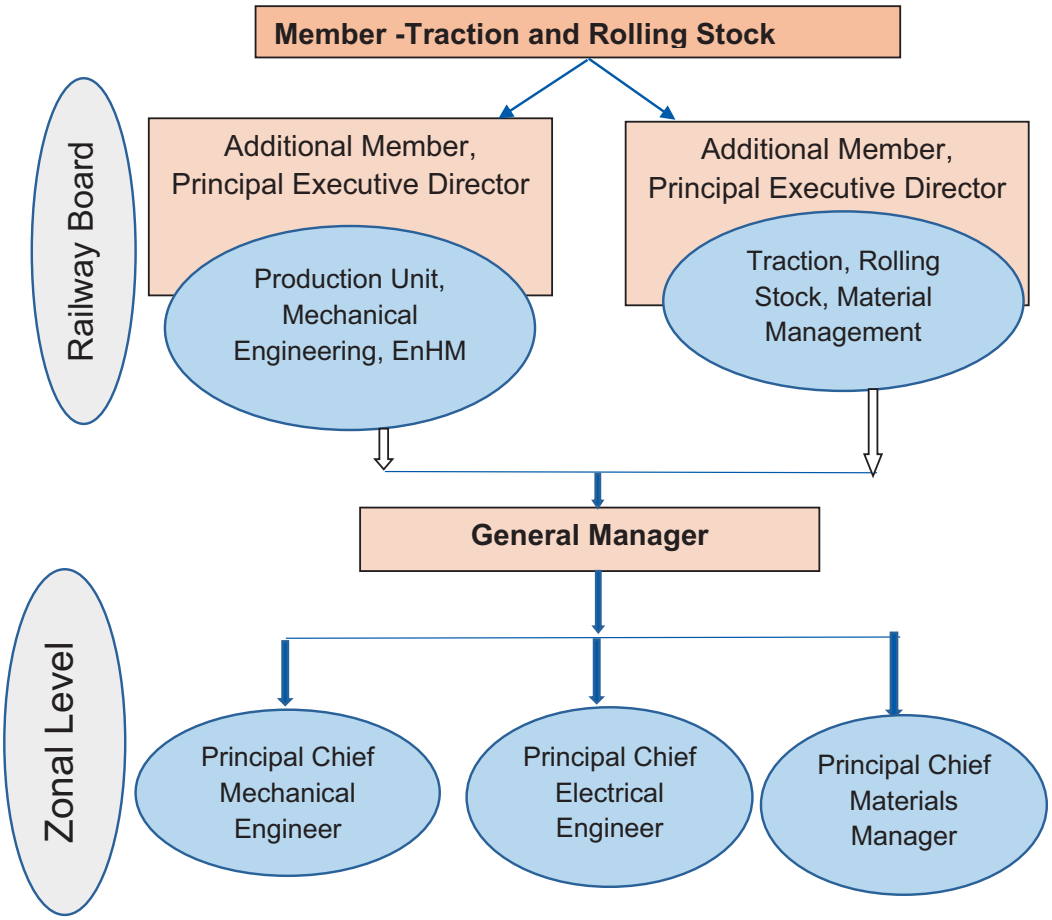
Chapter 4 – Traction and Rolling Stock

Member (Traction and Rolling Stock) at Railway Board is overall in-charge of Mechanical Department including Workshops and Production Units as well as Material Management Department. 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 (Traction and Rolling Stock). Member (Traction and Rolling Stock) is also responsible for Environment and Health Management (EnHM).



At Zonal level, Principal Chief Mechanical Engineer (PCME) 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. Principal Chief Electrical Engineer is overall in-charge of electrical maintenance of electric rolling stock, which includes electric Locos, Electric Multiple Units etc. He is also in-charge of the Electric Loco

sheds, Electric Workshops, General services and Over Head Traction services.

Total revenue expenditure on repair and maintenance of rolling stock[174] in workshop during 2018-19 was ₹ 16,187.15 crore[175]. Operating expenses on rolling stock and equipment was ₹ 14,097.56 crore[176] during 2018-19. Further, capital expenditure on Production Units[177] during 2018-19 was ₹ 25,691.28 crore. During the year, apart from regular audit of vouchers and tenders, 1,009 offices of the Mechanical Department were taken up for inspection.

Materials Management Department is responsible for planning, procurement of various types of stores required for operations and maintenance of trains. These include supply of spare parts, components, fittings, sub-assemblies to production units, maintenance, and manufacturing workshops. The Department is also responsible for total inventory management of all stores, their purchasing and distribution to consignees. Besides this, Materials Management Department also carries out disposal of scrap items through public auction and tenders (selected items).

At the Zonal level, Principal Chief Materials Manager is the principal head of the Department who is assisted by Chief Materials Managers and Deputy Chief Materials Managers. The Division is headed by Senior Divisional Materials Manager reporting to Divisional Railway Manager. Total expenditure of the Stores Department during 2018-19 was ₹ 1,143.26[178] crore. During the year, apart from regular audit of vouchers and tenders *etc*., 196 offices of the Stores Department were inspected.

This Chapter includes a thematic para on 'Audit of Selected Stations in Indian Railways' and six individual paragraphs. These paragraphs cover compliance issues on Rolling stock and Materials Management.

---

[174] including Carriages & Wagons, Plant & Equipment

[175] Sub head 3002-3003 (4)-Repair and maintenance of carriages and wagons and Minor head 300 of Sub head 3002-3003 (5)-Repair and maintenance of Plant and Equipment-Appropriation Accounts for 2018-19

[176] Sub head 3002-3003 (6)-Operating expenses-Rolling stock and equipment-Appropriation Accounts for 2018-19

[177] ICF/Chennai, RCF/Kapurthala, MCF/RaeBareli, RWP/Bela, RWF/Yelahanka, DMW/Patiala, DLW/Varanasi and CLW/Chittaranjan – Appropriation Accounts for 2018-19

[178] Minor Head 400 of Sub head 3002 (03)–General Superintendence and Services-Indian Railways Appropriation Accounts-2018-19

4.1 Audit of Selected Stations in Indian Railways

Audit of eight selected stations in seven Zonal railways covered the aspects of cleanliness, sanitation, environment management, safety, security and encroachment at railway stations.

Seventy-seven platforms were available in the eight selected stations. Cement concrete washable apron were not provided at 26 platforms. Despite having facilities of mechanized cleaning in the contract at all selected stations, the facility was underutilized due to non-availability of washable apron at 26 platforms of seven stations.

Indian Railway Water Policy 2017 stipulates that recycled water is to be used for non-potable purposes. Audit, however, observed that Zonal Railway Administration were yet to install water-recycling plants in these stations and groundwater was being used for all purposes.

Public Accounts Committee had recommended to increase the number of drinking water taps at all stations throughout the country. Against the requirement of 1,358 water taps as per prescribed norms, the availability of water taps was 1,062 (78 *per cent*). Availability of water cooler was 63 (41 *per cent*) against the requirement of 154 as per the prescribed norm (Minimum Essential Amenities-MEA).

Clause regarding segregation of waste as biodegradable and non-bio-degradable did not exist in the cleaning contracts at five stations.

Provision of boundary walls was not made in the circulating area at five stations. Security arrangement was also ineffective to maintain an encroachment free station premises. Audit observed that there were no norms prescribed for handling the footfalls in Foot Over Bridges.

4.1.1 Introduction

A railway station is an area where passengers board and alight from trains. Passengers expect visible and qualitative public utilities and amenities provided at the stations. With a view to meet the expectations of the passengers, Indian Railways (IR) had undertaken measures to provide improved facilities at the stations.

Indian Railways runs 13,523 passenger trains carrying 23.12 million passengers daily and has 7,321 stations. The sheer quantum of passenger operations put tremendous pressure on the existing infrastructure and calls for an effective system for maintenance of cleanliness and sanitation at stations. Providing passenger amenities like

drinking water, urinals, latrines, dustbins *etc.* at stations is an integral part of the various cleanliness related activities of the IR.

Provision of security arrangement and encroachment free station premises are the responsibilities of Indian Railways. Removal of encroachments in vicinity of stations is an imperative need to provide trouble-free entry/exit to the passengers.

4.1.2 Organizational set-up

Mechanical Department of Indian Railways is responsible for maintaining cleanliness and environmental management at stations. Member (Traction and Rolling stock) is in-charge of Environment and Housekeeping. He is assisted by Additional Member (EnHM).

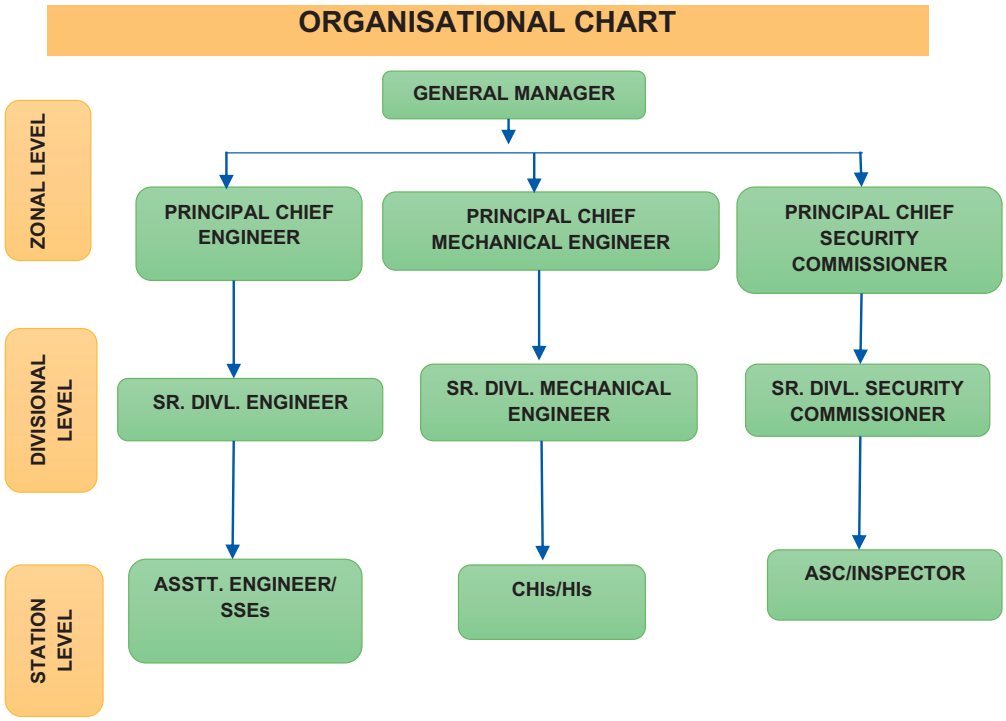
At the Zonal level, Principal Chief Mechanical Engineer (PCME) heads Mechanical department. PCME is assisted by Dy. CME/EnHM[179] at Headquarters level who is further assisted by Sr. DMEs/DME/AMEs (EnHM) at Divisional level. At implementation level (stations), Senior Section Engineers (SSEs) and Health Inspectors (HIs) are responsible for maintaining cleanliness at stations.

