. In addition, WR also had to bear a dividend liability of ₹ 1.42 crore from November 2013 to March 2016.

Indian Railways now have the right to avail power supply directly from generating companies under open access from generators of electricity as per Electricity Act. Accordingly, WR decided to obtain power supply through open access (February 2016) and got LMK/TSS disconnected permanently from MGVCL.

Thus, Railways incurred an avoidable expenditure of ₹ 4.21 crore towards payment of Minimum Guarantee without availing power supply from MGVCL.

There is a need to fix the responsibility on the officers responsible for delay in completion of works related arrangement required for receiving power supply.

Railway Board accepted (11 March 2019) the facts and stated that Railway tried their level best to get this minimum guarantee charges waived off. However, Consumer Grievance Redressal Forum gave its decision in favour of MGVCL. They added that the expenditure towards payment of Minimum Guarantee have already been recovered due to decision of the Railway to avail power through open access.

Audit is of the view that had Railway completed the work for construction of LMK/TSS, the amount paid towards payment of Minimum Guarantee could have been saved.

6.6 Western Railway (WR): Non–segregation of electricity supplied to Railway colonies

WR failed to segregate electricity supplied for Railway colonies at Dahod. They continued to pay electricity charges to MGVCL on commercial rates, whereas recovery from employees was made at domestic rates. This resulted in extra expenditure of ₹ 3.36 crore. Besides, there was loss of ₹ 2.95 crore due to unaccounted electrical consumption for the period 2010-11 to 2017-18.

Railway Board issued instructions (April 1986) to all Zonal Railways to segregate feeder lines for the Railway residential colonies. These instructions were issued to ensure that the payment of electricity charges in residential colonies was done at domestic tariff. Railway Board also advised (January 1987) Zonal Railways to recover the electricity charges from Railway employees at the rates, which they would have paid for direct supply from Electricity Boards. For new quarters, direct service connection from local supply authorities/ Electricity Boards was required to be arranged. This was to ensure that occupants could be billed individually and clear their electricity charges without coming through the railway channel.

At Dahod/ WR, electricity is being supplied from Madhya Gujarat Vij Company Ltd. (MGVCL) since April 2005, at commercial rates[360]. The segregation of power supply had not been done. As such, payment to MGVCL was being made by the Railway at commercial rates. However, the electricity charges for consumption in Railway residential colonies were being recovered at domestic rates from the occupants. Audit noticed that the matter could not be resolved at the local level. The same was also not escalated to Zonal Headquarter level. WR also did not approach Gujrat Electricity Regulatory Commission (GERC) seeking redressal in

[360] High Tension Point (HTP) no.1 for Workshop, HTP no. 2 for service buildings and 3059 Railway quarters located in five residential colonies scattered in the area of 2.74 lakh sqm

the matter. Audit observed that 2.94 crore units of electricity was consumed in Dahod Railway colonies during the period 2010-11 to 2017-18. For this, payment was made to MGVCL on commercial rates, whereas recovery from employees was made at domestic rates. This resulted in extra expenditure of ₹ 3.36 crore.

Audit further noticed unaccounted electricity consumption of 41.08 lakh units worth ₹ 2.95 crore in Railway colonies at Dahod during 2010-11 to 2017-18. WR attributed unaccounted electricity consumption to old transformers and distribution lines. However, they have not proposed replacement of these installations, as they plan to segregate power supply for Railway colonies.

Railway Board in their reply stated (7 March 2019) that a writ petition was filed before GERC, Ahmedabad. Correspondences were also made with GERC during February 2015 to November 2017. They further added that the extra expenditure pointed out by Audit is notional as the work of segregation is still not completed.

Audit has worked out the extra expenditure based on the difference between actual payment to MGVCL at commercial rate and amount recovered from the occupants of the Railway quarters at domestic rate. This could not be stated as notional. Further, GERC in its judgement (7 February 2007) had directed Chief Works Manager, Dahod to apply for separate connection for the power supply to residential premises. However, even after lapse of more than 10 years, power supply to the Dahod Railway colony has not been segregated.

Thus, there was lack of concerted action at appropriate level to install segregated electricity connection for Railway colonies at Dahod. This resulted in avoidable payment of ₹ 3.36 crore and loss of ₹ 2.95 crore due to unaccounted electrical consumption during 2010-11 to 2017-18.

Chapter 7
Other issues

This Chapter includes a long paragraph on 'Management of Kumbh Mela, 2019 by the Railways', wherein the deficiencies in running of trains, delays in completion of works undertaken for preparation of Kumbh Mela and issues of sanitation, security and safety of passengers have been highlighted. The Chapter also include two individual paragraphs highlighting issues related to procurement of stores at higher rates and non-redeployment of surplus staff.

7.1 South Eastern Railway (SER): Extra expenditure due to procurement of stores at higher rates and non-levy of liquidated damages

Stores Department of SER purchased various store items during 2012 to 2017 at higher rates in comparison to the rate of similar items procured almost simultaneously by Eastern Railway (ER). The information on rates of procurement by neighbouring Zonal Railways was readily available in iMMIS. However, while assessing the reasonableness of quoted rates, the Tender Committee did not take into consideration of these rates. As a result, SER incurred extra expenditure of ₹ 7.93 crore due to procurement of stores at higher rates. Further, in 51 POs even though full contractual quantity of the material was not supplied by the supplier, SER issued fresh POs at higher rates. This entailed extra expenditure of ₹ 4.49 crore. Of these, in 23 POs the orders were given to the same suppliers at higher rates. In addition, liquidated damages of ₹ 2.35 crore was also not imposed on the defaulting contractors.

Stores Department in various Zonal Railways procures store items for various railway departments. Tenders are called for through web-based e-Procurement System. The summarized position of various stores procurements made by all Zonal Railways over a period of time, including rates of such procurements, are recorded in the Material Management Information System (MMIS)/ Integrated Material Management Information System (iMMIS). Audit studied the data of the Stores Department in SER for the period May 2011 to December 2017 and observed the following deficiencies:

(i) Procurement of stores at higher rates - Ministry of Railways included a 'Fall Clause' in the Indian Railway Standard Conditions of Contract and codified[361] the same in December 1986. As per the clause

[361] Para 417 of Indian Railways Code for the Stores Department, Volume I (Appendix III to the Conditions of Contract (Para 3000 to 3003)

'the price charged for the stores supplied under the contract by the contractor shall in no event exceed the lowest price at which the contractor sells the stores or offer to sell stores of identical description'.

In December 1988, the Ministry further decided that Fall Clause shall be applicable only in rate contracts. In June 2008, the standard text of Fall Clause was included in the IRS Conditions of Contract as Clause 3000. Accordingly, the contractor is required to furnish a certificate to the concerned Accounts Officer along with each bill for payment of supplies made against the contract. The certificate should clearly specify that there has been no reduction in sale price of stores identical to the stores supplied under the contract and such stores have not been offered/ sold to any organisation at a price lower than the price charged to the Government under the contract.

Audit undertook an exercise to assess the reasonableness of accepted rates of various procurements by SER from the data available in MMIS/iMMIS. Audit compared the rates of procurement by SER with the rates of similar items procured almost simultaneously (within a period of one month to nine months) by ER[362]. The corresponding Purchase Order (PO) files of SER and copies of POs of ER were also reviewed. The review covered a period of five years from December 2012 to December 2017.

Audit observed that

- Stores Department of SER procured various store items at a much higher rates per unit than the rates of similar items procured simultaneously by ER through 120 POs.
- In 108[363] POs out of 120, SER incurred extra expenditure of ₹ 7.93 crore.

[362] ER is a neighbouring Zonal Railway with headquarters at the same station viz. Kolkata

[363] In 11 POs out of these, another railway office was the nodal authority for receipt and distribution of the store procured for users including COS, Stores, Kolkata

- The difference in rate of SER and ER ranged from 5.08 *per cent* to 234.75 *per cent*.
- Out of 108 POs, in respect of five POs, procurement was made from the same supplier within a time gap of one to seven months involving extra expenditure of ₹ 0.46 crore.
- The certificate which was mandatory to be obtained from the contractor was not obtained by the Stores Department of SER.

