Chapter 4 – Mechanical – Zonal Hqrs/Workshops/ Production units

The Mechanical Department is mainly responsible for management of –

- Train operations by ensuring Motive Power availability, Crew Management, Rolling Stock Management and Traffic restoration in case of accidents
- Workshops set up for repair, maintenance and manufacturing of rolling stock and related components
- Production Units engaged in production of Locomotives, Coaches, Wheel sets, etc

The Mechanical Department is headed by Member Mechanical at Railway Board who is assisted by Additional Members/ Advisor for Mechanical Engineering, Production Units and Rolling Stock/ Stores.

At Zonal level, the Department is headed by a Chief Mechanical Engineer (CME) who reports to the General Manager of the concerned Railway. The office of the Member Mechanical of the Railway Board guides the CME on technical matters and policy. At the divisional level, Sr. Divisional Mechanical Engineers are responsible for implementation of the policies framed by Railway Board and Zonal Railways. The Workshops are headed by Chief Works Managers and report to the CME of the concern Zone. Production Units are managed independently by General Managers reporting to the Railway Board.

The total expenditure of the Mechanical Department during the year 2013-14 was ₹ 26388.62 crore. During the year, apart from regular audit of vouchers and tenders, 588 offices of Mechanical Department were inspected.

The chapter includes two long paragraphs viz., 'Functioning of Research, Designs, Standard Organization (RDSO)' and 'Functioning of Rail Coach Factory (RCF), Kapurthala'. RDSO functions as a centre for acquisition, absorption and development of new technology and upgradation of existing technology for the Indian Railways. On the other hand, RCF is one of the coach production units of IR. These two units were monitored by Mechanical department at Railway Board.

In addition, this chapter includes two individual paragraphs related to non-availing of the benefit of CENVAT while paying Excise Duty on Rolling Stock by the Production Units (DLW, RCF, ICF) of IR and wasteful expenditure incurred by SR Administration on account of reworking of cylinder liners (a part of cylinder block used in diesel locomotive) due to defective honing of liners using obsolete honing machines.

4.1 Functioning of Research Designs and Standards Organization (RDSO) Lucknow

Highlights

Research Designs and Standards Organisation (RDSO) is an organization under Ministry of Railways, responsible for development of new technology and upgradation of existing technology for Indian Railways. The functioning of RDSO was earlier commented upon in Comptroller and Auditor General's Report No.9 of 2004, wherein issues regarding inadequate execution and monitoring of Research and Development (R&D) projects were highlighted. Some of the key findings discussed in this para are mentioned below:

- *Scrutiny of 15 selected R&D projects revealed that 11 projects were completed with delay ranging between 10 and 82 months. Out of these, five projects which related to development of new technology for safe train operations, could not be implemented as at the end of March 2014. Two projects related to construction of dedicated test track for RDSO and development of capsule type absorbers could not be completed even after expiry of six years of target completion date.* ***[Para 4.1.3.1 (a) & (b)]***

- *RDSO did not have required in-house expertise to undertake R&D projects and had to remain dependent on outside experts to carry out its primary functions of R&D activities.* ***[Para 4.1.3.2(a)]***

- *RDSO failed to implement recommendations of Restructuring Committee (May 2003) for giving focus to its primary function of R&D activities and to decentralize the works pertaining to vendor development and inspections. Instead, as revealed in Audit RDSO has been focusing less on R&D activities and more on its subsidiary functions like vendor development, inspections, and design activities.* ***[Para 4.1.3.2(b)]***

- *An important function of RDSO related to development of new vendors for procurement of safety and safety related items. For this, guidelines are laid down by the Indian Standards Organization (ISO) which include procedure for registration of vendors and their up-gradation and down gradation. Audit revealed that despite having single vendors for 51 items related to electrical, mechanical and signaling items since 2008, RDSO had not taken action to develop new vendors for these items leaving the field open for the limited existing vendors and giving them monopoly.*
  (Para 4.1.3.4)

4.1.1 Introduction

Research Designs and Standards Organization, Lucknow (RDSO) functions as a centre for acquisition, absorption and development of new technology and upgradation of existing technology for the Indian Railways. Its major functions involve development, adoption & absorption of new technologies, development of new & improved designs, development of standards for materials & products, providing technical guidance to zonal railways and providing consultancies and vendor approval and inspection related to critical & safety items used in Indian Railways.

The Director General[137] is the head of RDSO and reports to the Chairman Railway Board. Director General is assisted by an Additional Director General and 32 Directorates headed by Senior Executive Directors/Executive Directors. The Research and Development (R&D) works related to new and ongoing projects are managed by 27 different Directorates, responsible for developing new design/ specifications, upgrading the existing design/specifications etc.

At field level, RDSO has a total of nine units[138] spread across Indian Railways, headed by an Executive Director/Director. These units assist RDSO in vendor development activities in addition to inspection of materials of safety and safety related items, received from approved vendors against Zonal Railways contracts.

In addition, Railway Board constituted two apex bodies viz., Governing Council (GC) and Central Board of Railway Research (CBRR) for monitoring and regulating the R&D activities at RDSO.

The functioning of RDSO was earlier commented upon in Comptroller and Auditor General's Report No.9 of 2004. Audit reported that over the years RDSO has been focusing less on R&D activities and more on functions like vendor development and inspections. Audit commented on inadequate execution and monitoring of R&D projects resulting in considerable delays in completion/implementation of the projects. In its Action Taken Note (January 2011), RDSO had assured that an internal reorganization had been done with the primary objective of segregating the R&D activities from the routine activities such as inspection, quality assurance, vendor development etc. so that more thrust could be given to R&D activities.