Engineering and Security (Railway Protection Force) Departments handle encroachments, safety and security arrangements.

Principal Chief Engineer heads the Engineering department and is assisted by Chief Engineers at Headquarters and Senior Divisional Engineer (Sr. DEN) at Divisional level. Assistant Engineer (AENs)/Senior Section Engineer (SSEs) (Land) are responsible for maintaining the records related to encroachments.

Railway Protection Force is headed by Principal Chief Security Commissioner who is further assisted by Divisional Security Commissioner at Division level and Assistant Security Commissioner/Inspectors at Stations.

[179] Environment and Health Management



4.1.3 Audit Objectives

This audit covered issues pertaining to cleanliness, sanitation, environmental management, encroachment, and security of railway passengers at station. The audit objectives were to obtain reasonable assurance:

- Whether action taken for maintenance of cleanliness, sanitation, environmental management, safety and security arrangements and removal of encroachments at stations were adequate, effective, and as per laid down guidelines/instructions; and
- Whether the monitoring and internal control within Indian Railways at various levels was adequate and effective?

4.1.4 Audit Scope and Methodology

The study covered a period of three years from 2016-17 to 2018-19. For the review, the following points were examined in detail:

- Action plan formulated by the Zonal Railways for maintaining cleanliness and sanitation, security arrangements, environmental management and removal of encroachments at stations;

- Action taken for implementation of various guidelines/orders issued from time to time by MoR/National Green Tribunal (NGT)/Pollution Control Boards (PCBs).
- Remedial measures taken by IR to address recurrence of the deficiencies brought out in the previous audit reports and on assurances rendered to Public Accounts Committee (PAC) through Action Taken Notes (ATNs).

4.1.5 Audit Criteria

The following were the source for audit criteria:

I. Guidelines and instructions issued by the MoR, NGT orders/guidelines and the orders/guidelines of CPCB with reference to environmental issues.
II. Recommendations made by Public Accounts Committee.

4.1.6 Sample Size

The following eight Stations (including two suburban stations) were selected for audit:

Table 1- Sample of Stations selected

S.No.	Name of the station	Station Code	Zone
1	Amritsar	ASR	NR
2	Hazrat Nizamuddin	NZM	NR
3	Agra Cantt.	AGC	NCR
4	Gorakhpur	GKP	NER
5	Gaya	Gaya	ECR
6	Sealdah	SDAH	ER
7	Dadar	DR	CR
8	Dadar	DDR	WR

4.1.7 Audit Findings

Results of the audit are given in the subsequent paragraphs:

4.1.7.1 Facility of mechanized cleaning and adequacy of washable aprons at stations

The pre-requisite for mechanized cleaning is creation of a cement concrete apron[180] (CC apron) on all platform tracks. Mechanized cleaning also becomes easier if even surfaces are present in platforms and circulating area. The operation of machines becomes easier in smooth and even surfaces. The CC aprons are essential to keep the tracks between platforms free from night soil and garbage.

[180] Apron is a Cement Concrete Bed along the entire length of the track in the Railway stations. This facilitates mechanised cleaning.

Ministry of Railways (MoR), in their Action Taken Note stated (December 2008) that washable aprons were planned to be provided at all major stations (A and B category) in a phased manner.

Washable aprons with water hydrant/jet system should be provided[181] at all platforms where morning trains stop for longer duration to ensure cleanliness and better maintenance.

The information on the status of availability of washable aprons is indicated in Table 2:

TABLE – 2: Status of availability of washable aprons at selected stations

Name of station	Name of Zone/ Division	Category of station	Total No. of PF	No. of PF provided with washable apron	No. of PF without washable apron (Col.4-5)
1	2	3	**4**	**5**	**6**
GAYA	ECR/MGS	NSG 2	10	2	8
SEALDAH	ER/SDAH	NSG 1	21	19	2
GORAKHPUR	NER/LJN	NSG 2	10	10	0
DADAR	CR/MUM	SG 1	8	2	6
AGRA CANTT	NCR/ AGC	NSG 2	6	5	1
AMRITSAR	NR/FZR	NSG 3	8	6	2
HAZRAT NIZAMUDDIN	NR/DLI	NSG 2	7	5	2
DADAR	WR/BCT	SG 1	7	2	5
TOTAL			**77**	**51**	**26**

(Source: Records of O/o the Chief Health Inspector of selected station)

- Out of 77 Platforms (PFs) available in the eight selected stations, Cement Concrete (CC) washable apron had not been provided at 26 Platforms. Twenty *per cent* of the platforms in Gaya and twenty five *per cent* of the platforms in Dadar were only covered with CC aprons.
- Gorakhpur was the only station having all the PFs with CC washable apron.

Senior Section Engineers (SSEs) and Health Inspectors (HIs) working under the Mechanical Department are responsible for maintaining cleanliness at stations.

Scrutiny of on-going contracts for mechanized cleaning, use of recycled water, maintenance of score card *etc*. revealed the following:

[181] Based on Comprehensive Guidelines on Cleanliness issued in September 2012.

- Despite having facilities of mechanized cleaning in the contract at all selected stations, the facility was underutilized due to non-availability of washable apron at 26 platforms of seven stations.
- Non-availability of CC aprons also resulted in blockage of drains with ballast on the track which ultimately resulted in creating unhygienic surroundings.

Figure 4.1: Sewage of Platform No.03/04 blocked with Ballast at Gaya (ECR).

Figure 4.2: Sewage of Platform No. 05/06 blocked with Ballast at Gaya (ECR).

- At Gaya Station, toilet waste and water were directly released on the track, making the environment polluted resulting in health hazard for the passengers and also damaging the tracks.

Figure 4.3: Waste/water of public toilet damaging the track on Platform No. 04/05 at Gaya (ECR)

Figure 4.4: Waste/water of public toilet damaging the track on Platform No. 02/03 at Gaya (ECR)

- Contract conditions for Gaya station stipulate that removal and disposal of accumulated garbage was to be done continuously during the entire day. Audit scrutiny of the records revealed that removal of these accumulated garbage was not done on a continuous basis throughout the day.
- Indian Railway Water Policy 2017, stipulate that recycled water is to be used for non-potable purposes (replacing the presently used

fresh water). Engineering Department is responsible for erection and maintenance of water recycling plants. Audit, however, observed that Zonal Railway Administration were yet to install water recycling plants in these stations. Exploitation of groundwater is being done and used for all purposes against the Water Policy.

- To evaluate the performance of cleaning contract, a Daily Score Card is to be maintained to assess the quality of cleanliness. Daily score card for evaluation of quality of cleaning was not being maintained at Agra Cantt, Hazrat Nizamduddin and Amritsar stations. It was being maintained at the remaining five selected stations. The details of availability of CC aprons, cleaning procedure and contract available in the eight selected stations are given in **Annexures 4.1 and 4.2.**

Thus, Engineering and Mechanical Departments are responsible for the prevailing unhygienic condition in the selected stations.

4.1.7.2 Adequacy of toilets and urinals at stations

Non-availability of required number of toilets/urinal and their unusable condition was highlighted in Audit Report No. 6 of 2007 (Railways) on 'Cleanliness and Sanitation on Indian Railways'. In February 2007, MoR issued comprehensive instructions specifying the revised norms and quantum of minimum essential amenities at various categories of stations. In the follow-up audit in 2012, it was noticed that there were 66 *per cent* shortfall in the number of toilets. Non-availability of toilets would be 74 *per cent* provided the number of toilets that were not in use were also taken into account.

Further, comprehensive guidelines for provision of passenger amenities were issued in September 2012 and April 2018. These guidelines stipulated the norms for provision of toilets and urinals. In addition, the guidelines stipulated that at least one-third toilets and urinals should be reserved for ladies. Review of adequacy of toilets and urinals at the selected station revealed that:

- Toilets were provided as per the norms at all the selected stations; however, urinals for ladies were not available at any of the selected station except Sealdah and Dadar (DR) (sub-urban station building).

- At Gorakhpur and Amritsar, 12 gents toilets at each station and ladies toilets numbering eight and four respectively at the above stations were either not in use or were closed.
- Audit observed an open sewage line near Platform No. 4 at Kalyan end of Dadar (DR) station, was giving out bad odour. Audit also noted an open sewage line along the tracks.

Figure 4.5: Open sewage at the end of Platform No. 4 at Dadar station

The details regarding the adequacy of toilets and urinals at these eight stations are given in **Annexure 4.3.** Commercial and Engineering Departments have to initiate action to provide prescribed passenger amenities at these stations.

4.1.7.3 Adequacy and quality of drinking water at stations

(i) Adequacy of water at Station

Inadequacy in drinking water supply at stations was brought out in Audit Report No. 6 of 2007 (Railways). PAC had also observed that the inadequate water supply compounded by dirt and unhygienic surroundings made the amenity unfit for use. PAC, therefore, desired that the number of taps be increased expeditiously in a phased manner at all

stations throughout the country. Accordingly, MoR had issued guidelines for maintaining a minimum number of taps and water cooler at each platform. MoR's prescribed norm - Minimum Essential Amenities (MEA), stipulated that a minimum of 20 taps of drinking water and two water coolers should be available at each PF of NSG-1[182] to NSG-4 category of stations. In respect of each PF of SG-1[183] to SG-3 category of stations, six taps and two water coolers should be made available.