SER was aware of the rates of procurement of a particular item by other Zonal Railways at the time of assessing reasonableness of offered rates. However, the Tender Committee[364] did not consider the procurement rates of ER or any other Zonal Railways for the purpose of assessing reasonableness of the quoted rates. SER also did not enforce the 'Fall Clause' as part of IRS conditions of contracts to safeguard railway's financial interest.

Audit verified the system presently being followed by other departments of SER for procurement of stores. Audit observed that the procurement rates of other Zonal Railways were taken into account while assessing the reasonableness of rates by the Medical Department of SER.

Thus, Stores Department of SER failed to observe financial propriety in application of the 'Fall Clause' and assessing reasonableness of offered rates. Ineffective internal control mechanism by SER Administration led to extra expenditure of ₹ 7.93 crore on procurement of stores at higher rates in 108 POs.

(ii) Issue of fresh POs at higher rates without receiving the full quantities in the earlier POs (to the same supplier in some cases) - The term 'Delivery'[365] emphasizes that Contractor *inter alia* shall, as may be required by the Purchaser, deliver the required quantity of the stores and by the date specified in the contract. The delivery schedule mentioned in a PO gives a fixed period for completing supply of each material under

[364] including the Member from the Finance Department
[365] As per Clause 0601 of Appendix III under Para 417 of the Indian Railways Code for the Stores Department, Volume I

procurement, failing which provisions of penalty come into effect. As per Railway Board's orders[366], Liquidated Damages (LD) of a sum equivalent to two *per cent* of the price of the stores for each month or part of a month of delay in delivery, as per contract schedule (subject to the upper limit of 10 *per cent*) of value of delayed supplies irrespective of delays, unless otherwise provided, should be recovered.

Audit noticed that the above codal provisions and Railway Board's orders were not observed by the Stores Department on behalf of various railway departments. In respect of 51 POs issued during May 2011 to November 2016, full contractual quantity of the material was not supplied by the suppliers. However, SER issued fresh POs at higher rate resulting in extra liability of ₹ 4.49 crore**,** as assessed in audit[367]. Railways did not take any initiative to regularize the earlier 51 POs by issuing formal amendment/ cancellation before processing fresh tenders. In 23 of the above POs, even though supplies against earlier POs were incomplete, subsequent POs were issued to the same suppliers at higher rates.

(iii) Non-levy of liquidated damages - Audit further reviewed the data regarding levy of LD in the IT systems viz. AFRES[368]/IPAS[369] maintained by SER. Audit observed that railway had not imposed LD against any of the defaulting contractors in respect of 39 out of the 51 POs mentioned above. In these 51 POs, supply of material had been pending for long time (ranging between one year and five and half years). The amount of leviable LD assessed in audit was ₹ 2.35 crore.

Thus, without receiving the full contractual quantity of the material, SER issued fresh POs at higher rates resulting in extra liability of ₹ 4.49 crore. Further, SER did not impose liquidated damages of ₹ 2.35 crore on defaulting contractors for delayed delivery of materials.

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[366] Compendium of October 2009 on 'Rules for entering into supply contracts'
[367] In 11 POs, out of these, another railway office was the nodal authority for receipt and distribution of the stores procured for users including COS, Stores, Kolkata
[368] Advanced Financial and Railway Expenditure Management System (the application which was used by the railways before implementation of IPAS)
[369] Integrated Payroll and Accounting System

The matter was taken up with Railway Board on 15 November 2018; their reply has not been received (30 September 2019).

7.2 Northeast Frontier Railway (NFR): Unproductive expenditure due to non-redeployment of surplus staff of a closed Metre Gauge Diesel shed

The Diesel Shed at Lumding was closed in October 2014, due to gauge conversion[370] of Lumding - Badarpur - Silchar section. However, NFR did not take timely action to redeploy all the staff of the Diesel Shed. This led to unproductive expenditure of ₹ 34.81 crore on 362 to 140 surplus staff during October 2014 to July 2018.

As per instructions[371] of Railway Board (April 1989), areas where staff are likely to be rendered surplus, are required to be identified well in advance and planning made for their suitable redeployment.

For gauge conversion of the Lumding–Badarpur–Silchar section, Railway Board decided (June 2014) to impose Mega Block[372] with effect from 1 October 2014. Consequently, Diesel Shed at Lumding having strength of 362 staff became redundant and the personnel engaged in the shed became surplus. A meeting was held in September 2014 by General Manager and other Head of Departments of both Open Line and Construction Organisation. Accordingly, an action plan for redeployment of staff of the shed on roll as on September 2014 was drawn. This was done in consultation with the office bearers of recognised unions of NFR. The following was decided:

- Out of 325[373] staff on roll, 50 staff would be retained at Lumding for the purpose of running trains between Karimganj– Agartala portion.
- They would be deputed to Karimganj in a batch of 25 for the period of two months on rotation basis.

[370] From Meter Gauge to Broad Gauge
[371] Railway Board's letter No. E(NG)II-84/RE-1/10 dated 21.04.1989
[372] A mega block means suspension of traffic on a long stretch due to maintenance/construction work.
[373] Railway Administration did not take Leave Reserves, Stores Staff, Laboratory Staff, Loco Inspectors, Ministerial Staff etc. into account.

- Remaining staff was decided to be shifted to other Diesel Sheds of the Zone. They were to be transferred back to the Lumding Diesel Shed, once BG Diesel Shed was commissioned after two to three years.

Audit observed that orders of only 178 staff for transfer to different Sheds and Workshops were issued (January to February 2015). With effect from 1 October 2015, 50 staff, who were decided to be retained, also became surplus as by that time Mega Block was imposed in Karimganj-Agartala portion too. As such, NFR Administration transferred the existing staff only partially and that too after a delay of four to five months. They made payment of ₹ 34.81 crore[374] towards pay and allowances of the surplus staff.

In reply, Railway Board stated (April 2019) that

a. Resettlement of LMG Diesel Shed staff was a policy matter and decision was to be taken by Zonal Headquarters as per minutes of meeting.
b. As per sectional requirement for Meter Gauge train operation in section between Karimganj-Agartala from the period 01 November 2014 to 30 September 2015, 26 locos were maintained at Karimganj.
c. The LRS staff, store staff, Laboratory staff, loco inspector and ministerial staff were included in muster roll in diesel shed because they belong to LMG Diesel shed.
d. Adequate measures/steps were taken as far as possible and practical for deployment of surplus staff in other diesel sheds and troubleshooting points and they are continuing to work there.

Audit, however, noticed that after six months from receipt of Railway Board's order and three months from imposing Mega Block, Divisional Railway Manager (P) issued (January 2015) transfer orders of only half of the staff on roll. As per the instructions, action should have been taken immediately after the decision was taken. In the meeting of September

[374] ₹ 10.65 crore for the period from October 2014 to September 2015 and ₹ 24.16 crore for the period from October 2015 to July 2018

2014, no decision was taken for retaining 70 excess staff over and above the 50 staff considered. 50 staff decided to be retained were supposed to be deputed to Karimganj in a batch of 25 for a period of two months on rotation basis. Also, 25 staff deputed to Karimganj were to attend *Minor Schedule* of Meter Gauge Locomotives. Required infrastructure for major repair like periodic overhaul (POH) was not available at Karimganj. Out of 362 staff on roll as of September 2014, decision was taken to transfer 237 staff leaving 125 staff outside the purview of re-deployment from the very beginning. Out of 237 staff decided for transfer, order was issued to transfer only 178 staff leaving behind another 59 staff taking the number to 184. Retained 140[375] staff were still on roll at the end of July 2018 against Diesel Shed of Lumding which was closed in October 2014. Thus, non-redeployment of all the staff of MG Diesel shed at Lumding led to unproductive expenditure of ₹ 34.81 crore.