Audit again reviewed the functioning of RDSO with a view to assess whether the R&D projects undertaken at RDSO were successfully completed/implemented in a reasonable time frame and whether the objectives and deliverables of the projects were achieved. It was also examined whether RDSO was equipped with the appropriate manpower to undertake the R&D activities and Railway Board's guidelines were scrupulously followed in the initial development of vendors, upgradations, renewals, delisting, inspections

[137] Director General in Indian Railways is equivalent to the rank of General Manager.
[138] Field units of RDSO are located at Bangalore, Bhopal, Mumbai, Burnpur, Kolkota, New Delhi, Jaipur, Hyderabad and Gwalior.

etc. Audit focused on the R&D projects handled by RDSO and its activities related to vendor development during the period 2008-09 to 2013-14.

Over last five years, Audit identified 58 R&D projects, undertaken at RDSO for review based on the basis of Integrated Railway Modernization Plan, Technology Mission for Railway Safety (TMRS), Corporate Safety Plan. Out of these 58 projects, for detailed study Audit selected 15 projects (TMRS – 5, Safety related projects – 6, other than safety related projects – 4). Audit also selected a sample of vendors (50 each of vendors registered and renewed and 20 each of vendor delisted and upgraded) for scrutiny of vendor development activities at RDSO. Guidelines issued by the Railway Board with regard to R&D projects and vendor development and Report of the Restructuring Committee on RDSO were used as criteria by Audit.

4.1.2Audit findings

4.1.2.1 Completion and Implementation of R&D Projects

For monitoring the research programme and ongoing projects of RDSO, Railway Board constituted two apex bodies viz., Governing Council (GC) and Central Board of Railway Research (CBRR) in December 1987 and February 2002 respectively. These apex bodies are responsible for monitoring and evaluation of R&D projects for timely completion/implementation, so that the stated objectives could be achieved.

Meeting of GC and CBRR are required to be held regularly, at least once in six months, for monitoring and evaluation of ongoing R&D projects. Records of the meetings held during the period 2008-09 to 2013-14 were reviewed and it was noticed that-

(i) As against the requirement of 14 GC meetings, only three meetings (March 2008, March 2011 and May 20120) were held during the period 2008 to 2014.

(ii) During the above period only eight meetings of CBRR were held as against the requirement of 14 meetings as per Railway Board's instructions (September 2006).

Due to absence of regular meetings of GC and CBRR, proper monitoring of development and execution of R&D projects was compromised. This in turn, affected the timely completion/ implementation of R&D projects. Besides, ongoing projects could not be properly evaluated resulting in failure of projects, which resulted in non-achievement of desired objectives. Delay in completion/ implementation and failure of R&D projects are discussed in following sub-paras.

(a) Delay in completion of R&D projects

Audit reviewed the records of 58 R&D identified projects, undertaken at RDSO during the last five years. Out of these 58 projects, 17 projects, targeted to be completed between September 2004 and October 2010 have been

completed with delay ranging between three and 82 months. Four projects which were to be completed during March 2007 to December 2014, are yet to be completed by April 2015.The main reasons attributed by RDSO for delay were delay in finalization of contract, delay in development of technology by outsourced agency (IIT/ Kanpur), delay in conducting of trials etc. Audit also noticed that out of the 58 R&D projects undertaken at RDSO, 12 projects were completed on time.

In the Action Taken Note to the earlier Audit Report (No.9 of 2004), Railway Board assured that monitoring of individual projects and mission would be strengthened. However, in course of detailed examination of records of 15 R&D projects, Audit noticed that out of 13 projects due for completion between May 2005 and October 2010, 11 were completed with delay ranging between 10 and 82 months. The other two projects[139] were still in progress as of March 2014 even after expiry of six/seven years of their targeted completion date (March 2008/ March 2007). The remaining two projects[140] are to be completed by June 2016/ June 2017.

Audit analyzed the reasons for delay in completion of these projects. Some of the common reasons observed for delay in completion of these projects were delay in development of technology by the R&D partners, delay in trial runs, delay in discharge of tenders, preparation of impractical specifications, delay in finalization of specifications, non-finalization of sites in time etc. It is evident that many of these reasons were within the control of the management which could have been avoided through more scrupulous supervision.

(b) Delay in implementation of completed projects

Out of the 11 completed projects, three[141] were implemented successfully whereas three projects[142] failed. The reasons for failure of these three projects have been discussed separately in sub-para (c). Though the remaining five projects were completed between September 2009 and December 2010, they were yet to be implemented as on 31st March 2014. Audit analyzed the reasons for delay in implementation of these five projects, which are given below:

[139] Construction of dedicated test track for RDSO and Development of capsule type absorbers.
[140] Train Collision Avoidance System and Design and Development of axle load wagons for DFC
[141] Development of WILD System, Provision of State of the Art Track Recording System and Bogie Mounted Brake System.
[142] High Speed Ultrasonic Rail Testing Car (SPURT), Design & Development of Train Actuated Warning Device (TAWD) and Improved Rail Fastening.