Review of records revealed that taps and water coolers were not available as per prescribed norms as is tabulated at Table 3 and 4 below:

TABLE – 3: Norms vis-à-vis availability of water taps at selected stations

Name of station	Name of Zone/ Division	Category of station	Total no. of PF	No. of Water taps/ platform should be as per the Norms (MEA)	Total no. of Water taps should be available at station (col.4x5)	Total no. of Water taps actually available	Shortfall (Col. 6-7)
1	2	3	**4**	**5**	**6**	7	8
GAYA	ECR/MGS	NSG 2	10	20	200	113	87
SEALDAH	ER/SDAH	NSG 1	21	20	420	281	139
GORAKHPUR	NER/LJN	NSG 2	10	20	200	190	10
DADAR	CR/MUM	SG 1	6	6	36	13	23
		NSG1	2	20	40	20	20
AGRA CANTT	NCR/ AGC	NSG 2	6	20	120	175	(+)55
AMRITSAR	NR/FZR	NSG 3	8	20	160	116	44
HAZRAT NIZAMUDDIN	NR/DLI	NSG 2	7	20	140	127	13
DADAR	WR/BCT	SG-1	7	6	42	27	15
Total			**77**	**152**	**1,358**	**1,062**	**296**

(Source: Records of O/o the CHI at selected stations)

[182] Non Sub Urban
[183] Sub Urban

TABLE – 4 : Norms vis-à-vis availability of Water Cooler at selected stations							
Name of station	Name of Zone/ Division	Category of station[184]	Total no. of PF	No. of Water cooler at platform should be as per the Norms (MEA)	Total no. of Water cooler should be available at station (col.4x5)	Total no. of Water cooler actually available	Shortfall (Col. 6-7)
1	2	3	4	5	6	7	8
GAYA	ECR/MGS	NSG 2	10	2	20	5	15
SEALDAH	ER/SDAH	NSG 1	21	2	42	0	42
GORAKHPUR	NER/LJN	NSG 2	10	2	20	14	6
DADAR	CR/MUM	SG 1	6	2	12	4	8
		NSG1	2	2	4	3	1
AGRA CANTT	NCR/ AGC	NSG 2	6	2	12	12	0
AMRITSAR	NR/FZR	NSG 3	8	2	16	7	9
HAZRAT NIZAMUDDIN	NR/DLI	NSG 2	7	2	14	13	1
DADAR	WR/BCT	SG 1	7	2	14	5	9
TOTAL			77	18	154	63	91
(Source: Records of O/o SSE/Electrical at selected stations)							

From the tables above, it can be seen that :

- Against the requirement of 1,358 water taps as per prescribed norms, the availability of water taps was 1,062 (78 *per cent*).
- It was less than the prescribed norms at all the selected stations except at Agra Cantt station.
- Out of 281 taps available at 21 Platforms of Sealdah, 82 taps were sealed. Thus, passengers had access to only 199 operational taps.

Figure 4.6: Sealed Water Taps at Platform No 5 of Sealdah Station

[184] SG- Sub Urban NSG-Non Sub Urban

- Availability of water cooler was 63 (41 *per cent*) against the requirement of 154 as per the prescribed norm (MEA).
- Water coolers were not provided at any of the PFs of Sealdah station despite the fact that more than 1.3 lakh passengers visit this station every day.
- Similarly, it's availability was 25 *per cent* of the requirement at Gaya station and less than 50 *per cent* at Dadar (DR), Amritsar and Dadar (DDR) Stations.

(ii) Quality of drinking water

As per Para 913 of Indian Railway Medical Manual (IRMM), the Health Inspectors (HI) should check the presence of residual chlorine daily at various distribution points randomly and record of the same should be kept. According to Para 914 of IRMM, the Health Inspector should collect water samples for bacteriological examination at least once a month from each bigger/important station. Health Inspectors should also send water samples for chemical examination once in six months. Review of records related to quality of drinking water revealed that:

- Residual chlorine test was done as per the prescribed norms at all the selected stations except at Dadar (DR and DDR) and Agra Cantt stations. The desired level of chlorine (between 0.2 mg and 0.5 mg per litre) was not being maintained at Gaya station since the year 2008. Action for chlorination was yet to be taken up.
- Chemical analysis of water was not done by the Chief Health Inspector (CHI) at three[185] stations during the last three years. It was found to have been done only once in the year 2018-19 at two[186] stations.
- Bacteriological analysis of water was done at all the selected stations as per the norm. In case of Gaya station, the report was continuously "Unsatisfactory". Despite this, the Railway Administration took no remedial action. The authenticity of the reports was doubtful as the requisite official credentials were not marked on these reports.
- Water treatment plant had not been installed at Gaya station despite continuous reporting of contaminated and chemically un-potable water supply.

[185] DR, AGC and NZM
[186] Gaya and ASR

The details regarding the adequacy of water, quality of drinking water for passengers and monitoring the quality of drinking water at eight stations are given in **Annexures 4.4 and 4.5**.
Commercial and Engineering Departments have to initiate action to provide quality drinking water at these stations as per norms.

4.1.7.4 Waste Management at station

Railways generate a huge quantity of non-biodegradable and biodegradable waste. PAC had recommended that *IR must frame a policy on waste management and lay down a mechanism whereby the quantum of garbage generated at stations can be assessed realistically. This would help in setting up adequate collection, segregation and disposal facility along with necessary infrastructure.*

Further as per Solid Waste Management Rules, 2016[187], the duties of waste generators are as follows:

(1) Every waste generator shall:-

a. segregate and store the waste generated by them in three separate streams namely bio-degradable, non- biodegradable and domestic hazardous wastes in suitable bins. Handover segregated wastes to authorised waste pickers or waste collectors as per the direction or notification by the local authorities from time to time;
b. wrap securely the used sanitary waste like diapers, sanitary pads etc., in the pouches provided by the manufacturers or brand owners of these products or in a suitable wrapping material as instructed by the local authorities. Shall place the same in the bin meant for dry waste or non- bio-degradable waste;
c. store separately construction and demolition waste, as and when generated, in his own premises and shall dispose off as per the Construction and Demolition Waste Management Rules, 2016[188]; and
d. Store horticulture waste and garden waste generated from his premises separately in his own premises and dispose of as per the directions of the local body from time to time.

(2) No waste generator shall throw, burn or bury the solid waste generated by it, on streets, open public spaces outside his premises or in the drain or water bodies.

[187] In 2016 Ministry of Environment, Forests and Climate Change came up with new Solid Waste Management Rules.
[188] In 2016 Ministry of Environment, Forests and Climate Change came up with Construction and Demolition Waste Management rules, 2016.

(3) All waste generators shall pay such user fee for solid waste management, as specified in the byelaws of the local bodies.

The MoR, in its Action Taken Note, stated (April 2010) the garbage disposal system is already in place in IR. However, in Audit Report No. 21 of 2012-13 (Railways), on "Environment Management in Indian Railways-Stations, Trains and Tracks", it was observed that though a garbage disposal system was in place, the same was not effective due to lack of proper monitoring. The report had highlighted that the commitment of MoR for assessment and implementation of remedial measures to overcome the shortcomings in collection and disposal of garbage remained unfulfilled. Further, in compliance to the order of Hon'ble National Green Tribunal (NGT) dated 1 October 2018, IR was to draw an action plan for waste management.

Review of records pertaining to selected stations revealed the following:

- Clause regarding segregation of waste as bio-degradable and non-bio-degradable did not exist in the cleaning contracts of five[189] stations. As a result, mixed waste was being transported and dumped at landfills.
- Separate dustbins were not provided for bio-degradable and non-biodegradable waste at three[190] stations during the period of review.
- Separate dustbins were provided for wet and dry wastes at Gaya, Dadar (DR & DDR), Amritsar and Gorakhpur stations. However, all these were mixed at the time of removal from the station defeating the purpose of providing these separate bins.
- Centralized dumping yard was not provided at three[191] stations.
- No system/agreement with the local bodies existed for disposal of waste at the designated place. However, at Dadar (DDR) and Amritsar, it was being removed by the Municipal Corporation.
- Waste collected from different platforms accumulated at different unauthorized places at the station itself at Gaya and Amritsar stations. It was found to have not been removed even up to 5-6 days at Gaya Stations on many occasions.

[189] Gaya, GKP, AGC, ASR, and NZM
[190] SDAH, AGC and NZM (except PF 1)
[191] DR, AGC, and ASR

- Dismantled waste materials were dumped in the space between Central Railway and Western Railway with adverse consequences on cleanliness. This also has a potential of causing increase in rodent population.

Figure 4.7: Waste materials dumped at the space between Central and Western lines (Dadar)

- Incinerator was not available at any of the selected stations except in ladies waiting room at DR.

Details regarding the handling of waste generated and their disposal mechanism in the eight stations are given in **Annexure 4.6, 4.7 and 4.8.**

4.1.7.5 Measures adopted for Pollution control

For independent assessment of pollution of air, water and noise at station premises/sidings/sheds, Central Pollution Control Board (CPCB) in March 2012, conducted a study at the instance of Audit at 14 major stations spread over 12 zones. The study revealed that the IR was not complying with statutory guidelines for prevention and control of pollution. The CPCB observed that none of the stations had applied for consent under The Air (Prevention and Control of Pollution) Act, 1981 and The Water (Prevention and Control of Pollution) Cess Act, 1977. The consent for handling hazardous waste authorization under The Hazardous Wastes

(Management and Handling) Rules, 1989 was also not obtained. Monitoring of ambient air quality and noise by CPCB also revealed that various gaseous pollutants and noise level were exceeding the limit prescribed by it. The report also commented on the discharge of effluents from the stations without proper treatment.

Audit scrutiny revealed the following shortcomings:

- System to monitor the noise level as required under rules 3(1) and 4 (1) of the Noise Pollution (Regulation and Controls) Rules 2000" did not exist at any of the selected stations.
- Survey from passenger for noise level was also not being conducted by the railway authority at any of the selected stations.
- System for measurement of noise when passing/movement of trains did not exist at any of the selected stations.
- Procedure for monitoring and recording the quality and quantity of effluents generated was not adopted at any of the selected stations.