7.3 Management of Kumbh Mela, 2019 by the Railways

7.3.1 Introduction

Kumbh Mela has been inscribed in the UNESCO's representative list of the intangible cultural heritage of humanity[376]. At Allahabad, the Kumbh Mela is held after every six years and Maha Kumbh Mela after every 12 years. The Kumbh Mela, 2019 was held between 15 January 2019 and 4 March 2019 for 49 days. Railways play an integral role in ensuring the smooth organisation of the event by actively coordinating with the State Government. This includes

Figure 7.1: Tent City in Kumbh Mela area, Allahabad

[375]Number decreased owing to superannuation etc.
[376]Inscription: 12.COM 11.b.12

- running special trains for dispersal of pilgrims
- taking care of sanitation and minimum essential amenities at the railway premises
- arranging temporary holding in station premises
- facilitation in Mela area for Booking & Passenger Information; and
- ensuring the safety and comfort of pilgrims during the event.

The Kumbh Mela railway traffic in the Allahabad area is handled at ten[377] Railway stations of three zones, viz., North Central Railway (NCR), Northern Railway (NR), and North Eastern Railway (NER). These stations are located within 1.6 km to 14 km from Sangam area.

Map 1: Mela Area Stations

Audit reviewed (August to November 2018) the activities of Railways for management of Kumbh Mela, 2019. Audit recommended short term (for Kumbh Mela 2019), medium term (for Magh Mela 2020) and long term (for Maha Kumbh 2025) measures. Railways responses and action taken have been verified/examined during the Mela period. Audit observed that no unfortunate events occurred during the Mela period. Audit, however, noticed that issues such as running of special trains, works related to passenger amenities and safety, medical facilities to passengers, waste

[377] Out of ten Mela serving stations, Daraganj station (NER) was closed during Kumbh Mela, 2019

management at station premises were not adequately addressed by Railways.

Audit also studied the manner in which the passengers and operations were handled by the railways during the Mela period. Instructions/ Guidelines issued by the Railway Board regarding the planning and execution of work related to Kumbh Mela, 2019, minutes of meetings to monitor the works, Justice (Rtd.) Onkareshwar Bhatt's Committee Report and Report of the Harvard University on Maha Kumbh Mela 2013 were the main sources of criteria for audit review.

Audit findings are discussed in subsequent paragraphs.

7.3.2 Running of special trains

During the Maha Kumbh Mela, 2013 to evacuate the expected 34 lakh passengers, 471 Mela Special trains were planned. Audit commented on shortfall (ranged between four to 13) in the running of Mela Special trains from Allahabad station during the important bathing days (Makar Sakranti, Mauni Amawasya and Basant Panchami). This caused overcrowded and passenger inconvenience on these days.

For Kumbh Mela 2019, Railway estimated (September 2018) an evacuation of 33 lakh passengers, which was subsequently revised (December 2018) to 45.48 lakh. They planned to run 800 (subsequently increased to 821[378]) outward Mela Special trains on 30 days[379].

In order to avoid recurrence of stampede-like situation, the Bhatt Committee[380] had recommended (August 2014) that no special train should originate or terminate from/ to Allahabad Junction. The Committee recommended originating/terminating these trains from satellite stations[381] of Allahabad Junction. However, Railways planned 54 *per cent* of the

[378] NCR-622, NER-110+21 & NR-68

[379] six main bathing days including two days before and two days after

[380] The State Government of Uttar Pradesh on 18 February 2013 appointed Onkareshwar Bhatt, the retired Justice of Allahabad High Court to conduct Judicial Probe into the Allahabad Railway Station Stampede that occurred during Kumbh Mela period.

[381] Stations which are little far from main station, in decongested areas so that the trains can terminate and originate from these station without congesting the main stations.

special trains (440 out of 821) to run from Allahabad Junction. Audit observed that

- As against 821 special trains planned, total 565[382] special trains were actually run. There was a shortfall of 256[383] special trains.
- Railways were also not able to operate the special trains as per their planning for the main bathing days (including one day after). On 13

Figure 7.2 Passengers entering through emergency window

Figure 7.3 Passengers sitting on the engine at Naini

Mela days[384] including the main bathing days and one day after, 72 *per cent* were run.

- Audit reviewed the position of timetabling of special trains during the Mela period. Timetable of *50 per cent* of special trains was announced by railway only on 03 January 2019, due to non-confirmation of availability of rakes. This did not leave adequate time for the passengers to plan their journey and book tickets in special trains.
- Railways intimated a figure of 73.66 lakh evacuation of passengers during Mela period in Sameeksha Sangosthi of March 2019 held in Railway Board. Railways again intimated (August 2019) a figure of 73.41 lakh passengers based on the special trains and regular trains run during the mela period. Railways carried these passengers through the special and regular trains.

[382] 427, 75, and 63 special trains were run by NCR, NER, and NR respectively
[383] 195-NCR, 56-NER & 5-NR
[384] Makar Sankranti (15.01.19 and 16.01.19), Paush Poornima (21.01.19 and 22.01.19), Mauni Amavasya (04.02.19, 05.02.19 and 06.02.19), Basant Panchmi (10.02.19 and 11.02.19), Maghi Poornima (19.02.19 and 20.02.19) and Maha Shivratri (04.03.19 and 05.03.19)

- However, as per the records of commercial department, 31.21 lakh tickets were sold from Allahabad area (stations of NCR, NR and NER) during the mela period. Even if it is accepted, for arguments sake, that the sale of tickets figure may not be total evacuation as there would be ticket sale from other stations also for outward journey from Allahabad, ticketless travel during the mela period etc., the gap of over 40 lakh passengers seems difficult to explain.
- Correctness of the estimates of travel needs to be also seen in the context that based on the estimation of 45.48 lakh passengers, Railway planned 821 special trains. They, however, ran only 565 trains. A significantly higher number of passengers, with fewer special trains is difficult to accept.
- No effective steps were taken by the Railways to assess the actual footfall at the stations during Kumbh Mela, 2019.

Figure 7.4 Accumulation of passengers outside enclosure at Allahabad station

Figure 7.5 Over crowded enclosure at Allahabad station

7.3.3 Impact of incomplete works on passenger amenities, crowd management and cleanliness

Railways undertook 52 works costing approximately ₹ 1,850 crore for supplementing infrastructure facilities relating to passenger amenities. These works related to the development of stations, circulating areas, traffic facilities, Foot Over Bridge and Road over Bridge. Of these, 22 works related to passenger amenities. Remaining 30 works relate to the

creation of infrastructure for the smooth movement of trains during the Mela period and beyond.

(a) Passenger Amenities works

Out of 22 passenger amenities works, seven works could not be completed at the time of the start of the Mela on 15 January 2019. Audit observed that

- Quick watering arrangement work was planned at Allahabad. This was meant to reduce the stoppage time of trains for watering at Allahabad. The work was not completed and at least 4300 coaches in different trains at Allahabad Stations departed without water during Kumbh Mela period. Around 6.12[385] lakh passengers were inconvenienced due to trains departing without water.

Figure 7.6 Passengers drinking unhygienic water from hydrant pipes at Allahabad Chheoki

- The new overhead tank[386] at Chheoki Station was not constructed up to end of Kumbh Mela 2019. Passengers were found drinking unhygienic water from pipes meant to hydrate the coach toilets.

- The work of 3rd down line between Naini and Chheoki with additional platform (2km) was not completed. 91 trains from/ to Jabalpur and Jhansi originated/ terminated at Allahabad junction. These trains could have been run from Cheoki, if the planned work was completed. This resulted in an additional burden on already saturated Allahabad Junction[387] and impacted movement of regular trains from the station.

[385] 4300 coaches/20 coaches per train *2850 passenger per train = 612750 passengers
[386] Work of Chheoki-development as a terminal station which included new overhead tank
[387] Allahabad station handles around 190 trains per day in five directional passenger traffic out of which 18 trains are originating trains

- Subedarganj station was planned to be developed as a Terminal station. This would enable to shift Kanpur-bound special trains from Allahabad to Subedarganj to reduce the burden on Allahabad Junction. However, the work was yet to be completed (April 2019). As a result, only ten Mela special trains could be run from Subedarganj.