Table 4.1 – Delayed implementation of projects

Sl. No.	Brief of the project	Audit findings
1	**Track Side Bogie Monitoring System (TBMS)** To arrest derailment of goods train due to defects in bogie of wagons, RDSO undertook a project with IIT/Kanpur in 2005.	➢ The field trial was conducted (April, May & July 2008) at NR/NER. The project was completed in September 2009 at a cost of ₹1.21 crore. ➢ Ignoring this development, RDSO also undertook another project (2006) with similar objectives and procured one TBMS from Australian firm at a cost of ₹ 5.34 crore despite RDSO Finance observations regarding duplicity of efforts. ➢ The system was installed/ commissioned in January 2010 at Lucknow-Sultanpur section. ➢ Although, both the projects are completed, yet their adoption on a large scale over IR is still pending.
2.	**Corrosion Prevention of Rails** Development of corrosion resistant rails (made of copper molybdenum - Cu-Mo; or Nickle, Chromium and Copper - NCC) for improving the service life of rail track in the corrosion prone sections of Indian Railways	➢ RDSO undertook (2003 and 2005) joint project with SAIL and IIT/ Kanpur for development of Cu-Mo and NCC made corrosion resistant rails respectively. ➢ The Cu-Mo rails were tested during 2003 to 2006) and NCC rails were tested in March 2009) on coastal region of SCR and ECoR. ➢ RDSO recommended (March 2009) RB that NCC rails showed better corrosion resistance than Cu-Mo rails during laboratory evaluation and could be considered for future renewals for corrosion prone areas. ➢ As per RB's instructions (April 2009) Bhilai Steel Plant (BSP) of SAIL supplied two types of rails to five Zonal Railways (WR, SER, SCR, SR and SWR) at ₹53.68 crore for comparative study. ➢ However, laying of rails in these Railways was not completed (September 2014).
3.	**Wheel and Axles of Improved Metallurgy** Development of "Wheel and axles of improved metallurgy" to reduce/ avoid the wheel failures and breakage of axles	➢ RDSO undertook (August 2005) the project in collaboration with IIT/Kanpur and technology of improved metallurgy was developed in April 2007. ➢ These wheel sets were fitted on 16 coaches by RCF and dispatched to various Zonal Railways during May 2010 to June 2010 for field trial. No adverse performance report from any railway has so far been received from any Railway. ➢ The technologies developed were to be assimilated in IR by April 2012 after completion of trials. The same has not yet been assimilated.
4.	**Environment friendly coach toilet discharge system** To achieve zero discharge of solid/liquid residue, use of minimum quantity of water and elimination of foul condition on board.	➢ The project, namely zero toilet discharge system (ZTDS) was started in August 2005 with targeted date of completion in August 2008. ➢ The prototype of ZTDS was manufactured in August 2008 and completed its field trials 2009 in five trains. However, RB decided to develop Waste Management System at depots for extended trials.

		➢ The contract awarded (Dec. 2010) for the work was terminated (May 2012) as the design details submitted by the firm was not as per requirement. ➢ The proposal submitted (July 2012) by IIT/ Kanpur for extended trails of ZTDS with waste management system is still under process.
5.	**State of the Art Alumino Thermit Welding Technology** Indian Railway has a high failure rate of AT welds which poses a serious challenge in ensuring train safety. Railway Board (2000) decided to improve the rail-weld technology.	➢ Railway Board instructed (May 2001) RDSO to frame specifications for advanced technology in thermit welding. ➢ RDSO submitted final specification in October 2006. RB directed (December 2006) SER to float a global tender for evaluating the technology, which was to be discharged (July 2008) as the offering technology was not as per RDSO's specifications. ➢ Subsequently, RDSO invited (March 2009) EOI for upgraded welding technology with revised specifications. Though the project was closed in September 2010, the vendor development for the welding technology is still under process.

(c) Non-achievement of objectives due to failure of R&D projects

Out of the 15 selected R&D projects, three projects (one related to TMRS and other two were safety related projects) failed. The details of these projects are mentioned as under:

Table 4.2 – Failed projects

Sl. No.	Brief of the project	Audit findings
1	**Improved Rail Fastenings** Fastenings have elastic properties and are used to attach the rails to the sleepers. Loss of toe load takes place due to problems in the fastenings such as fatigue of Elastic Rails Clips (ERCS), crushing/ damage/ shifting of grooved rubber pads and corrosion/ breakage of liners. These fittings did not have anti theft, anti sabotage features.	RDSO undertook the project (August 2005) for development of improved rail fastenings with anti theft and anti sabotage features. Although prototype of ERC was developed (December 2008) as per theoretical designs, the same failed to meet the requisite test results as the test results could not meet the required value of toe load. Another prototype was developed with modified theoretical design but again the results did not meet the required specifications. As such, the technology had not been delivered rendering the entire expenditure of ₹ 1.24 crore infructuous.
2.	**High Speed Ultrasonic Rail Testing Car (SPURT)** SPURT car is used for ultrasonic testing of rail in a speedy manner.	RDSO decided to procure high speed ultrasonic rail testing car for testing in speedy manner. Two works were sanctioned (1998-99 and 1999-2000) for procurement of SPURT. It was observed that SPURT car supplied (April 2005) against the contract awarded (December 2003) failed to comply with the specification and the system was rejected (September 2006). The Governing Council attributed (November 2006) the failure of SPURT car to the impractical specifications prepared by RDSO. Subsequently another work for procurement of three SPURT was not processed as Railway Board decided to continue the testing of rails on service contract basis instead of