4.1.7.6 Safety and Security arrangement in Railway Stations

Adequate and effective security is imperative for the protection against hazards, damages, theft and criminal activities at stations. Security of railway stations, which includes passengers security and railway property, are one of the most important activities of railways. The entry of unauthorized persons, unauthorized coolies, unauthorized vendors and large number of visitors lead to unmanageable crowds on railway platforms. Security threats are further compounded by the existence of unmanned multi entry and exit points at the stations. Low ratios of security personnel to passengers also makes it difficult to provide security. Security on the stations is the joint responsibility of two agencies:

1. **Railway Protection Force (RPF) and the Railway Protection Special Force (RPSF- a specialized armed wing)** - Both these forces are under the administrative control of the railway authorities. The RPF and RPSF primarily deal with the protection of railway property. Since the year 2003, security of passengers and passenger areas has also been entrusted to the RPF.
2. **Government Railway Police (GRP)** – GRP is under the administrative control of the respective State Governments. This is a wing of the State Police which exclusively deals with prevention and detection of crime and maintenance of law and order in station premises/passenger areas and trains.

Further, based on the recommendations of a High Level Committee, 202 railway stations were identified (2008) as sensitive for the purpose of installation of an Integrated Security System (ISS) to strengthen surveillance mechanism at these stations. ISS includes use of Close Circuit Television (CCTV) Cameras, Access control, Personal and Baggage Screening System and Bomb Detection system *etc*. These issues were addressed by MoR and all the Zonal Railways were advised (September 2008 and June 2009) to ensure speedy implementation of ISS at all the identified sensitive stations.

Review of records revealed that despite clear guidelines of the High Level Committee for installation of Integrated Security System at the identified stations, it was not done at the selected stations.

It was observed that the High Level Committee (2008) recommended Access Control Solutions for railway stations for filtering bonafide passengers from potential miscreants and saboteurs. The committee recommended judicious use of Hand Held Metal Detectors (HHMD), Door Frame Metal Detectors (DFMD) and X-ray baggage scanners for random checking in passenger area in adequate numbers. Audit Scrutiny during the inspection of the stations and records revealed that:

- Door Frame Metal Detectors (DFMDs) were not even planned for installation at Gaya and Dadar (DDR). Information regarding required number of DFMDs was not available at Agra Cantt (AGC) and Hazrat Nizamudin (NZM) stations.
- Against the planning of forty and twenty five DFMDs at Sealdah (SDAH) and Dadar (DR) respectively, no DFMDs was installed at Sealdah (SDAH) and only ten DFMDs were installed at DR, out of which only three were operational.
- Four[192] out of the eight stations were having unauthorized entries. The two stations (Gaya and Gorakhpur) were open from all sides leading to the possibility of the entry of trespassers.

During the inspection of stations and scrutiny of the records on the installation of Baggage Scanners, the following were observed:

- Baggage Scanner was not planned at Gaya and Dadar (DDR).
- It was not planned at other five stations[193] with reference to the actual number of authorized entries at these stations. Only one baggage scanner was planned each for Dadar (DR) and Amritsar against the actual number of eleven and six authorized entries.

[192] Gaya, GKP, AGC and NZM
[193] SDAH, GKP, DR, AGC and ASR

- At Hazrat Nizamuddin, four number of Baggage Scanners were installed at all the four authorized entries. However, the arrangement was still inadequate due to availability of three unauthorized entries.

The status of installation of CCTV cameras at stations was studied. It was observed that:

- CCTV cameras were installed as per plan at two stations[194] only.
- Against the planning/requirement of 250, 44 and 133 number of CCTV cameras, 218, 17 and 85 CCTV cameras were installed at Sealdah, Amritsar and Hazarat Nizamuddin respectively. Thus, there was shortage of 32, 27 and 48 numbers of CCTV cameras at these stations.
- Sixty-seven numbers of CCTV cameras were installed at Gorakhpur station. During joint inspection, it was observed that out of 67 CCTV cameras, 41 CCTV cameras were out of order in August 2019. These cameras were being monitored by six LED screens installed in the control room of RPF post Gorakhpur. Out of these, three LED screens were found to be in out of order condition in August 2019.
- For the CCTV maintenance register at Dadar (DR), although breakdown time of CCTV system was mentioned in the register, date and time of restoration of the system was not found to have been recorded in the register. In the absence of restoration details, the total breakdown period could not be assessed.
- CCTV footage was not integrated to the command center at five stations[195].
- Bomb Detection and Disposal System was not available at five[196] stations.
- Deployment of RPF personnel even on the authorized entry/exit was absent at Gaya and Dadar (DDR) Stations.
- Provision of boundary walls was not made in the circulating area at four[197] stations.
- Security arrangement was also ineffective to maintain an encroachment free station premises. A total of 532 encroachments existed around the seven[198] stations premises.

[194] GKP and DR
[195] Gaya, SDAH (up to 25.03.2019), ASR, NZM and DDR
[196] Gaya, GKP, DDR, DR and AGC stations
[197] Gaya, SDAH, GKP, AGC
[198] Gaya - 53, SDAH-342, GKP-02, DR-05, ASR-89, DDR-40, AGC-01

The details regarding the availability of CCTV, Door Frame Metal Detector, Baggage Scanners, security aspects etc for the eight selected stations are given in **Annexures 4.9 and 4.10.**

Thus, all the components of ISS, were either not functional or available simultaneously at the eight selected stations depriving the control room from getting an overall assessment of the threat perception. The non-functionality/availability of ISS components indicates the persistence of security risks.

4.1.7.7 Crowd Management at station

MoR, in its Disaster Management Plan (2013), has prescribed that Zonal Railways will prepare Disaster Management Plan at Headquarters and Divisional Levels as per the provisions of Disaster Management Act, 2005. Duties are assigned to Government Railway Police (GRP)/Railway Protection Force (RPF) for effective crowd control and management of rush at Railway Stations during festivals. Specific defined areas of jurisdiction for crowd control and duties are assigned to GRP/RPF. They will monitor crowds and rush build up in the circulating areas, booking windows, station platforms and mainly on Foot Over Bridges (FOBs).

During review of position on crowd management, it was noticed that:

- Standardized Divisional plan for crowd management and arrangements did not exist at Amritsar and Hazrat Nizamuddin stations.
- There are six Foot Over Bridges (FOBs) at Dadar (DR) and structural audit of five FOBs was carried out by IIT, Bombay. Although IIT, Bombay had recommended that all the five FOBs are unsound and should be repaired immediately, no FOB was repaired at Dadar (DR) till date (March 2019).
- Audit observed that no norms were prescribed for handling the footfalls in the FOB. Annual inspections were carried out on the FOBs as per Para 116 of Indian Railway Works Manual (IRWM) 2000. However, there were no criteria to evaluate the load which can be sustained by the FOB. Railway Administration stated that the criteria of sustained load by FOB was not evaluated and no-load testing was being done to evaluate the strength of the FOBs to ensure the safety of the structure.

Thus, non-repair of FOBs in disregard to the recommendation of IIT, Bombay coupled with absence of load bearing testing poses a safety risk to 8.5 lakh passengers, who pass through these FOBs every day. Details

of the arrangements made for handling crowd during festive occasions at the eight selected stations are given in **Annexure 4.11.**

4.1.7.8 Encroachments at stations and station premises

Proper maintenance of land boundary is the first and effective step towards prevention of encroachment. Guidelines for demarcation of land boundaries, laying of boundary stones, boundary walls, fencing *etc*. have been explicitly enumerated in Paras 808 to 813 of Indian Railway Works Manual (IRWM).

The procedures to be followed for handling encroachments have been stated in Para 1048 of Indian Railways Code for Engineering Department (demarcations and periodic verification of the boundaries). The provisions of Paras 813 to 814 of Indian Railway Permanent Way Manual (IRPWM) also indicate the periodical verifications to be carried out by the Section Engineer in charge. In addition, periodical directives are issued by MoR and the Joint Procedure Orders are also issued by the Zonal Railways on the issue of encroachments.

Scrutiny of records for selected stations revealed the following:

- All selected stations except Agra Cantt and Nizamuddin had encroachments within the station premises. At three[199] stations, there were commercial encroachments[200]. At Dadar (DDR), there were forty residential encroachments. In all these cases, no eviction proceeding was initiated under PPE Act[201] till date.

Review of status of encroachment (as on 31 March 2019) tabulated in Table 5 revealed the following:

TABLE – 5: Status of encroachments as on 31 March 2019

Name of station	Name of Zone/ Division	Total no. of encroachments	Type of encroachments	Area encroached
1	2	3	4	5
GAYA	ECR/MGS	50	Soft (commercial)	NAV
		3	Hard (commercial	4300 sqft
SEALDAH	ER/SDAH	332	Soft (commercial)	Not available
		10	Residential	
GORAKHPUR	NER/LJN	2	Religious	76.5 sqm

[199] Gaya, SDAH and ASR
[200] 53, 332 and 89 number of shops respectively
[201] Public Premises (Eviction of Unauthorized Occupants) Act, 1971

DADAR	CR/MUM	**5**	Religious	143.665 sqm
AGRA CANTT	NCR/ AGC	**1**	Religious	Not available
AMRITSAR	NR/FZR	**88**	Commercial	982.34 sqm
		1	Commercial	18.42 sqm
HAZRAT NIZAMUDDIN	NR/DLI	**NIL**	Not Applicable	Not Applicable
DADAR	WR/BCT	**40**	Residential	4460 Sq.ft
Total		**532**		
(Source: Records of O/o AEN at selected stations)				

- A total of 53 encroachments existed around Gaya Railway station. The year when such encroachments occurred and area covered by the 50 soft encroachments were not maintained by the Zonal Railway Administration. Even though, these encroachments were removed in February 2017 and November 2016, they re-surfaced.
- At Amritsar, encroachments covering an area of 982.34 sqm in 88 locations were existing since 1981 and one encroachment covering an area of 18.42 sqm existed since 1992.
- All the 332 encroachments (shops) at Sealdah Station were existing for more than 20 years. All these encroachments were soft in nature and no records regarding area covered/age-wise break up was maintained by the Railway Administration.
- The South Section of Sealdah Station had 10 residential encroachers along the tracks within 500 metres of the station.
- In the high level Co-ordination Committee Meeting held on 02 February 2018, the General Manager/ER stated that the encroachment issue hampered the safety of passengers and trains. He urged the officials for taking up the issue in the right spirit. No eviction programme was found on record, except some correspondences at higher level.
- There were 40 old hard encroachments (residential premises and temple) spread over an area of 4,460 sqft for more than 15 years at Dadar (DDR). Railway Administration was yet to initiate any action for removal of these encroachments, despite the fact that these encroachments were in Safety Zone *i.e.*, land within 15 meters from the centre line of the track in PF No. 5.