Figure 7.7 Huge traffic jam and discomfort at Allahabad Railway station road

- The work of multi-level parking at Allahabad railway station was sanctioned in 2017. The work remained incomplete and parking facility in circulating area of Allahabad Junction was closed. This led to huge traffic jams. Unauthorised parking of vehicles was noticed outside circulating area of station during the Kumbh Mela, 2019.

- In consultation with State Government, Railways had planned for

Figure 7.8: Toilets for Divyangjan and females were found locked at Allahabad station

construction of community toilets at 29 locations on Allahabad station to prevent open defecation. However, the work was not initiated. Even those which were newly constructed (including one for '*divyangjan*' at platforms of Allahabad Station) were found closed/unusable. This may

have been a reason for open defecation, as noticed in station premises.

There were delays in execution of the above works, as adequate planning was not done and funds provided were not adequate or provided late. There were other issues such as non-availability of labour, site clearance etc., which delayed these works.

7.3.4 Cleanliness and waste management

Provision of clean and hygienic surroundings is one of the commitments made by Indian Railways in its Citizen Charter. During Kumbh Mela/ Magh Mela, sanitation and cleanliness at the Railway station, disposal and treatment of solid and liquid waste is a major challenge for Railways. Environment pollution and an outbreak of vector-borne disease are potential risk areas.

Figure 7.9 Non segregation of waste at source into bio-degradable and non-biodegradable wastes - Allahabad station

As per NGT's[388] interim report of 10.4.2019, 18,000 metric tonne of solid waste collected during Kumbh Mela 2019 remained untreated in Allahabad district. Audit estimated that within railways, ~2029 to 4788[389] quintal garbage (based on the norms[390] suggested by the RITES) remained untreated due to non-availability of any mechanism for Solid Waste Management during Kumbh Mela, 2019. As per solid waste management rule-2016[391] it is the responsibility of the waste generator to ensure treatment of generated waste.

[388] National Green Tribunal

[389] 65 gm x 3121000 (31.21 lakh passengers of tickets sold in Kumbh 2019)=2029 Quintals to 65 gm x 7366000 (73.66 lakh passengers evacuated as per Railways) = 4788 Quintals

[390] On an average one railway passenger contributes to roughly 65 gram of waste.

[391] It is the duty of the waste generator to ensure segregation of waste at source, facilitate collection of segregated waste in separate stream, handover recyclable material to either the authorised waste picker or the authorised recyclers. The biodegradable waste shall be processed, treated and disposed of within the premises as far as possible.

During physical verification (13 January to 6 February 2019), Audit noticed non-segregation of waste, non- provision of separate dustbins for biodegradable and non-biodegradable waste at Allahabad (platform no.7), Naini (platform no.1) and Chheoki (platform no.1) stations. Audit also noticed use of open trucks/trolley for carrying the waste from the platform of Allahabad Station. The staff engaged in cleaning work were found without personal protection equipment like hand gloves and face mask (platform no.1 and 2 of Allahabad station, platform no.2 of both Chheoki and Naini stations).

7.3.5 Medical Facilities

Railway Medical department had planned first-aid posts, sanitation arrangement, management of portable drinking water, foodstuff check, control of infectious diseases, control over flies and mosquitoes, and immunization and inoculations of staff members. Railway had planned to keep Accident Relief Medical Equipment (ARME) at Allahabad and Kanpur ready for an emergency. During Kumbh Mela, 2019, Audit noticed that

1. Emergency services of blood bank were not available in the Central Railway Hospital Allahabad.
2. Pre-packed first-aid kits for stampede were made available at Kumbh serving Railway stations for better disaster preparedness.
3. During Kumbh Mela 2019, the contract for Pharmacist and Health attendant for first-aid Booth for thirty days (for main bathing days including two days before and after) was awarded. However, the same was not found functional on five days on all the Mela stations checked in Audit[392]. Further on two[393] other days, first-aid booth was also not found functional at Allahabad Chheoki station.
4. Audit noticed that five out of seven ambulances hired by the railways[394] were without any emergency equipment like oxygen cylinder, stretcher, stretcher bearer, first-aid box. Given the past experience of the stampede during Kumbh Mela 2013, Railways

[392] 02.02.2019, 03.02.2019, 12.02.2019, 21.02.2019 & 06.03.2019
[393] 08.02.2019 and 11.02.2019
[394] 5-Mechanical department, 2-Medical Department

should have planned for fully equipped ambulances for use in emergency.

7.3.6 Safety arrangement in station premises

As per Railway Board's instructions[395], third party audit of FOBs need to be conducted to assess the condition of FOBs and to ensure safety. In the ibid instructions, Zonal Railways were advised to carry out one time third party technical audit of FOBs duly checking all aspects of the FOBs by engaging expert national/international agencies. However, the same has not been conducted at Allahabad and other stations. NCR administration stated (December 2018) that Safety audit is required to be carried out for more than 80 years old Bridges/ FOBs. Mandatory inspections of all the FOBs were being done as per the prescribed guidelines of Railway Board.

Figure 7.10 Movement of passengers from one PF to another PF through railway tracks at Jhusi station as there was no FOB

However, Audit noted that third-party safety audit of FOBs was not conducted in NCR.

Audit also noticed that there was no FOB connectivity between platform number 02 and 03 at Jhusi station. As a result, the movement of passengers from one platform to another platform was primarily through railway tracks only, which was risky and could have caused accidents (figure 7.10).

[395] Railway Board Letter No. 2017/07/CE-III/BR/Safety dated 03.08.2018

During Kumbh Mela, Audit noticed that while other stations have sufficient wide entry gates, widening of entry gates was not planned in Naini station

Figure 7.11 Trespassing at Allahabad Chheoki station due to non/partial fencing

Figure 7.12 No fencing/boundary cause trespassing at Naini Junction

for ensuring smooth crowd management. Wide-entry gates were made at Naini Junction during Kumbh Mela, 2019, after the matter was raised in Audit. Audit further noticed that

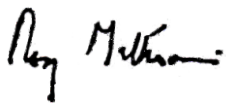
Figure 7.13 Incomplete fencing at Chheoki station leading to cattle on the tracks

- During joint inspection (May 2018) with State Mela Authorities, vulnerable locations were identified for fencing to ensure unidirectional traffic. Work of fencing of identified vulnerable locations (track & station entry point) at four locations (Chheoki, Naini, Jhusi, Allahabad City) was also planned but not completed during Kumbh Mela period. This resulted in free movement of cattle on the tracks and passenger trespassing compromising their safety (illustrated in figures 7.11 to 7.13).
- Metal detectors/luggage scanners were planned for ensuring the safety and security of passengers. However, these were not utilised during peak hours or remained non-functional during the Mela.

7.4 Conclusion

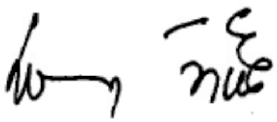
The Kumbh Mela, 2019 was held between 15 January 2019 and 4 March 2019 for 49 days. Railways had an integral role in ensuring smooth organisation of the event by actively coordinating with the State Government. Audit noted that issues such as running of special trains, works related to passenger amenities and safety, medical facilities to passengers, waste management at station premises were not adequately addressed by Railways. These caused inconvenience to passengers coming for the Kumbh Mela. Temporary fencing at vulnerable locations (track & station entry point) were not completed. This led to cases of free movement of cattle on tracks and passengers trespassing.

Not addressing the above issues adequately may pose risk for the next mega event such as Magh Mela 2020 and Maha Kumbh Mela 2025. It is likely that in future the footfall and accumulation of crowd at Allahabad would only increase. Therefore, Railways need to address the above issues before the Magh Mela 2020.