		procurement of SPURT cars. Finally the project was closed in March 2012.
3.	**Design and Development of Train Actuated Waning Device (TAWD)** Designed to prevent accidents at level crossings by giving an audio visual warning to road users of approaching trains.	The development of TAWD was undertaken (September 1998) by RDSO. The prototypes supplied by two firms[143] were put (March 2001) on field trials on WR and ER, which were discontinued (July 2003) as per RB's instructions due to failure, poor reliability and inherent field problems reported by them. Subsequently, RB decided (December 2004) to develop TAWD with different specifications and directed RDSO to go ahead with field trials with different specifications at 90 unmanned and manned level crossings. Accordingly, the systems were installed for extensive trials in nine Zones (SCR, SWR, SR, ECoR, NR, NWR, NCR and SER) by RDSO-approved firms[144]. Consequent upon failures reported by Zonal Railways in the trials of the second TAWD System, RB directed (September 2005) that no further trial runs may be taken up beyond the works already in progress with contractual commitments. However, by then, the firms had already supplied 89 equipment to the above nine Zones. The project was finally closed by the Railway Board in September 2008. Thus, the decision of Railway Board to procure a large number (90) of TAWD equipments without prototype testing deprived the IR of the intended benefits of the technology besides an infructuous expenditure of ₹ 7 crore incurred in procurement of these equipment.

(d) Non-achievement of desired objectives after implementation of projects

A flattening of wheel is termed as "Wheel Flat" which occurs due to unintentional sliding of the wheels on rails. Continued usage of flat wheels causes rail fractures/failures in rolling stock. For detection of Wheel Flat, a project Wheel Impact Load Detection (WILD) System was undertaken (2001-2006) by RDSO in collaboration with IIT, Kanpur. The prototype was developed and trials were conducted in August/September 2006. The project was completed in October 2006. The Railway Board nominated (February 2006) COFMOW for procurement and installation of systems as per specifications framed by the RDSO. As per specifications, the system would be able to (i) detect defective wheels in the range of 770 mm to 1100 mm diameter; (ii) work effectively in the speed range of 30 to 160 Kmph; and (iii) detect 95 per cent or more defective wheels on first pass.

[143] M/s Marble, Mumbai and M/s BEL, New Mumbai.
[144] M/s CEL, Sahibabad and M/s GG Tronics, Bangalore.

As per Railway Board's instructions, COFMOW awarded two contracts (April 2007 and April 2010) for supply of fifteen WILD systems at a cost of ₹ 11.43 crore. The WILD systems supplied by the selected firm were installed over ten Zonal Railways (SER, SWR, SR, SCR, SECR, ECR, ER, ECoR, CR &WCR) during August 2007 to May 2011.

A review of records revealed that after installation/commissioning of the system, Zonal Railways reported failures such as poor reliability due to false alarms causing undue detention, no correlation between WILD results and actual defects, non-raising of alarm on passing of skidded wheel over the system etc. RDSO accepted (March 2011) the limitations that the System was able to give optimum results only for 1000 mm wheel diameter at speeds between 55 and 65 Kmph.

The issue was also discussed in GM conference (January 2012) wherein it was commented that the performance of the WILD is abysmal and 93 per cent of the alerts are meaningless.

Thus, the WILD System could not be implemented as on 31st March 2014 due to limited utility of the System which also resulted in unproductive expenditure of ₹11.43 crore.

Above findings (4.1.3.1-a to d) clearly indicate lack of adequate monitoring mechanism in development of new projects and their execution for timely completion and implementation. Delay in completion/ implementation of R&D projects may cause obsolescence of the technology in addition to depriving Railways of the intended benefit of the new technology.

4.1.2.2 Manpower Management

(a) Non-availability of required Research Experts

In response to an Audit query issued in August 2007, RDSO stated (May 2008) that RDSO personnel are utilized for Design/R&D activities and consultancy to the extent possible. RDSO also stated that its staff consisted primarily of Diploma Holders/Engineering Graduates and were not having adequate qualifications to undertake high level research.

Further, RDSO in its Status Paper submitted to the Railway Board stated (April 2010) that R&D is a multidisciplinary activity which requires services of experts and scientists presently procured from outside sources through specific MoUs with different IITs etc. RDSO further accepted that in-house availability of scientists and experts would certainly help to expedite such projects. This could be achieved by:

- A separate parallel cadre of scientists (doctorates) recruited through UPSC with promotional avenues up to HAG level. This will help in improving knowledge level in research and development teams.
- Deputation of technology specific experts from other scientific organizations.

- Hiring of experts as required for working on complex R&D projects.

Records further revealed that the Central Board of Railway Research (CBRR) suggested (June 2010) for a dedicated permanent research cadre with persons possessing higher qualification for RDSO. In the Action Taken Note to the earlier Audit Report (No.9 of 2004), Railway Board itself stated (January 2011) that for achieving the objective of focusing on the primary function of R& D activities, a separate Research group will be created which will handle key projects requiring multi-disciplinary teams. Audit also observed that RDSO proposed from time to time (May 2011, September 2011, March 2013 and August 2013) for revamping of research cadre by direct recruitment of persons with higher qualification. However, the matter was pending with the Railway Board. As such, after expiry of four years of assurance given by Railway Board and despite repeated proposals of RDSO, matter of creation of separated research cadre is still pending with Railway Board (March 2015).

Audit observed that during the review period, RDSO availed the consultancy services from various IITs and overseas firms in 48 R&D activities involving an estimated cost of ₹ 70.19 crore. The required expertise to undertake R&D Projects were not available within RDSO and the RDSO had to remain dependent on outside experts to carry out its primary responsibilities of Research and Development, thus compromising the quantum and quality of R&D activities.