Figure 4.8: 40 Nos. of old hard encroachment within safety Zone at Dadar (DDR)

Figure 4.9: Encroachment on boundary wall adjoining Platform No.1 (southern end) at Dadar(DDR)

- Encroachment Inspection Register was not maintained at Gaya and Sealdah stations. At Gorakhpur, though the encroachment register was being maintained, the same was never submitted to AEN.
- There were 171 authorized vendors at the platforms of Gorakhpur station and no unauthorized vendors were given access to the platforms. Surprise and regular security checks were being conducted from time to time by Railway Authorities. As per the information furnished by the RPF Inspector 315, 399, and 304 unauthorized vendors were arrested from the platforms during 2016-17 to 2018-19.
- In addition to the commercial and residential encroachments, there were also Religious Encroachments (five Temples at Dadar (DR), one Masjid at Agra Cantt and one Mazar and one temple at Gorakhpur). The Mazar and Temple at Gorakhpur were more than 60 and 20 years old respectively. All the five temples at Dadar (DR) were in existence since 1995. There was no record for the existence of Masjid at Agra Cantt.
- NER Administration had allowed space for daily market on "Tehbazari" basis which was near to the railway track at Gorakhpur station. This is within the safety limit of train operations. In case of any accident, the chances of mass casualties could not be ruled out. Further, the residual and waste generated from this market was being disposed off in a pond in the vicinity of the railway colony. This is polluting the environment due to decomposition of the waste in the pond.

Figure 4.10: Market allowed by railway administration on "Tehbazari" basis near railway track within safety limit at GKP

- As per recent proposal (August 2019), boundary wall for a length of 12,250 meter was to be constructed at Gaya station. During the period 2016-17 to 2018-19, around 1800 meter of length was programmed for construction. However, only 400 meter (22 *per cent*) was constructed during the last three years.
- At Amritsar (ASR), as a preventive measure to check encroachment, there was a requirement of 2000 meter boundary wall in 2016-17 and 2017-18. This was subsequently increased to 5,000 meter in 2018-19. However, only 1,000 meter of boundary wall (400 meter in 2017-18 and 600 meter in 2018-19) was constructed during the period under review. Work for the construction of remaining portion of the boundary wall was not planned during the period under review.
- There was no demarcation of land between Railway and Mumbai Municipal Corporation on East side of Dadar (DR) station. This resulted in blocking of railway land by illegal vendors causing inconvenience to the passengers during entry and exit from main gate and terminus station of Dadar.
- Boundary wall was neither constructed nor planned to be constructed at Sealdah (SDAH) station as of 31 March 2019.
- NER Administration was to construct 4,000-meter boundary wall for Gorakhpur station based on the MoR's directives. Despite proposals for construction of boundary wall initiated by the Senior Section Engineer (SSE-Works) to the Sr. DEN during December 2014, October 2017 and July 2019, the same has not been sanctioned till the date of audit (March 2019).

- The target for plantation was 10,000 plants per annum at Gaya. However, 1,000 plants (10 *per cent*) were planted each year during 2016-17 to 2018-19. At Gorakhpur 400, 200 and 3,000 plantations were targeted and planted during the years 2016-17 to 2018-19 respectively. In Amritsar 29,000, 2,000, 5,425 plantations were planted against the target of 29,000, 15,000 and 15,000 respectively during the period 2016-17 to 2018-19.
- Planning and/or execution of plantations around the Station was not noticed at Sealdah, Dadar (DR), Agra Cantt stations. At Hazrat Nizamuddin and Dadar (DDR) there was no target fixed for plantations during 2016-17 and 2017-18.

The details of encroachments, monitoring them and preventive measures taken to check encroachments at eight stations are given in **Annexures 4.12 to 4.16.**

The procedures to be followed for preventing encroachment on railway land has been enumerated in IRWM, IRPWM and code for Engineering Department. However, the instances of encroachment as shown in Table-5 and above narration leads to the conclusion that the system is not effective. MoR needs to re-visit its policy/procedures on prevention of encroachment for making the system robust.

4.1.7.9 Conclusion

Based on the recommendations made by the PAC, MoR had initiated measures to improve the level of cleanliness and sanitation at stations. However, these measures did not translate in improving the cleanliness/sanitation at stations. Absence of CC aprons at stations resulted in piling up of garbage on tracks. Absence also led to blockage of drains with ballast resulting in unhygienic surroundings. Drinking water supply arrangements to the passengers and the quality of water does not match the norms fixed by MoR. Waste Management Policy was not effective as there was no segregation of bio-degradable and non-biodegradable waste. The provisions of Water Policy were not followed and was evident with absence of water recycling plants in all the selected stations. Further, groundwater was being exploited which was against the norms.

Measures adopted for pollution control were not effective as none of the stations had obtained consent for operation under Air and Water Pollution Control Acts. The procedure for monitoring and recording the quality and quantity of effluents generated was not adopted at any of the selected

stations. IR had not framed measures to monitor and control noise pollution.

Absence of ISS components indicated the persistence of security risks. The policy/procedures of IR for preventing encroachment was not effective.

4.1.7.10 Recommendations

- ***Ministry of Railways needs to frame a separate Waste Management Policy and comply to Board/NGT's instructions to overcome the shortcomings of Waste Management at the Stations.***
- ***Ministry of Railways needs to take adequate measures for planning and implementation of water management, which includes availability of sufficient water, water treatment plant, water recycling plant etc.***
- ***Ministry of Railways needs to take appropriate measures to remove encroachments.***
- ***Ministry of Railways needs to provide adequate Integrated Security System as per recommendations of the High Level Committee.***

The matter was taken up with MoR in October 2020; no reply was received (February 2021).

4.2 Avoidable stabling of Diesel Locomotives due to inefficient planning : Northern Railway

Two Diesel Locomotives remained stabled[202] in Diesel Loco shed for a period of five and seven years due to inefficient material planning and delay in taking decision for their repairs. This resulted into loss of earning capacity of locomotives amounting to ₹ 97.27 crore besides blocking of capital of ₹ 22.84 crore.

Indian Railways, to achieve the maximum possible availability and reliability in service, follows the system of preventive maintenance[203] of rolling stock. System of preventive maintenance envisages a schedule for maintenance at regular specified intervals including replacement of components. It aims to replace the components before they actually fail in service due to ageing, wear and tear, while also endeavoring to obtain maximum life possible for the components.

[202] Stabling of Locomotive in the shed i.e. parking of Locomotive in the shed for repair and maintenance

[203] Indian Railway Maintenance Manual for Diesel Locomotives (December 2013)

In Indian Railways, Diesel Locomotives are manufactured by Diesel Locomotive Works (DLW)/Varanasi[204]. Maintenance of Diesel Locomotives is undertaken in Diesel Loco sheds of the Zonal Railways. Hence, for undertaking periodical maintenance, Diesel Loco sheds are required to maintain inventory in efficient manner.

In Diesel Loco Shed, Alambagh (DSL/AMV) of Northern Railway, audit noticed inordinate delays of approximately five to seven years in repair of two locomotives as mentioned below:

(i) Diesel Locomotive No.12292

WDG-4[205] Diesel Locomotive No. 12292[206] (attached to DSL/AMV) failed (20 March 2013) during service due to Interface Module being defective. This non-stock item was not available in DSL/AMV. Against the indent for this item of April 2013, Controller of Stores/Northern Railway placed order[207] almost after a delay of one year in March 2014. The item was received in November 2015 *i.e.* after a gap of about 32 months due to delay in import. Audit observed that before receipt of the item, two vital assemblies (Computer Chassis Assembly and Optic Fiber Cable) of this Locomotive were cannibalized in the maintenance of other Locomotives. The indents for these assemblies were placed in February 2014 and July 2014 respectively, however, these assemblies were not received. Due to non-receipt of the indented assemblies costing ₹ 9.59 lakh[208], DSL/AMV approached (12 September 2017) DLW/Varanasi to arrange a complete AC-AC System of EMD make for this locomotive. The complete AC-AC system costing ₹ 2.44 crore was received in October 2017 in DSL/AMV. Finally, the locomotive was repaired and put to service on 4 January 2018.

Thus, the said Locomotive remained stabled in the shed for a period of almost five years (i.e. 58 months) due to inefficient material planning. This resulted in loss of earning capacity of the Locomotive (₹ 37.71 crore[209]) besides blocking of capital of ₹ 11.42 crore (cost of Locomotive). As the indented assemblies could not be received, the Locomotive was repaired at an extra cost of ₹ 2.34 crore by replacing with complete set of AC-AC system.