New Delhi **(ROY MATHRANI)**
Dated: 06 December 2019 **Deputy Comptroller and Auditor General**

Countersigned



New Delhi **(RAJIV MEHRISHI)**
Dated: 06 December 2019 **Comptroller and Auditor General of India**

Annexure 1.1 (Para 1.8)							
Status of Action Taken Notes of Ministry of Railways (as on 30 September 2019)							
Year	**Total Paragraphs included in the Reports**	**No. of Paragraphs on which ATNs finalized**	**No. of Paragraphs on which ATNs are pending**				
			ATNs not received	**ATNs on which comments sent to Railway Board**	**ATNs finally vetted but yet to be loaded in the portal**	**ATNs under verification by Audit**	**Total**
2012-13	30	29	0	1	0	0	1
2013-14	47	43	0	2	0	2	4
2014-15	44	39	0	2	0	3	5
2015-16	45	32	0	9	0	4	13
2016-17	46	12	7	10	1	16	34
Total	**212**	**155**	**7**	**24**	**1**	**25**	**57**

Status of Public Account Committee's Action Taken Reports of 16th Lok Sabha (as on 30 September 2019)					
Report no.	**Total number of Paragraph**	**No. of paragraphs on which ATR finalised**	**No. of Paragraphs on which ATR are pending**		
			ATR vetted by Audit and pending with Ministry	**Vetted ATR sent to Ministry with its comments**	**ATR pending with Audit for vetting comment**
84th	2	2	0	0	0
86th	3	2	0	0	1
88th	7	7	0	0	0
93rd	8	8	0	0	0
99th	3	3	0	0	0
100th	3	3	0	0	0
108th	3	3	0	0	0
109th	10	5	0	0	5
116th	2	1	1	0	0
117th	1	1	0	0	0
119th	5	3	2	0	0
Total	**47**	**38**	**3**	**0**	**6**

Annexure 2.1 (Para 2.1.6)					
Statement showing status of proposal received and Private Freight Terminals commissioned on Indian Railways.					
S. no	**Zonal Railway**	**Period**	**Number of proposals received for setting up of PFTs (Opening Balance)**	**PFTs commissioned**	**Number of proposal outstanding (Closing Balance)**
1	***2***	***3***	***4***	***5***	***6***
1	CR	Up to March 2016	4	4	0
		2016-17	0+2	1	1
		2017-18	1+3	2	2
		TOTAL	**9**	**7**	**2**
2	ER	Up to March 2016	6	2	4
		2016-17	4+0	0	4
		2017-18	4+0	0	4
		TOTAL	**6**	**2**	**4**
3	ECR	Up to March 2016	7	2	5
		2016-17	5+0	0	5
		2017-18	5+1	0	6
		TOTAL	**8**	**2**	**6**
4	ECoR	Up to March 2016	3	1	2
		2016-17	2+1	1	2
		2017-18	2+2	2	2
		TOTAL	**6**	**4**	**2**
5	NR	Up to March 2016	14	6	8
		2016-17	8+5	5	8
		2017-18	8+10	1	17

		TOTAL	**29**	**12**	**17**
6	NCR	Up to March 2016	2	2	0
		2016-17	0+1	0	1
		2017-18	1+1	0	2
		TOTAL	**4**	**2**	**2**
7	NER	Up to March 2016	3	1	2
		2016-17	2+0	1	1
		2017-18	1+2	0	3
		TOTAL	**5**	**2**	**3**
8	NFR	Up to March 2016	0	0	0
		2016-17	0+1	0	1
		2017-18	1+0	0	1
		TOTAL	**1**	**0**	**1**
9	NWR	Up to March 2016	4	3	1
		2016-17	1+0	0	1
		2017-18	1+1	0	2
		TOTAL	**5**	**3**	**2**
10	SR	Up to March 2016	1	0	1
		2016-17	1+1	0	2
		2017-18	2+0	0	2
		TOTAL	**2**	**0**	**2**
11	SCR	Up to March 2016	10	3	7
		2016-17	7+0	2	5
		2017-18	5+1	1	5
		TOTAL	**11**	**6**	**5**
12	SER	Up to March 2016	5	1	4
		2016-17	4+1	2	3
		2017-18	3+0	0	3

		TOTAL	**6**	**3**	**3**
13	SECR	Up to March 2016	6	3	3
		2016-17	3+1	1	3
		2017-18	3+0	2	1
		TOTAL	**7**	**6**	**1**
14	SWR	Up to March 2016	2	0	2
		2016-17	2+1	0	3
		2017-18	3+2	0	5
		TOTAL	**5**	**0**	**5**
15	WR	Up to March 2016	11	3	8
		2016-17	8+1	2	7
		2017-18	7+1	2	6
		TOTAL	**13**	**7**	**6**
16	WCR	Up to March 2016	2	2	0
		2016-17	0+2	0	2
		2017-18	2+0	0	2
		TOTAL	**4**	**2**	**2**
	IR	**Up to March 2016**	**80**	**33**	**47**
		2016-17	**47+17**	**15**	**49**
		2017-18	**49+24**	**10**	**63**
		TOTAL	**121**	**58**	**63**
Note Closing balance of previous year has been shown in opening balance of next year.					

Annexure 2.2 (Para 2.1.7)

Statement showing the details of projected traffic vis-à-vis actual traffic at PFTs during the period 2015-16 to 2017-18

S. no	Zonal Railway	Number of Divisions	Number of PFTs	Year	Projected business volume at the time of application (DPR) submitted by TMC			Actual number of rakes loaded/ unloaded in PFTs	Shortfall, if any, w.r.to col. No.7 (col.7-col.8)	Shortfall in percentage
					Number of rakes for loading	Number of rakes for unloading	Total (Col 5 + Col 6)			
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
1	CR	2	7	2015-16	552	1683	2235	683	1552	69.45
				2016-17	596	1711	2307	600	1707	74.00
				2017-18	1087	1757	2844	830	2014	70.81
				TOTAL	**2235**	**5151**	**7386**	**2113**	**5273**	**71.39**
2	ER	1	2	2015-16	190	625	815	218	597	73.25
				2016-17	194	639	833	214	619	74.31
				2017-18	202	655	857	450	407	47.49
				TOTAL	**586**	**1919**	**2505**	**882**	**1623**	**64.79**
3	ECR	2	2	2015-16	12	48	60	118	-58	-96.67
				2016-17	24	96	120	198	-78	-65.00
				2017-18	24	96	120	180	-60	-50.00
				TOTAL	**60**	**240**	**300**	**496**	**-196**	**-65.33**
4	ECoR	3	4	2015-16	684	360	1044	274	770	73.75
				2016-17	796	462	1258	283	975	77.50
				2017-18	1505	1113	2618	580	2038	77.85
				TOTAL	**2985**	**1935**	**4920**	**1137**	**3783**	**76.89**
5	NR	3	12	2015-16	1459	2031	3490	3234	256	7.34
				2016-17	2062	2621	4683	4510	173	3.69
				2017-18	2946	3576	6522	7457	-935	-14.34
				TOTAL	**6467**	**8228**	**14695**	**15201**	**-506**	**-3.44**

6	NCR	1	2	2015-16	186	174	360	604	-244	-67.78
				2016-17	198	186	384	754	-370	-96.35
				2017-18	198	186	384	992	-608	-158.33
				TOTAL	**582**	**546**	**1128**	**2350**	**-1222**	**-108.33**
7	NER	1	2	2015-16	100	20	120	129	-9	-7.50
				2016-17	532	177	709	409	300	42.31
				2017-18	654	239	893	848	45	5.03
				TOTAL	**1286**	**436**	**1722**	**1386**	**336**	**19.50**
8	NWR	1	3	2015-16	772	772	1544	2285	-741	-47.99
				2016-17	830	830	1660	4277	-2617	-157.65
				2017-18	1205	1205	2410	7145	-4735	-196.47
				TOTAL	**2807**	**2807**	**5614**	**13707**	**-8093**	**-144.16**
9	SCR	3	6	2015-16	144	463	607	672	-65	-10.68
				2016-17	211	606	817	615	202	24.72
				2017-18	831	752	1583	909	674	42.58
				TOTAL	**1186**	**1821**	**3007**	**2196**	**811**	**26.97**
10	SER	1	3	2015-16	1116	1476	2592	570	2022	78.01
				2016-17	1116	1476	2592	407	2185	84.30
				2017-18	1116	1476	2592	604	1988	76.70
				TOTAL	**3348**	**4428**	**7776**	**1581**	**6195**	**79.67**
11	SECR	2	6	2015-16	1893	2248	4141	1163	2978	71.91
				2016-17	2397	2500	4897	1008	3889	79.41
				2017-18	2507	2394	4901	1153	3748	76.47
				TOTAL	**6797**	**7142**	**13939**	**3324**	**10615**	**76.15**
12	WR	4	7	2015-16	465	376	841	863	-22	-2.60
				2016-17	1594	1775	3369	1001	2368	70.29
				2017-18	2735	2916	5651	1744	3907	69.14
				TOTAL	**4794**	**5067**	**9861**	**3608**	**6253**	**63.41**