(b) Non-implementation of recommendations of Restructuring Committee

The Ministry of Railway constituted (August 2002) a Committee to effect the changeover of RDSO as a Zonal Railways in a smooth manner and to work out the modalities of restructuring of RDSO. The idea was to relieve RDSO from routine functions of vendor development/inspection and design activities so that it could fully concentrate on research work. The Restructuring Committee in its report (May 2003) inter-alia stated that:

- RDSO should concentrate on its primary job of Research, being a premier Research Organization.
- Work pertaining to Design and Vendor Development should be decentralized in a phased manner so that RDSO would be relieved from this activity and concentrate on research work.
- Design and vendor development staff should be transferred to other Production Units (PUs).

Based on the above report, the Railway Board directed (September 2003) the concerned Railway Board's Directorates to implement the recommendations.

Audit assessed the implementation of recommendations of the Committee and noticed that:

- As against the total sanctioned strength of 481 design staff, 408 were still working in 13 Directorates of RDSO, as on 31st Match 2014. In response to an audit query, RDSO stated (March 2013) that in the absence of clear

directions from the Railway Board, the action to transfer the design staff was not taken.

- Instead of taking action to transfer the design staff, RDSO made new appointments of 133 Design staff during January 2004 to October 2014 involving an expenditure of ₹ 14.05 crore approximately towards their pay and allowances, as on 31st October 2014.
- In regard to vendor development staff, 110 staff were still working in RDSO as on August 2014 as against the sanctioned strength of 134.

From the above, it is clear that even after a lapse of more than ten years of the recommendations of the Restructuring Committee, the decentralization of Vendor Development and Design staff was not carried out by RDSO, due to which RDSO was not able to focus on its primary responsibility of Research & Development.

4.1.2.3 Capital Outlay not commensurate with Research & Development activities

The expenditure on R&D activities is charged to capital head of Accounts. To improve functioning of research activities at RDSO, capital budget of RDSO should be adequate. Audit noticed that Chairman Railway Board in GC Meeting of December 2005 stated that RDSO's expenditure in proportion to gross expenditure of Indian Railways is only 0.2 per cent, which is quite low and unsuitable for the works/projects to improve productivity, safety and throughput of IR. RDSO in its Status Paper further stated (April 2010) that the capital budget of RDSO was about 0.25 per cent of the Indian Railways' Capital Budget which was not commensurate with the research and development requirements of a technology driven industry like Railways. RDSO also stated that its capital budget was highly inadequate when compared to the similar industry average of about 2-3 per cent world over. Accordingly, RDSO suggested to increase the capital budget to about 2-3 per cent of the capital budget of Indian Railways.

Audit, however, noticed that on one hand RDSO stated that its capital budget was very less, on the other hand RDSO demanded less in the form of revised budget allotment (RBA) in comparison to the original budget allotment (OBA) and even final budget allotment (FBA) was less than that of RBA, which is depicted in the following table:

Table 4.3 (Fig. in crore)

Year	OBA	RBA	FBA
2010-11	78.00	41.91	40.60
2011-12	50.00	38.63	38.42
2012-13	51.11	51.19	51.19
2013-14	40.00	28.06	24.00
2014-15	25.00	25.00	19.25
Total	**244.11**	**184.79**	**173.46**
Average	**48.82**	**36.96**	**34.69**

Source: records of Finance department of RDSO

From the above table, it may be seen that budget demanded by RDSO in form of RBA was less (ranged between ₹11.37 crore and ₹36.09 crore) than that of OBA in three years out of the five years. It was also seen that even the FBA was less (ranged between ₹0.21crore and ₹5.75crore) than that of RBA in four years. During the above five years, on an average, RBA is 32 per cent less than OBA and further FBA is 42 per cent lower than OBA. From this fact, it is evident that less demand by and allotment of capital budget to RDSO may hamper the R & D activities due to financial constraints.

Audit further noticed that during the period 2009-10 to 2013-14, expenditure incurred by RDSO on R&D activities was only 9 to 18 per cent of the total expenditure (under Revenue and Capital Heads) as detailed below:

Table 4.4 (₹ in crore)

Year	Expen-diture under Revenue Head	Expen-diture under Capital Head	Total Expen-diture	Expen-diture under R&D	Percentage of expenditure incurred on R&D to the total expenditure
2009-10	145.99	43.56	189.55	23.0	12
2010-11	122.23	43.91	166.14	29.53	18
2011-12	134.59	38.91	173.50	31.24	18
2012-13	149.36	52.44	201.80	33.63	17
2013-14	162.01	24.50	186.51	18.64	9

Source: records of Finance department of RDSO

It is evident from the above that proportion of total expenditure incurred by RDSO on R&D activities was quite meager and not commensurate with increasing requirements. As a result, the R&D effort of RDSO was deficient.

4.1.2.4 Vendor Development activities

Functions of RDSO also include registration of fresh vendors for procurement of safety and safety related items. Production Units of Zonal Railways are also responsible for registration of vendors for safety and safety related items. Zonal Railway and Production Units are required to procure safety and safety related items from vendors registered by RDSO/Production Units.

For fresh registration of vendors, guidelines are prescribed by the Indian Standards Organization (ISO) which include procedure for registration of vendors and their upgradation and down gradation. The procedure as mentioned in the ISO guidelines for vendor development in RDSO is given below:

- Expression of interest (EOI) is published in newspapers (preferably on three months basis) for all approved safety and safety related items having less than three vendors. The details of EOI are also posted on RDSO website.