---

[204] Renamed as Banaras Locomotive Works,Varanasi
[205] Broad Gauge Diesel Locomotive for Goods Train
[206] commissioned in May 2010
[207] Controller of Stores/Diesel Locomotive Works/Varanasi
[208] Estimated cost ₹ 9.59 lakh (Computer Chassis Assembly-₹ 3.30 lakh, Optic Fiber Cable-₹ 6.29 lakh)
[209] Loss has been worked out after allowing six months as import content is involved for repair of this diesel loco

(ii) Diesel Locomotive No.12300

Another WDG-4 Locomotive No. 12300[210] (attached to DSL/AMV) was damaged (10 January 2012) in an accident in Samastipur Division of East Central Railway. The Locomotive was brought back to DSL/AMV in damaged condition in March 2012 for repair. The Locomotive was beyond repair as its cabin, computer control brake system, underframe *etc.* required complete replacement. DSL/AMV authority proposed (March 2012) Northern Railway Headquarters to send the Locomotive to Diesel Locomotive Works/Varanasi (DLW/BSB) for special repair. The DLW/BSB refused to repair the said Locomotive and advised to get the same attended in Loco Workshop/Charbagh/Lucknow. The Locomotive was sent to Loco Workshop/Charbagh in September 2012 for replacement of damaged Driver Cab. Locomotive was received back in November 2012 in DSL/AMV. However, Locomotive could not be put to use due to some other deficiencies in Traction Motor, compressor, undergear components etc. The Locomotive remained stabled in DSL/AMV in damaged condition since March 2012 to September 2017. The Locomotive was sent (September 2017) to Golden Rock (GOC) Workshop/Trichy/Southern Railway for rehabilitation in compliance of MoR's instructions of June 2016[211]. However, reasons for delay of 15 months in sending the Locomotive to GOC Workshop were not on record. The Locomotive was received back from GOC Workshop in February 2019 after 17 months. Records pertaining to follow up by the DSL/LKO with GOC Workshop expediting repair of defective Locomotives were not produced to audit. The Locomotive could not be utilized for more than seven years (86 months) between January 2012 and February 2019. The Locomotive was re-commissioned on 25 February 2019. Thus, the said Locomotive remained under repair for a period of seven years. This resulted in loss of earning capacity of Locomotive (₹ 59.56 crore[212]) besides blocking of capital of ₹ 11.42 crore.

Thus, due to inefficient planning in arranging vital spares for repair of Locomotive and delay in taking decision to send the Locomotive for rehabilitation to GOC Workshop, two new Locomotives remained idle for five and seven years, respectively. This resulted in loss of earning capacity of Locomotive of ₹ 97.27 crore besides blocking capital of ₹ 22.84 crore.

---

[210] commissioned in May 2010

[211] for special repair of accident damaged High Horse Power Diesel Locomotives

[212] Loss has been worked out after allowing four months for repair of accidental Diesel Locomotive.

The matter was taken up with the Diesel Loco shed authorities in June 2016 and June 2017. They stated (July 2016) that in respect of Locomotive No. 12292, detention/stabling was due to delay in procurement of imported spares as unit exchange was not available in the shed. They further stated that cannibalized parts of this Locomotive were utilized in emergency situation to prevent grounding of other Locomotives. Reply in respect of Locomotive No. 12300 was, however, not furnished.

Reply of Diesel Loco shed authorities was indicative of inadequate material management in arranging vital spares for repairs of Locomotives. Also, there was delay in taking decision to send the Locomotive (No.12300) to GOC Workshop for rehabilitation.

Matter was taken up with the Northern Railway Administration in June 2019. In the interim reply of 30 December 2019, they reiterated that Locomotive No.12292 was of M/s EMD Make (USA) and the defective Interface Module was required to be imported from USA. Import of material requires a number of legal and financial sanctions/foreign currency, which was time consuming process. The other sub-assemblies (Computer chassis and OFC cable) were utilized in other EMD Locomotive nos. 12220 and 12722 in emergency situation to prevent grounding of these Locomotives. For Locomotive No. 12300, they stated that condition of Locomotive (involved in accident) was beyond repair. Control cables, lugs and connectors *etc*. were damaged and required replacement. This Locomotive was equipped with AC - AC traction system of S1 type, which got completely damaged and procurement of this system was stopped by DLW/Varanasi. After joint inspection with RDSO and DLW on 6 and 10 November 2016, it was found that Locomotive can be put back into service after major repair and replacement of its assembly. Finally, after joint inspection with GOC on 25 July 2017, this Locomotive was sent (12 September 2017) to GOC Workshop for rehabilitation.

It is evident from the reply that the joint inspection of the accidental Locomotive was conducted only after a lapse of four years from the arrival date of Locomotive to the shed. In other case, the import difficulties of spare parts cited by Railway Administration do not justify the undue delay of five years.

The matter was taken up with MoR in May 2020; no reply was received (February 2021).

4.3 Loss of earning capacity and avoidable empty haulage of Wagons: South Central Railway

Ministry of Railways had issued detailed guidelines for attending repairs to wagons during Periodical Overhaul (POH) and Routine Overhaul (ROH). Prolonged detention and unwarranted empty haulage were observed at depots and workshops leading to loss of earning capacity of wagons. The loss of earning capacity of these wagons has been assessed in audit as ₹ 14.48 crore and avoidable empty haulage of ₹ 0.24 crore.

Safety of freight operations is dependent on proper maintenance of wagons. For ensuring optimum performance of wagons, it is necessary that preventive maintenance is done timely and defects are attended. Detention during examination and repairs are to be kept minimum so that the wagons are made available for traffic use for optimum utilization.

Ministry of Railways (MoR) issued (July 2016) instructions that wagons with heavy body damages are allowed to be sent to Workshop for major body repairs provided that the date of Periodical Overhaul[213] (POH) becoming due within the next three months. Railways were required to handle the wagons which are not due for POH in appropriate manner in open line instead of sending them to workshops (NPOH in railway terminology).

Accordingly, wagons which had been received in the wagon depots for repairs had to be examined to identify the extent of repairs to be carried out. If the wagons were due for POH within the next three months these wagons were sent to Workshops and repairs were carried out along with the periodical over haul. In other cases, the repairs which were minor in nature had to be attended in the wagon depots itself.

A scrutiny of records of the wagons, which were received in the Wagon Depots for identification of extent of repairs in South Central Railway (SCR) was carried out. Audit observed that 120 wagons (during the period July 2016 to March 2019) with heavy structural damages were received in the Wagon Depots[214] for identification of repairs. After the identification of

[213] POH means Periodical Overhaul. The time period of POH is six years for wagons.
[214] Wagon depots Vijayawada (BZA), ROH depots at Ramagundam (RDM) and Gooty (GY)

repairs, the wagons were either to be attended in the depots itself or sent to Wagon Workshop[215].

At the Wagon Depots (BZA, RDM and GY), there was delay in examination of the wagons (58 wagons) in identifying the extent of repairs to be undertaken. The delays ranged from 1 to 133 days after allowing a grace period of eight days. Forty-two wagons which were sent to Wagon Workshop (RYPS) were sent back to Wagon Depots without attending to any repairs stating that these were wrongly received. Sixteen wagons could not be traced in the records of Wagon Workshop. Delay in examination of these 58 wagons led to loss of earning capacity of ₹ 2.46 crore (assessed by Audit).

Further scrutiny of records of the Wagon Workshop and Wagon Depots revealed that:

- There was delay in carrying out the repairs (POH) for 41 wagons at Wagon Workshop. The delays ranged from 20 to 809 days resulting in loss of earning capacity of ₹ 8.65 crore.
- There was delay in carrying out the repairs (ROH[216]) to seven wagons at the Wagon Depots. The delays ranged from 3 to 874 days. This resulted in loss of earning capacity of ₹ 3.37 crore.
- Further, 40 wagons were shuttling between Wagon Depot and Wagon Workshop without being attended to. The avoidable haulage charges on account of this was assessed in audit as ₹ 0.24 crore

The issue was raised with the MoR in April 2020. In reply, MoR stated (July 2020) that necessary instructions were issued and the same was being followed except for some exemption where specific permission was granted.

The fact remains that due to non-observance of MoR's guidelines, there were cases of unwanted booking for POH leading to detention and unnecessary haulage of wagons. The loss was recurring inspite of instructions issued by MoR and not being enforced effectively.

Thus, there was loss of earning capacity of ₹ 14.48 crore and avoidable empty haulage of ₹ 0.24 crore due to non-observance of MoR's guidelines.

[215] Wagon Workshop at Rayanpadu (RYPS) if the wagon is due for POH in the next three months

[216] ROH means Routine Over Haul. The time period for ROH is 12 to 24 months depending upon type of wagon.

4.4 Lack of internal control resulted in non-recovery of cost of wagon damages: North Eastern Railway

NER Administration failed to comply with the instructions issued by the Ministry of Railways with regard to timely raising of bills and recovery of cost of wagon damages from the concerned siding owners. This resulted in non-recovery of cost of wagon damages to the tune of ₹ 6.89 crore from Private Siding Owners.

Ministry of Railways (MoR) issued (July 2005) "Standard form of Agreement of Private Siding" wherein it was clearly mentioned (Para 18) that the siding owner is entirely responsible for damage to the engines, damages and deficiencies of rolling stock (Railway Wagons) or other property of Railway Administration from any cause and shall make good on demand for all such losses.

The MoR issued (September 2015) detailed instructions on prevention of damages to wagons during loading/unloading operations over Indian Railways as a "Joint Procedure Order (JPO) on Wagon Damages". In the JPO, it was mentioned that Zonal Railways may ensure timely raising of bills and recovery of cost for the wagon damages from the concerned siding owner. Similarly, in case of wagons damaged during handling in Railway goods shed, cost of damages may be recovered from the concerned customer/handling agent. The recoverable amount should reflect in the "Bills Recoverable" Register maintained by the Sr. DFM of the division. These instructions were again re-iterated in May 2019 by the MoR.

East Central Railway (ECR) in September 2018 informed Principal Financial Adviser (PFA)/NER, Gorakhpur regarding arrival of damaged wagons of BOXN/E rakes unloaded at different sidings over NER. Review of the records of Senior Divisional Commercial Manager (Sr. DCM)/NER/Lucknow revealed (January 2019) that the wagons were damaged due to mishandling at various sidings, which led to their detachment during maintenance. It was further stated that the necessary deduction of cost may be realized. Based on information furnished by the ECR, Office of the General Manager (Commercial), NER intimated (October 2018) to all Sr. Divisional Commercial Managers of three Divisions[217], the status of BOXN/E rakes with damaged wagons as reported by ECR. The Sr. DCMs were also asked to look into the matter regarding damages to wagons and get these damaged wagons checked

[217] Varanasi, Lucknow, Izzatnagar

by deputing staff, recover the repair cost and furnish report in detail for further action.

Audit, however, noticed that the repair cost of the damaged wagons was not recovered by the respective Sr. DCMs/NER despite clear instructions issued by the MoR in the JPO with regard to the recovery of cost of damaged wagons. Audit assessed the total amount as ₹ 6.93 crore **(Annexure 4.17)** for the period from October 2015 to October 2019, which was not recovered. Thus, NER Administration failed to recover the amount to that extent from various siding owners for repair cost of the damaged wagons despite the written requests made by the ECR from time to time.