13	WCR	2	2	2015-16	292	304	596	2	594	99.66
				2016-17	672	504	1176	90	1086	92.35
				2017-18	672	504	1176	84	1092	92.86
				TOTAL	**1636**	**1312**	**2948**	**176**	**2772**	**94.03**
	IR	**26**	**58**	**2015-16**	**7865**	**10580**	**18445**	**10815**	**7630**	**41.37**
				2016-17	**11222**	**13583**	**24805**	**14366**	**10439**	**42.08**
				2017-18	**15682**	**16869**	**32551**	**22976**	**9574**	**29.41**
				TOTAL	**34769**	**41032**	**75801**	**48157**	**27643**	**36.47**

Annexure 2.3 (Para 2.1.7-i)								
Status of setting up of Freight Terminals (Private Siding and PFTs) under "Mission 100" during 2016–2018								
S. no	**Zonal Railway**	**Target for commissioning of Private Sidings**	**Private siding commissioned**	**Target for commissioning of PFTs**	**PFTs commissioned**	**Target for commissioning of Private Terminals**	**Private Terminals commissioned**	**Shortfall in commissioning of Freight Terminals**
1	CR	6	3	5	3	11	6	5
2	ER	0	0	1	0	1	0	1
3	ECR	5	1	0	0	5	1	4
4	ECoR	8	5	1	3	9	8	1
5	NR	*6*	*2*	*8*	*6*	14	8	6
6	NCR	10	4	0	0	10	4	6
7	NER	0	0	2	1	2	1	1
8	NFR	3	1	1	0	4	1	3
9	NWR	5	1	0	0	5	1	4
10	SR	6	4	0	0	6	4	2
11	SCR	3	3	3	3	6	6	0
12	SER	11	5	3	2	14	7	7
13	SECR	8	8	3	3	11	11	0
14	SWR	4	3	0	0	4	3	1
15	WR	3	2	6	4	9	6	3
16	WCR	0	0	2	0	2	0	2
	IR	**78**	**42**	**35**	**25**	**113**	**67**	**46**

Annexure 2.4 (Para 2.1.7-ii)

Statement showing analysis of freight earnings of PFTs and freight earnings of Divisions where PFTs commissioned during 2015-16 to 2017-18

Zonal Railways	Number of Divisions	Division wise Earnings (In crore)			TOTAL	Number of PFTs	PFTs Earnings (In crore)			TOTAL	Contribution of PFTs to the Gross Earnings of concerned Divisions (In %)
		2015-16	2016-17	2017-18			2015-16	2016-17	2017-18		
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*
CR	2	4363.01	3807.09	4652.27	12822.37	7	55.39	114.30	118.16	287.85	2.24
ER	1	2805.37	2989.15	3429.18	9223.70	2	10.28	5.48	22.59	38.35	0.42
ECR	2	11050.90	10770.88	12995.64	34817.42	2	61.53	10.38	30.60	102.51	0.29
ECoR	3	15842.81	15864.40	17091.43	48798.64	4	30.48	26.50	49.52	106.50	0.22
NR	3	6590.98	7967.11	7916.19	22474.28	12	211.36	256.40	544.67	1012.43	4.50
NCR	1	453.43	415.44	426.37	1295.24	2	33.55	38.72	49.64	121.91	9.41
NER	1	139.46	133.18	117	389.64	2	7.38	25.26	53.10	85.74	22.00
NWR	1	230.34	328.19	504.58	1063.11	3	64.94	146.23	249.57	460.74	43.34
SCR	3	8144.75	6950.49	7733.83	22829.07	6	52.37	34.16	73.48	160.01	0.70
SER	1	7012.09	7925.47	8088.79	23026.35	3	4.24	5.50	37.85	47.59	0.21
SECR	2	17997.7	17726.94	18662.46	54387.06	6	72.07	44.75	135.89	252.71	0.46
WR	4	9426.24	7086.13	7599.94	24112.31	7	311.07	135.04	268.69	714.80	2.96
WCR	2	1678.1	1363.09	1533.58	4574.77	2	0.34	31.42	25.99	57.75	1.26
TOTAL	**26**	**85735.14**	**83327.56**	**90751.26**	**259813.96**	**58**	**915.00**	**874.14**	**1659.75**	**3448.89**	**1.33**

Annexure 2.5 (Para 2.1.7-ii)

Statement showing analysis of freight earnings of PFTs and freight earnings of Divisions where PFTs commissioned upto 2015-16

(₹ in crore)

Zonal Railways	Division on which PFTs in operation	No. of Divisions	Total freight earning of Division during 2015-16	Number of PFTs in operation on Zonal Railway as on March 2016	Total freight earning of PFTs during 2015-16	Contribution of PFTs to the Gross Earnings of concerned Divisions (In %)
1	*2*	*3*	*5*	*6*	*7*	*8*
CR	Mumbai	1	2213.50	1		
	Nagpur	1	2149.51	3		
	Total	**2**	**4363.01**	**4**	**55.39**	**1.27**
ER	Asansol	1	2805.37	2		
	Total	**1**	**2805.37**	**2**	**10.28**	**0.37**
ECR	Danapur	1	24.87	1		
	Dhanbad	1	11026.027	1		
	Total	**2**	**11050.90**	**2**	**61.53**	**0.56**
ECoR	Sambalpur	1	722.19	1		
	Total	**1**	**722.19**	**1**	**30.48**	**4.22**
N.R	Ambala	1	1906.24	1		
	Ferozepur	1	2130.60	1		
	Delhi	1	2554.14	4		
	Total	**3**	**6590.98**	**6**	**211.36**	**3.21**
NCR	Allahabad	1	453.43	2	33.55	
	Total	**1**	**453.43**	**2**	**33.55**	**7.40**
NER	Izatnagar	1	139.46	1		
	Total	**1**	**139.46**	**1**	**7.38**	**5.29**
NWR	Jaipur	1	230.34	3		
	Total	**1**	**230.34**	**3**	**64.94**	**28.19**

SCR	Secunderabad	1	4896.08	1		
	Hyderabad	1	94.19	1		
	Vijayawada	1	3154.48	1		
	Total	**3**	**8144.75**	**3**	**52.37**	**0.64**
SER	Chakradharpur	1	7012.09	1		
	Total	**1**	**7012.09**	**1**	**4.24**	**0.06**
SECR	Bilaspur	1	14962.61	1		
	Raipur	1	3035.05	2		
	Total	**2**	**17997.66**	**3**	**72.07**	**0.40**
WR	Vadodara	1	2739.01	1		
	Ratlam	1	1286.40	1		
	Ahmedabad	1	5363.65	1		
	Total	**3**	**9389.06**	**3**	**311.07**	**3.31**
WCR	Bhopal	1	954.50	1		
	Kota	1	723.60	1		
	Total	**2**	**1678.1**	**2**	**0.34**	**0.02**
	Grand total	**23**	**70577.34**	**33**	**948.55**	**1.34**

Annexure 2.6 (Para 2.2.1)