- In response to the EOIs, vendors apply for registration as approved suppliers for the concerned items.
- Fresh registration is given as Part-II vendor for maximum period of two years after meeting the eligibility criteria prescribed in ISO guidelines. Renewed registration (2nd and subsequent) is valid for a period of three years.
- Vendors are upgraded as Part-I vendor on the basis of their experience (minimum period of one year or 15 months from date of issue of last inspection certificate after completing the minimum specified quality). However, adverse performance attributable to unsatisfactory quality/workmanship of the vendor is to be considered at the time of up-gradation.
- The vendor can be downgraded or temporarily/permanently delisted based on poor performance, non-conformity, non-compliance to approved QAP etc.

Audit examined the records of vendor development maintained at directorates of RDSO. The detailed findings in this regard are discussed below:

(a) Non-issue of expression of interest (EOI)

Records of RDSO revealed that during the review period (2008-09 to 2013-14), 118 EOIs were published by RDSO on its website. However, in respect of electrical, mechanical and signaling items, 51 single vendors are continuing from 2008. Despite having single vendors for these items for over six years, no EOIs have been published either in newspapers or on RDSO website.

It is evident that RDSO was not complying with the guidelines prescribed by ISO for issuing EOIs entailing a risk of development of monopolistic tendencies among single vendors.

(b) Discrepancies in initial development, up-gradation, renewals, delisting etc.

Audit reviewed the process of vendor management of RDSO during period from 2008-09 to 2013-14 as per the following sample:

Table 4.5

Category of vendors	Total No. of vendors	Sample selected by Audit
Total number of vendors registered	515	50
Total number of vendors delisted/down graded	386	20
Total number of renewal cases	2392	50
Total number of vendors upgraded	257	20

The review revealed the following:

In RDSO, though the prescribed guidelines (as mentioned in Para 7.4) for initial registration, down-gradation and delisting of vendors were followed,

procedural lapses in upgradation of two vendors were noticed. These are detailed below:

(i) A firm[145] was registered (June 2007) by RDSO as Part-II vendor for supply of high capacity Hyterel upper and lower washers for a period of two years. The firm applied (September 2009) for upgradation to Part-I despite the fact that registration to Part-II had lapsed in June 2009 and required renewal. However RDSO upgraded (December 2009) the firm as Part-I vendor on the basis of performance reports of six Zonal Railways collected by the firm itself. This was contrary to the prescribed guidelines according to which the performance of vendors should be collected by RDSO from the consignees (Zonal Railways) while considering for upgradation.

The above facts indicate that RDSO upgraded the firm without obtaining a single direct feedback from any Zonal Railway as required and disregarding the fact that approved tenure of the firm as Part-II vendor had already lapsed. This amounts to according undue favour to the firm.

(ii) In another case, a firm[146] registered as Part-I vendor for supply of Axle box bearings was downgraded (October 2008) to Part-II for a period of one year on the basis of failure reports of Zonal Railways. Despite the fact that failure of the firm continued during 2008 to 2010, RDSO upgraded (2009) the firm to Part-I on the ground that there was only one firm in Part-I and there had been a remarkable drop in failures in bearings during 2109-10 as compared to earlier periods. This action of RDSO was contrary to the prescribed guidelines for upgradation of vendors, wherein at the time of up-gradation, no adverse performance of the vendor should have been noticed. This also amounts to according undue favour to the firm.

4.1.2.5 Over-emphasis on Vendor development activities in place of R&D

Research & Development (R&D) is envisaged as the primary function of RDSO being a premier research organization of Indian Railways. Audit, however, observed that during the period of 2008-2014, RDSO was found primarily engaged in vendor development activities and not on R&D. This is exemplified from the fact that there were 3468 vendors registered with RDSO for 999 items as on 31-12-2014. Further, during the review period, RDSO registered 515 new Part-II vendors, delisted/downgraded 386 vendors, upgraded 257 vendors from Part-II to Part-I and renewed 2392 vendors. For these vendor development activities, 14 out of 32 Directorates of RDSO were actively involved. Moreover, the decentralization of Vendor Development and

[145] M/s Calstar Steel Ltd., Kolkata.
[146] M/s NEI, Jaipur.

Design activities was not carried out by RDSO as per the recommendations of the Restructuring Committee as also brought out earlier in Para 4.1.3.2 (b).

Audit also observed that RDSO was not adequately equipped with the required technical manpower to carry out R&D activities. In place of building in-house capacity and expertise, RDSO entered into MOUs with various IITs/ overseas entities and outsourced 48 R&D activities during the review period, which were supposed to be the core functions of RDSO. These facts have also been highlighted in Para 4.1.3.2 (a). Audit further revealed that proportion of total expenditure incurred by RDSO on R&D activities was inadequate to meet increasing requirements as mentioned in Para 4.1.3.3.

From the above, it is evident that instead of concentrating on core R&D activities, RDSO was primarily engaged in subsidiary and peripheral works of vendor development and other routine activities like drawings and specifications. This may affect the quality and quantum of R&D activities carried out by RDSO and its overall contribution to technological upgradation and modernization of Indian Railways.

4.1.3 Conclusion

Significant delays (ranging between three to 82 months) were noticed in completion of 17 out of 58 identified R&D projects undertaken at RDSO. Instances of non-implementation of the completed projects (between September 2009 and December 2010) were also noticed that may result in obsolescence of the new technologies developed. Railways need to ensure an effective monitoring mechanism in the system for timely completion/ implementation of projects.