Further, on verification of the maintenance of records and steps taken for recovery of the damage charges *etc,* audit observed that "Bills Recoverable" registers, as prescribed in the JPO are not being maintained in NER. It was also noticed that the division wise position of outstanding amount of such damage charges were not being maintained either by Accounts Department or by the Commercial Department.

On this being pointed out by Audit, Sr. Divisional Mechanical Engineer (Sr. DME)/C&W/Varanasi stated (August 2019) that the Commercial Department was requested (July 2014, September 2014, February 2018 and March 2019) for the recovery, as the same were to be made by them. However, the Commercial Department (Varanasi) stated (August 2019) that in two cases, the siding owners were requested to deposit the damage charges and in remaining cases, they had not received the details of recovery.

The Assistant Commercial Manager of Izzatnagar Division stated (August 2019) that an amount of ₹ 3.94 lakh was realized from the Siding Owners and steps were being taken for recovery of the balance amount of ₹ 4.44 lakh.

Thus, lack of internal control at the level of Divisional and Zonal Railway of NER for maintenance of records as prescribed in the JPO and non-compliance to the instructions of MoR resulted in non-recovery of cost of wagon damages of ₹ 6.89 crore from the Private Siding Owners.

The matter was taken up with MoR in May 2020; no reply was received (February 2021).

4.5 Loss due to premature condemnation and replacement of Spherical Roller Bearings and non-enforcement of warranty clause thereon: East Coast Railway

Carriage Repair Workshop of East Coast Railway (ECoR) scrapped 6,332 number of Spherical Roller Bearings during the period April 2016 to May 2019. 71 *per cent* of these (4,481) had not completed even half of the codal life leading to their premature replacement, which entailed extra expenditure. Moreover, ECoR did not maintain record of date of commissioning of bearings and therefore warranty in case of failed bearings was reckoned from the date of manufacture rather than date of their commissioning. Premature replacement of Spherical Roller Bearings and failure to take advantage of warranty clause thereon, led to a loss of ₹ 5.30 crore.

Spherical Roller Bearings is a vital anti frictional element, which improves service life of rolling stock by reducing the heat produced[218]. Of the various types of Spherical Roller Bearings, the bearing No. 22326-C/C3 type[219] is being used on Integral Coach Factory (ICF) coaches of Railways. Research Designs and Standards Organisation (RDSO) prescribed a codal life of 20 years for Spherical Roller Bearings type 22326 (16.25 t) used on Broad Gauge (BG) coaches. Para 3.1 of RDSO specification No. C-8257 prescribes that supplier shall be completely responsible for the satisfactory and efficient performance of the roller bearings in service. This is irrespective of any approval given by purchaser/RDSO for the design features or tests/ inspection carried out by the purchaser/RDSO. Further, as per Para 3.3 of the specification, the contractor shall replace the roller bearings failing or proving unsatisfactory[220] within a period of 36 month or 4,00,000 km from the date of commissioning into service whichever is later. The period of warranty shall stand extended by the duration for which the roller bearings remain inoperative under exercise of this clause.

Wheel Shop of Carriage Repair Workshop at Mancheswar (CRW/MCS) of ECoR replaces the defective roller bearings during overhauling of coaches. Roller bearings used in ICF coaches of Indian Railways are centrally procured through the Controller of Stores of ICF. The suppliers

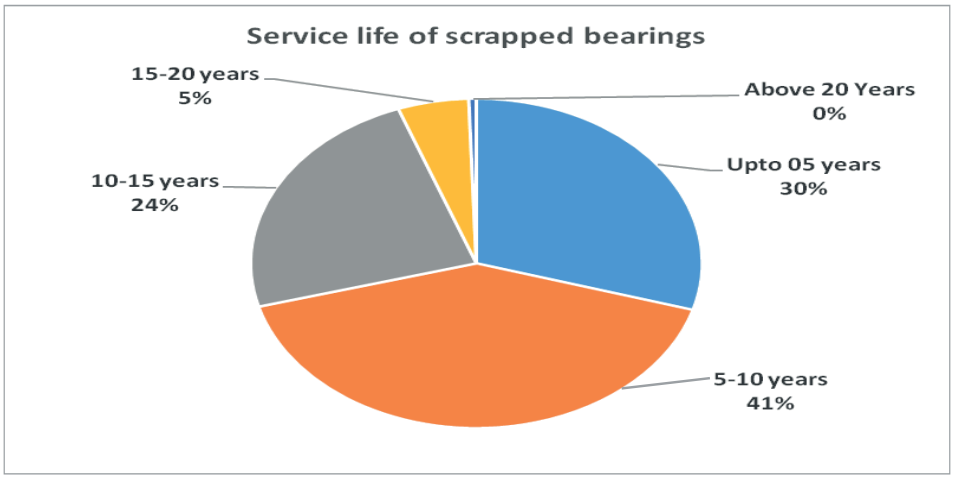
[218] Para 1.0 of Indian Railways handbook on maintenance of Spherical Roller Bearings of CAMTECH vide No. IRCAMTECH/M/12-13/Bearing/1.0
[219] Conforming to RDSO Specification No. C-8257 (Rev.01) with Amendment slip No. 1 and 2 suitable for 16.25 tonnes and 13 tonnes axles
[220] Attributed to defective/faulty design, defective material or poor workmanship

directly deliver the bearings to the consignee of ECoR i.e Senior Material Manager/CRW/MCS after obtaining the RITES inspection certificate. Two firms viz. M/s FAG Bearing India Limited (FAG) and M/s National Engineering Industries Limited (NBC make) had supplied Spherical Roller Bearings type 22326C/C3 to CRW/MCS in lots from time to time. The suppliers had also submitted work test and guarantee certificate to replace the failed bearings[221].

It was noticed by Audit that during overhauling of coaches at MCS, total 6,332 number of bearing were replaced during the period April 2016 to May 2019 due to various defects as shown below:

Manufacturing firm	Period of service life of scrapped bearings (in years)					
	Up to 05	5-10	10-15	15-20	Above 20	Total
FAG	1,155	1,127	637	157	17	3,093
NBC	717	1,482	858	165	17	3,239
TOTAL	**1,872**	**2,609**	**1,495**	**322**	**34**	**6,332**

Age analysis of the defected/scrapped bearings as available in the records of Wheel Shop, MCS was as follows:



- Above age analysis shows that 4,481 bearings (*71 per cent*) were scrapped as defective within half of their codal[222] life. Out of that, 1,872 bearings had failed before completion of five years (*i.e*. one-fourth of codal life) from date of manufacturing. This raises doubt about the quality of the bearings supplied to the Railway.

[221] Within a period of 36 month or 4,00,000 km from the date of commissioning into service or 48 months from the date of receipt whichever is earlier
[222] RDSO prescribed a codal life of 20 years for spherical roller bearings type 22326 (16.25 t)

- Warranty claim was to be raised against the bearings, which had failed within 36 months from the date of induction into service. No such record was maintained by the Railway. As such, month and year of manufacturing stamped on the scrapped bearing was reckoned for warranty claim.
- In respect of 515 bearings which had failed within three years of manufacturing, warranty claims were raised against the suppliers viz. FAG and NBC Ltd. Out of that, 280 bearings were jointly inspected by the suppliers and only 107 bearings were accepted by the firms for replacement under warranty. For the remaining 173 bearings, the firms refused to honour the warranty claims. The firms citied that there was no material defect, poor workmanship, faulty design and quality lapse since the bearings had been in service for a period ranging between six and 36 months. The suppliers also stated that the replacements of failed bearing were accepted not by virtue of contractual obligation but as a goodwill gesture and good business relationship. Such justification given by the firms were never contested by the Railway Administration which allowed the firms to escape from their contractual obligation.
- M/s FAG Ltd[223] did not respond to the warranty claim for 235 bearings which failed during June 2017 to May 2019[224]. The firms accepted the warranty claims against some of the defects[225] in bearings but at the same time many other bearings with same defects were not accepted for replacement under warranty. Hence, no consistent criteria for acceptance or rejection of warranty claim of defective bearings was adopted by the suppliers. As such, Railway Administration failed to safeguard the interest of Railway by not enforcing the warranty clause to get replacement of all such failed bearings.

The matter was brought to the notice of Ministry of Railways (MoR) in May 2020. MoR, in its reply, stated (December 2020) the following:

(a) Previously warranty was claimed for few bearings only. Since December 2013 claiming of warranty for all failed bearing during service period (36 months) has started at CRW/MCS.

(b) It was practically not possible to maintain the running kilometers of each bearing. Due to non-availability of running kilometers of

[223] Since M/s NBC has accepted 25 bearings as on August 2019 for replacement, their portion is not mentioned here.
[224] Joint inspection by M/s FAG Ltd had not been conducted since June 2017.
[225] like outer race pitted, flaked, rusted *etc*.

individual bearing and date of its first induction into service, CRW/MCS have started the warranty claim for failed bearings during service period[226]. Records for the date of commissioning of roller bearings are being maintained for new bearings put into service since February 2019.

(c) Though the codal life may be 20 years, the health of the bearing depends on many external factors[227] which are not possible to factor in while deciding upon the service life of a bearing.

(d) Concerned OEMs were asked to conduct the Joint Inspection at CRW/MCS. During Joint Inspection, the firm accepted some quantity of failure of bearing for replacement. For balance, the firm stated that the failure occurred due to lapses in maintenance practices and not due to any manufacturing defects.

The reply of MoR was not acceptable in view of the following:

(a) The Audit observations cover deficiencies in warranty claims of failed bearings during the period April 2016 to May 2019. It was noticed that due to non-maintenance of records of date of procurement and date of commissioning of bearings, date of manufacturing of roller bearings was taken into account for claiming warranty instead of date of induction into service.

(b) It was also noticed that the age of bearings which failed within warranty period ranged between two months and three years from the date of manufacturing. Since Railway is not maintaining the records of installation of individual bearings, many more bearings eligible for warranty claim went unclaimed.

(c) The firm (FAG) did not visit the CRW/MCS workshop since July 2017 and as a result 345 failed bearings were awaiting joint inspection (as of May 2020).