Number of ATVMs and Co-ATVMs installed as of March 2018 at the selected stations

Zonal Railway	A-1 stations	ATVM	Co-ATVM	A stations	ATVM	Co-ATVM	B stations	ATVM	Co-ATVM	C stations	ATVM	Co-ATVM	D stations	ATVM	Co-ATVM
CR	Thane (TNA)	31	4	Panvel (PNVL)	12	2	Sangli (SLI)	1	0	Ghatkopar (GC)	15	1	Bhiwandi	2	1
	Pune (PUNE)	14	4	Miraj (MRJ)	4	2	Dhamangaon (DMN)	1	0	Kurla (CLA)	15	1	Baramati (BRMT)	1	
	Nagpur (NGP)	6	5	Wardha (WR)	2	2	Sewagram	1	0	Dombivli (DI)	13	1	Uruli (URI)	1	
	Nasik Rd (NK)	3	1	Bhusawal (BSL)	2	1	Pandharpur (PVR)	4	1	Bhandup (BND)	9	1	Ajni (AJNI)	2	
	Solapur (SUR)	7	2	Ahmednagar (ANG)	2	1	Wadi (WADI)	2	1	Talegaon (TGN)	4	0	Akkalkot	1	
ECoR	Bhubaneswar (BBS)	0	0	Srikakulam Road (CHE)	3	0	Angul (ANGL)	1	0				Kotabommali (KBM)	1	
	Puri (PURI)	0	0	Jajpur Keonjhar road (JJKR)	1	0	Balugaon (BALU)	2	0				Khariar Road (KRAR)	1	
	Visakhapatnam (VSKP)	0	0	Khurda road (KUR)	3	0	Balangir (BLGR)	1	0				Mahasamunda (MSMD)	1	
				Rayagada (RGDA)	2	0	Duvadda (DVD)	2	0				Tilaru (TIU)	1	
				Sambalpur (SBP)	2	0	Kantabanji (KBJ)	1	0				Talcher Road (TLHD)	1	
ER	Howrah (HWH)	18	7	Barddhaman (BWN)	4	3	Bolpur (BHP)	2	0	Bally (BLY)	2	2	Salar (SALE)	0	
	Sealdah (SDAH)	20	7	Kolkata (KOAA)	2	0				Srirampur (SRP)	4	2	Azimganj (AZ)	0	
	Bhagalpur	0	2	Naihati (NH)	4	0				Chandannagar (CGR)	4	2			
				Asansol (ASN)	0	2				Sodepur (SEP)	4	0			
				Durgapur (DGR)	0	1				Barrackpur (BP)	6	2			
NCR	Allahabad (ALD)	7	0	Mirzapur (MZP),	3	0	Firozabad (FZD),	2	0				Govindpuri (GOY),	2	
	Kanpur (CNB)	6	0	Etawah (ETW),	3	0	Vindhyachal (BDL),	2	0				Rura (RURA),	2	
	Jhansi (JHS)	7	0	Banda (BNDA),	0	0	Dabra (DBA),	2	0				Bharthana (BNT),	2	
	Gwalior (GWL)	6	0	Mahoba (MBA),	0	0	Datia (DAA),	1	0				Bhuteshwar (BTSR),	1	
	Mathura Jn.	5	0	Agra Fort (AF)	0	0	Dholpur (DHO)	2	0				Hodal (HDL)	1	

	(MTJ)														
NER	Gorakhpur (GKP)	12	0	Mau (MAU)	5	0	Mairwa (MW)	2	0				Fatehgarh (FGR)	2	
	Lucknow (LJN)	7	0	Khalilabad (KLD)	3	0	Badshahnagar (BNZ)	2	0				Barhni (BNY)	1	
				Basti (BST)	4	0	Lalkuan (LKU)	2	0				Babhnan (BV)	1	
				Chhapra (CPR)	7	0	Mankapur	2	0				Chauri Chaura (CC)	1	
				Kathgodam (KGM)	2	0	Kaptanganj	1	0				Yusufpur	1	
NR	New Delhi (NDLS)	5	6	Ghaziabad (GZB)	3	0	Gurgaon (GGN)	2	0				Shamli (SMQL)	3	
	Ludhiana (LDH)	5	6	Ferozpur Cantt. (FZR)	3	0	Phillaur (PHR)	1	0				Fazilka (FKA)	2	
	Lucknow (LKO)	6	6	Sultanpur (SLN)	0	0	Prayag (PRG)	3	0				Bachhrawan (BCN)	2	
	Dehradun (DDN)	3	3	Moradabad (MB)	5	0	Najibabad (NBD)	3	0				Gajraula (GJL)	1	
	Chandigarh (CDG)	2	3	Saharanpur (SRE)	5	0	DhuriJn (DUI)	2	0				Sirhind (SIR)	1	
NW	Ajmer (AII)	9	0	Abu Road (ABR)	3	0	Beawar (BWBN)	2	0				Ranapratap Nagar (RPZ)	2	
	Jaipur (JP)	11	0	Bikaner (BKN)	3	0	Sirsa (SSA)	3	0				Sadulpur (SDLP)	2	
	Jodhpur (JU)	5	0	Bandikui (BKI)	4	0	Dausa (DO)	3	0				Durgapura (DPA)	3	
				Gandhinagar (GADJ)	4	0	Nokha (NOK)	2	0				Sanganer (SNGN)	1	
				Nagaur (NGP)	3	0	Merta Road (MTD)	2	0				BhagatKi Kothi	1	
SCR	Vijayawada Jn (BZA)	12	4	Kakinada Town (CCT)	2	1	Basar (BSX)	1	1	Bharatnagar (BTNR)	2	1	Dwarapudi (DWP)	1	
	Hyderabad Decan (HYB)	3	2	Guntur (GNT)	6	1	Dharmavaram (DMM)	2	0	Hitec City (HTCY)	2	1	Godavari (GVN)	1	
	Kacheguda (KCG)	5	2	H Sahib Nanded (NED)	5	1	Gudivada (GDV)	2	0	Malakpet (MXT)	2	0	Jadcharla (JCL)	1	
	Secunderabad (SC)	14	6	Nizamabad (NZB)	3	1	Kamareddi (KMC)	2	0	Sitafal Mandi (STPD)	2	0	Krishna (KSN)	0	
	Tirupati (TPTY)	7	4	Rajamundry (RJY)	3	1	Narasapur (NS)	2	0	Vidyanagar (VAR)	2	0	Malkajgiri (MJF)	1	
SECR	Bilaspur (BSP)	2	1	Raigarh (RIG)	1	1	Anuppur (APR)	1	0				Tilda (TLD)	1	
	Raipur (R)	3	2	Champa (CPH)	1	1	Korba (KRBA)	1	1				Aamgaon	1	

				Bhilai Power House (BPHB)	0	1	Shahdol (SDL)	1	1				Kamptee	1	
				Durg (DURG)	1	0	Bhatapara (BYT)	1	0				Tumsar Road	1	
				Rajnandgaon (RJN)	1	1	Dongargarh (DGG)	1	0				Tirora	1	
SER	Kharagpur	0	2	Midnapur (MDN)	0	0	Midnapur (MDN)	4	0	Bagnan (BZN)	6	0	Jhargram (JGM)	3	
	Tatanagar	0	2	Digha	0	0				Mecheda (MCA)	5	0	Belda (BLDA)	3	
				Shalimar	0	0				Santragachi (SRC)	4	0	Kanthi (KATI)	1	
										Chengel (CGA)	2	0			
										Shyamchak (SMCK)	1	0			
SR	Chennai Egmore	2	1	Katpadi Jn.	1	1	Karur Jn.	2	1	Velachery	2	1	Thiruvarur	0	
	Madurai Jn.	4	1	Tiruppur	2	1	Tirur	1	1	Tambaram	4	1	Rameswaram	2	
	Thiruvananthapuram Central	2	1	Tiruchchirappalli Jn.	2	1	Kumbakonam	1	0	Avadi	2	1	Tirupattur	0	
	Ernakulam Jn.	2	1	Palakkad Jn.	3	1	Tenkasi Jn.	2	0	Mambalam	2	1	Pattambi	1	
	Coimbatore Jn.	3	1	Tirunelveli Jn.	3	1	Changanasseri	1	0	Tiruvottiyur	1	0			
SWR	Bengaluru (SBC)	10	6	Hubballi (UBL)	4	2	Londa (LD)	2	0				Whitefield (WFD)	1	
	Yasvantpur Jn (YPR)	7	3	Vasco Da Gama (VSG)	3	0	Gadag (GDG)	2	0				Bangalore East	0	1
				Bangalore Cant (BNC)	2	2	Tumkur (TK)	2	0						
				Sri Sathya Sai Prasanti Nilayam (SSPN)	2	0	Haveri (HVR)	2	0						
				Mysore(MYS)	5	2	Harihar (HRR)	2	0						
WCR	Jabalpur	6	0	Katni,	4	0	Narsinghpur	2	0				Sihora Road	1	
	Bhopal	6	0	Bina,	4	0	Guna	2	0				Shridham	1	
	Kota	6	0	Habibganj,	6	0	Ganjbasoda	2	0				Ashoknagar	1	