Lack of adequate in-house qualified research experts forced RDSO to rely upon consultancies from outside agencies and caused delay in project completion/ implementation besides increase in financial burden. Over the years, RDSO has been focusing less on R&D activities and more on subsidiary functions like Vendor Development/ Inspections and design activities despite repeated recommendations/ instructions of the Railway Board. RDSO should enhance its capital outlay on the core R&D activities.

The matter was brought to the notice of Railway Board in February 2015; their reply has not been received (May 2015).

4.2 Functioning of Rail Coach Factory, Kapurthala

Highlights

Rail Coach Factory Kapurthala, a coach production unit of Indian Railways was set up in 1986. It is charged with the responsibility of design, development and manufacturing of coaches. Initially the production capacity was 1000 Coaches per annum which was increased to 1500 coaches per annum in 2010.

Rail coach Factory, Kapurthala manufactures more than 1500 coaches per annum which include around 470 LHB coaches. It is equipped with state-of-the-art Plant and Machinery having specialized facilities like laser cutting, plasma cutting, robotised welding and spot welding facilities.

Audit on the working of RCF was taken up with the objectives to assess the correctness of the budgeting and accounting procedures to ensure proper allocation and utilization of resources, efficiency in production activities and effectiveness of the monitoring system.

Some of the key findings are mentioned as under:

- *Appropriation to Depreciation Reserve Fund (DRF) is considered a component of the cost of the product. Loading of excess DRF to the cost of coaches resulted in inflating the cost of coaches and avoidable payment of Dividend of ₹3.31 crore during 2011-12 to 2013-14.*

  (Para 4.2.6.1-b)

- *Provisions for new coaching stock in the annual Rolling Stock Programme (RSP) which were to be made at least two years in advance were finalised by Railway Board with delays. Similar delays were observed in the approval by Railway Board of the coach production programme of RCF. Further, Railway Board made frequent changes in respect of the Production programme approved by it as seen in the years 2012-13 and 2013-14. The changes made in the approved production programme resulted in stores/materials worth ₹31.93 crore remaining unutilised.*

  (Para 4.2.6.2)

- *The project for complete switchover to production of LHB stainless steel coaches was started in April 2008. High level safety review committee in its report had recommended (February 2012) complete switchover to LHB type coach production and stopping the production of conventional type of coaches due to safety reason. The project was not successful as RCF was not able to manufacture more than 470 LHB coaches till date in any production year and majority of coaches produced in RCF were still of conventional type which went against the objective of phasing out the conventional coaches.*

  (Para 4.2.6.2-a)

- *Pre-inspection of the stores by RITES/RDSO was meant to ensure the quality of materials. Cases of rejection by RCF of stores pre-inspected by RITES/RDSO were seen during the audit scrutiny. In several cases either the defects were rectified by the supplier or cost of rejected material was recovered. Cases of rejection of material supplied after having been inspected and certified by the reputed agencies like RITES/RDSO indicates flawed inspection process.*

(Para 4.2.6.7-b)

- *Shortage of manpower in the technical cadre was dealt with in a casual manner by appointing excess Group 'D' staff by General manager as substitutes in place of technicians and supervisors for which higher technical qualifications are required and who are recruited by Railway Recruitment Board.*

(Para 4.2.6.8-b)

- *All finished coaches are required to be dispatched to the allottee zonal railway soon after their manufacture. Audit scrutiny revealed that 286 manufactured coaches were not dispatched in time and detained for periods ranging between one to ten months beyond the prescribed time limit. This delay in despatching the finished coaches resulted in the investment of ₹ 414.40 crore remaining unfruitful. This further led to avoidable loss of earning capacity of ₹ 46.14 crore which indicates ineffective monitoring mechanism.*

(Para 4.2.6.9-a)

- *Store components valuing ₹ 21.53 crore were lying unutilised without issue for more than 36 months. These items were not declared as scrap or useable as Survey committee had not surveyed these items resulting in non-disposal of stores besides avoidable payment of dividend to General Revenue.*

(Para 4.2.6.9-b)

4.2.1 Introduction

Prior to 1981 there were only three Passenger coach factories in the country viz. Integral Coach Factory Perambur; Bharat Earthmovers Ltd. Bangalore and Jessop& Company Ltd Calcutta. They were having a production capacity of 800 coaches, 300 to 400 coaches& 250 coaches respectively. The annual requirement of coaches for Indian Railways was assessed by the Railway Reforms committee at 2620 coaches per annum while the capacity available was only 1400 coaches per annum. The shortfall of 1220 coaches per annum was proposed to be met by enhancing the annual production capacity of ICF for manufacture of 200 additional Coaches and setting up of a new factory with a production capacity of 1000 Coaches per annum at Kapurthala. Ministry of Railways decided in 1981 to set up a Coach Production unit for the

Indian Railways, accordingly the Rail Coach Factory at Kapurthala (RCF/Kapurthala) was setup in 1986 with an installed capacity of 1000 coaches per annum. The first coach was rolled out on 31st March 1988 and thereafter its production progressively increased from 1000 to 1400 under the Expansion Project-I[147]at a cost of₹55.42 crore sanctioned by Railway Board in December 2006. The installed capacity was further increased to 1500 coaches per annum under the Expansion Project-II[148]in April 2008 at a sanctioned cost of ₹37.97crore.