Thus, due to non-maintenance of records of procurement and date of commissioning of bearings, Railways had forfeited the right of proper warranty claim. Premature failure of large number (71 *per cent*) of the RDSO approved and RITES inspected bearings raises concern about their quality. Thus, Railway sustained a loss of ₹ 5.30 crore[228] due to premature condemnation and replacement of Spherical Roller Bearings

[226] 36 months from the date of manufacturing of the bearings
[227] Like track geometry, track defect, overloading, wheel profile *etc.*
[228] ₹ 0.49 crore on account of failure in securing replacement under warranty (+) ₹ 4.81 crore due to premature replacement of 3,966 bearings which failed before completion of half of their codal life

and non-enforcement of warranty clause thereon during the period April 2016 to May 2019.

4.6 Procurement of complete Rotor and Stator of Traction Motor at higher rates resulted in avoidable extra payment: Chittaranjan Locomotive Works

Chittaranjan Locomotive Works (CLW) purchased 769 Rotors and 450 Stators, for assembling Traction Motor, from trade at higher prices during 2018-19. Prices of these items had shown a downward trend since last five years. Despite this, CLW did not ascertain the reasonability of rates and purchased the items at higher rates. This had resulted in avoidable extra payment of ₹ 15.88 crore.

Central Vigilance Commission's (CVC) guidelines for improvements of Contracts (November 2002) stipulate that preparation of estimates for contracts needs special emphasis. The estimated rate is a vital element in establishing the reasonableness of prices. Thus, it should be worked out in a realistic and objective manner. For arriving at the estimated rate, the prevailing market rates, last purchase prices, economic indices for the raw material/labour, other input costs, Indian Electrical & Electronics Manufacturers' Association (IEEMA) formula, wherever applicable should be factored.

Chittaranjan Locomotive Works (CLW) produces 3-phase locomotives for Indian Railways. For production of the 3-phase locomotives (Version WAG-9 or WAP-7), Traction Motors (TM) are required. CLW manufactures the TM by assembling them in-house by utilizing Rotors and Stators. CLW also purchases complete TM from trade in case of requirements that are beyond their in-house production capacity.

During the year 2018-19, CLW procured 769 Rotors at the rate of ₹ 5.97 lakh per unit and 450 Stators at the rate of ₹ 8.15 lakh per unit (basic rate without GST) for assembling 3-Phase Traction Motors through two separate tenders.

At the time of evaluation, the Tender Committee (TC) observed that there was a decreasing trend in basic purchase prices of Rotors and Stators during the period 2013-14 to 2016-17. In case of Rotors, the basic purchase prices had decreased from ₹ 5.91 lakh per unit in 2012-13 to ₹ 4.36 lakh per unit in 2016-17. Similarly, in case of Stators, the basic purchase prices per unit had decreased from ₹ 9.25 lakh in 2012-13 to ₹ 6.43 lakh in 2016-17. The basic purchase price per unit had marginally increased to ₹ 6.90 lakh in 2017-18.

However, in spite of the above observations regarding decreasing trend of prices, the TC finalized the procurement of Rotors at the rate of ₹ 5.97 lakh per unit and Stators at the rate of ₹ 8.15 lakh per unit.

The main justifications for acceptance of the higher rates by the TC were as follows:

i) DMW had procured the same items in July 2018 at the rate of ₹ 5.97 lakh and ₹ 8.15 lakh;
ii) Urgent nature of the purchases; and
iii) Reduction of demand of these items during 2016-18 resulting in price decrease. However, during 2018-19, the firms anticipated increase in demand and therefore increased the prices.

The Finance Member in the TC was not convinced about the reasonableness of rates. The Finance Member had recorded that DMW had ordered very small quantity of Rotors and Stators and the firm did not provide volume discounts.

Audit also noted that the offered rate of items for DMW was for only 77 Rotors and Stators each as against 1,219 (769 rotors and 450 Stators) procured by the CLW. The procurement by CLW was 16 times more than that of DMW quantity in 2018-19. Thus, the TC did not take into consideration the 'economies of scale' in these procurements by CLW.

DMW had started production of 3-phase locos with effect from 2016 only and till 2018-19 had manufactured only 60 locos. In comparison, CLW had manufactured 968 WAP-7 and WAG 9 locos during the same period (2016-19). Hence, finalizing rates relying on the rates finalized by DMW was unreasonable.

It was further observed that in contravention of the CVC guidelines (2002) the TC did not make any independent rate analysis on the basis of prevailing market rates, last purchase prices, economic indices for the raw material/labour, other input costs *etc*., for arriving at the reasonability of the rates quoted by the vendor.

The TC further justified acceptance of higher rates due to the 'urgent' nature of the purchase. Audit however observed that the grounds of urgency cited by Technical Members were not correct as the delivery schedule of the procured items was to commence after five months of TC finalization.

Further, the CLW had in-house production facility of Rotors and Stators as well as procurement of complete traction motor to meet-up any urgent

requirement for production. Records of CLW did not indicate that it had planned, in advance, to purchase these items for emergency situation or the ordered quantity was reduced to the extent for meeting emergency requirement. Moreover, the nature of urgency or any details about it was not available in the deliberation records of the TC.

The contention of the TC that the rates were reduced by the firms correspondingly so as to become competitive and secure the purchase orders from Railways was also not correct. During the previous five years, Railways had only three approved vendors for supply of rotors, stators and traction motors. Therefore, the competition was limited to these three vendors only during all the five years. Further, the demand had steadily increased over the past five years in respect of Rotors and Traction Motors as is clear from the fact that procurement of Rotors had continuously increased from 92 units in 2012-13 to 826 units in 2016-17 whereas procurement of Traction Motors had increased from 283 in 2012-13 to 540 in 2017-18. Thus, the TC's justification that the demand had reduced around last two years was not correct.

Thus, CLW had made procurements of Rotors and Stators at higher rates which resulted in avoidable payment of ₹ 15.88 crore[229] by CLW.

The matter was taken up with MoR in June 2020; no reply was received (February 2021).

4.7 Procurement of Driver Display Unit at higher rate: Chittaranjan Locomotive Works

Non-consideration of lower price offer of an established supplier for procurement of Driver Display Units (DDUs) resulted in extra expenditure of ₹ 10.92 crore.

Indian Railways (IR) introduced three-phase drive (Insulated Gate Bipolar Transistor) propulsion for fitment on locomotives[230] at Chittaranjan Locomotive Works (CLW) in 2009. This propulsion system consists of nine[231] major equipment including Driver Display Unit (DDU)[232]. CLW

[229]Rates for previous purchases (a) Rotors purchased in 2016-17 @ ₹ 4.59 lakh per unit, Stators purchased in 2017-18 @ ₹ 6.98 lakh per unit, Rate for purchases during 2018-19 Rotors: ₹ 5.97 lakh per unit, Stators ₹ 8.15 lakh per unit, (b) Avoidable payment is difference in current rate and previous rate * No. of Rotors/Stators = ₹ 1.38 lakh*769 + ₹ 1.17 lakh*450 = ₹ 1,061.22 lakh+ ₹ 526.50 lakh = ₹ 1,587.72 lakh

[230]WAG9 , WAG9H and WAP7 classes of locomotives

[231]Traction converter/inverter, Auxiliary Converter/Inverter, Cooling System, Control Communication & Protection System, Driver Display Unit, Interface with other equipments, Apparatus for ensuring safety of operating and maintenance personnel,

procured these nine equipment individually from trade. However, after May 2012, it also started procuring propulsion system (including all nine equipment) as a whole.

Audit noted that CLW procured 83 full propulsion systems[233] (with two DDUs in each system) from M/s Medha Servo Drive Pvt. Ltd (Medha) during April 2013 to March 2018.

Additionally, CLW continued to procure DDUs (an individual component of propulsion system) from trade. Audit noted that procurement of DDUs was done from July 2013 through a single vendor viz. M/s Advanced Rail Controls Pvt. Ltd (ARC). During 2015-16 to 2017-18, CLW had procured 1,706 DDUs against three tenders[234]. In these tenders, M/s Medha's offer of ₹ 2.70 lakh per unit was rejected whereas ARC's higher offer of ₹ 3.34 lakh per unit was accepted.

Audit observed that:

- The lower offer of M/s Medha was rejected, even though it had successfully supplied[235] the propulsion systems to CLW during the same period.
- The price offer of M/s Medha was rejected on the grounds that it was a Part-II vendor[236]. Audit however noted that CLW had earlier placed bulk orders on M/s ARC when it was a Part-II vendor.
- Audit further could not find on record any efforts made by CLW for convincing M/s ARC to match the lower rate quoted by M/s Medha. This would have saved ₹ 0.64 lakh per unit (₹ 3.34 lakh per unit minus ₹ 2.70 lakh per unit) in procurement of 1,706 DDUs in the above three tenders.

Traction Motor Speed Sensors & Source code and compiler of software of traction/auxiliary converter *etc*.

[232]DDU displays important information relevant to the driver, such as operational aspects, fault status / messages *etc*.

[233]Traction converters, auxiliary converters, vehicle control units (VCUs) and other associated sub-systems (total nine equipments) Specification No. RDSO/2008/EL/SPEC/0071.

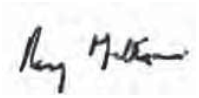
[234] Tender nos. 71/15/5090, 71/16/5090 and 71/17/5090.

[235]As per RDSO letter dated 1 July 2014 (F/820 of offer Vol.I), the locomotive was offered for traffic from 23 January 2014. It had completed 64,000 kms without any problem and therefore, its performance was considered satisfactory.

[236] Vendors are classified as Part-I and Part II. Part I vendors are approved by RDSO. Part II vendors are those who are capable of supplying items to Railways and are encouraged for Development orders resulting in vendor development.

Thus, lapse on the part of CLW for not considering the lower offer of Medha at the time of finalisation of the rates of procurement of DDU resulted in extra expenditure of ₹ 10.92 crore.

The matter was taken up with MoR in June 2020; no reply was received (February 2021).



New Delhi
Dated: 28 June 2021

(ROY MATHRANI)
Deputy Comptroller and Auditor General

Countersigned

New Delhi
Dated: 30 June 2021

(GIRISH CHANDRA MURMU)
Comptroller and Auditor General of India