				Bharatpur	4	0	Bhawanimandi	1	0				Bayana	1	
				Swaimadhopur	4	0	Gangapur City	2	0				Shamgarh	1	
WR	BCL+Mumbai Central (BCT)	8	3	Andheri (ADH)	28	2	Maninagar (MAN)	0	2	Bhayandar (BYR)	10	2			
	Borivali (BVI)	28	2	Anand (ANND)	0	2				Churchgate (CCG)	9	2			
	Ahmedabad (ADI)	28	6	Bharuch (BH)	0	2				Dadar (DDR)	15	2			
	Indore (INDB)	0	4	Jamnagar (JAM)	0	2				Elphinstone Road (EPR)	7	0			
	Surat (ST)	0	5	Nimach (NMH)	0	2				Goregaon (GMN)	10	0			
	Ujjain (UJN)	0	3	Rajkot (RJT)	0	2				Jogeshwari (JOS)	9	0			
										Kandivli (KILE)	14	0			
										Malad (MDD)	14	0			
										Mira (MIRA)	9	0			
										Mahim (MM)	6	0			
										Nalla Sopara (NSP)	17	0			
										Santa Cruz (STC)	11	0			
Total	**51**	**353**	**118**	**69**	**203**	**46**	**58**	**103**	**9**	**37**	**246**	**24**	**56**	**69**	**2**

Annexure 2.7 (Para No.2.2.4)					
Share of tickets sold through UTS, ATVMs and CoATVMs					
Category of station	**Number of stations selected**	**Sale of unreserved tickets during 2015-16 to 2017-18**			
		Total number of tickets sold from UTS	**Total number of tickets sold from ATVMs**	**Total number of tickets sold from Co-ATVMs**	**Total**
A1	51	837074110	99883177	14596479	951553766
A	69	426763701	61147440	3475141	491386282
B	58	104251094	22010386	303101	126564581
C	37	3547180648	793474401	4239304	4344894353
D	56	53584791	11283078	1944	64869813
Total	**271**	**4968854344**	**987798482**	**22615969**	**5979268795**

Annexure 3.1 (Para 3.19)

Statement Showing land license fee to be recovered from the siding Authorities

S. no	Name of the siding	Station	Area of land in Sq.M.	Date of Handing over to Party	License Fee to be recovered (in Rs.)	Agreement executed with Party
1	M/s WCL, Nandan Washery siding	Hirdagargh	32700	Jan-84	11118000	No
2	M/s WCL, Damua Colliery Siding	Hirdagargh	29218	Jan-84	9962000	No
3	M/s WCL, Hirdagarh Siding	Hirdagargh	8451	Jan-48	5950000	No
4	M/s Air force Siding Amla	Amla	4952	Nov-44	3700000	No
5	M/s WCL,Lalpeth Colliery,Babupeth	Babupeth	11507	Mar-50	7888000	No
6	M/s WCL, Rajur Colliery,Rajur	Rajur	2148	Feb-26	2024000	No
7	M/s WCL,Ghugus	Ghugus	78620	15/11/1918	78700000	No
8	M/s Ordinance Factory, Bhandak	Bhandak	26074	Oct-67	13311000	No
9	M/s WCL,Umrer	Butibori	933	Dec-65	530000	No
10	M/s WCL,Ballharshah	Ballarshah	16025	02/01/1908	17710000	No
11	M/s WCL,Rayatwari Colliery, Chandrapur	Chandrapur	2099	Apr-65	10445964.67	No
12	M/s CAD/Pulgaon	Pulgaon	8455	01/09/2003	12397261.85	No
13	M/s WCL,Rawanwara/Parasia	Parasia	21275	21/10/1960	323299353.8	No
14	M/sWCL, East Dongar Chikhli,Parasia	Parasia	32537	14/06/1948	494942866.19	No
15	M/s MEL, Chandrapur	Chandrapur	2099.00	01/10/1979	819000.00	Yes
16	M/s MSEB,Chandrapur	Chandrapur	5575.00	24/01/2007	26268926.21	Yes
17	M/s ACC,Ghugus	Ghugus	472	25-Sep-68	950775.9477	Yes
18	M/s FCI/Ajni	Ajni	1330	22/05/2007	210184411.98	Yes
19	M/s Kartikay Coal Washries,Wani	Wani	1248	11/08/2006	486888.54	Yes
20	M/s HPCL,LPG bottling plant,Khapri	Khapri	4681	18/06/2007	12860622.29	Yes
21	M/s MSEB,CD/Vivekanand Nagar	Vivekanand Nagar	22483	25/09/1968	4561621.00	Yes
22	M/s FCI/Sewagram	Sewagram	3396	15/11/1986	11572449.32	Yes
23	M/s Llyod Steel,Bhugaon	Bhugaon	6345.2	12/01/1994	11784162.52	Yes
					1271467304.29	

Annexure 4.1 (Para 4.1.4)			
Statement showing ZRs/PUs wise details of Machines selected for the study			
S. no	**Zonal Railway/ Production Unit**	**Total Machines procured by COFMOW during 2014-18 (Up to November 2017)**	**Machines selected for review**
1	**2**	**3**	**4**
1	Central Railway	117	20
2	East Coast Railway	83	20
3	East Central Railway	98	20
4	Eastern Railway	162	33
5	North Central Railway	79	20
6	North East Railway	71	20
7	North East Frontier Railway	73	20
8	Northern Railway	125	25
9	North West Railway	98	22
10	South Central Railway	99	22
11	South East Central Railway	95	20
12	South East Railway	58	20
13	Southern Railway	169	33
14	South West Railway	47	20
15	West Central Railway	75	20
16	Western Railway	94	24
17	Metro Railway	3	3
18	Chittranjan Locomotive Workshop	17	17
19	Diesel Locomotive Workshop	39	20
20	Diesel Modernisation Workshop	28	20
21	Integrated Coach Factory	267	31
22	Modern Coach Factory	35	20
23	Rail Coach Factory	101	20
24	Railway Wheel Factory	8	8
	Total	**2041**	**498**

Annexure 6.1 (Para 6.2)						
Statement showing the extra expenditure done by Railways for procurement of extra quantity of HSD oil, where the Railway Board has advised to Zonal Railways to blend bio-diesel with HSD oil consumed by Locomotives (in litres)						
Zonal Railway	**Quantity of HSD oil procured**	**Consumption during eight months (March to October)**	**Required quantity of bio-diesel (@5% of HSD oil consumed (col.3)**	**Quantity of bio-diesel actually procured**	**Less procurement of bio-diesel (Col.4 - Col. 5)**	**Loss (in ₹)**
1	***3***	***4***	***5***	***6***	***7***	***8***
WCR	374816640	263977786	13198889.3	1885480	11313409.3	184328021.7
NCR	335649472	199223767	9961188	490000	9473188	75507736.03
NR	269315852	168059889	8402997	0	8402997	485807185
NWR	774187812	510473933	25523696.65	144000	25379696.65	203965250.1
NER	432598725	286125364	14403609	191467	14212142	87056845
ECR	556028000	322067744	16103387.2	0	16103387.2	NAP
Total	**2742596501**	**1749928483**	**87593767.2**	**2710947**	**84884820.2**	**1036665038**
			875.94 lakh litres			**₹103.67 crore**