Rail coach Factory, Kapurthala is now manufacturing more than 1500 coaches[149] per annum which includes around 325 to 470 LHB[150] coaches. Since production began, in March 1988, RCF has already manufactured 28,863 coaches for Indian Railways up to March 2014.It is equipped with *state-of-the-art* Plant and Machinery having specialized facilities like laser cutting, plasma cutting, robotised welding and spot welding facilities.

Budget for RCF is provided in Demand No. 16 under Rolling Stock. The annual budget allotment during the last three years (2011-12 to 2013-14) ranged from ₹2049 crore to₹2325 crore. 66 per cent to 70 per cent of gross budget of RCF was spent on procurement of raw material for manufacturing of coaches, 13 per cent to 15 per cent on labour payment, three per cent to six per cent on creation of new assets and the balance were the over-heads.

No detailed study on the working of RCF/Kapurthala has been done during recent past. It has, therefore, been considered appropriate to conduct a review on Functioning of RCF, Kapurthala as all the activities viz., Designing, Planning, Manufacturing of coaches, procurement of material and projects management are carried out under its administrative control.

4.2.2 Organisational structure

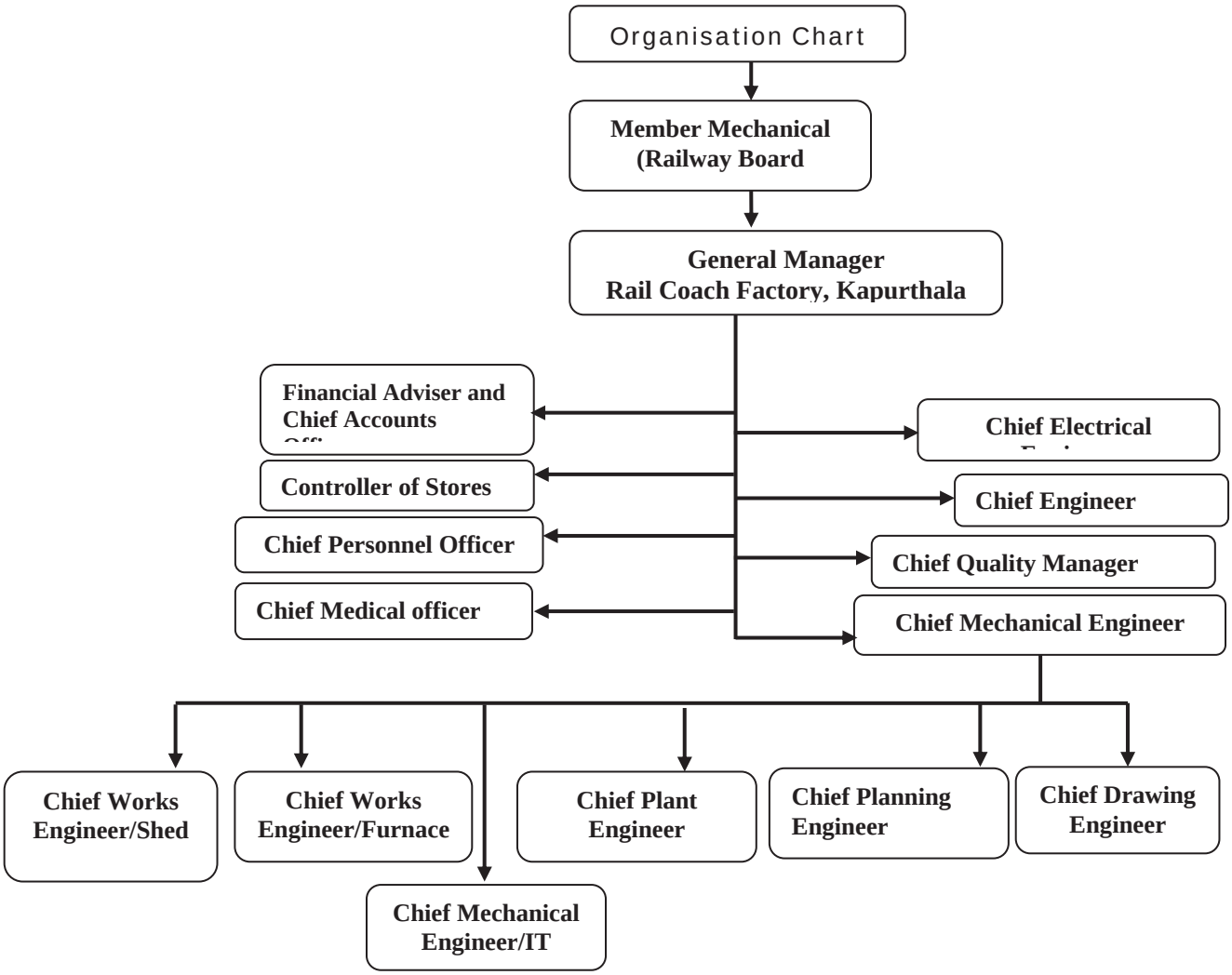
RCF is headed by a General Manager who functions directly under the control of Member Mechanical in Railway Board. He is assisted by Heads of Department of Mechanical, Electrical, Civil Engineering, Stores, Personnel, Medical, IT, Quality control and Accounts.

[147] Sanctioned under Item No. 5 of Pink Book 2005-06. Contract between RCF and M/s IRCON was made on 12/12/2006

[148] Sanctioned under Item No. 4 of Pink Book 2008-09. Contract between RCF & M/s RITES was made on 19/04/2008

[149](A): Conventional Coaches: GS, SCN, VPUHX, SLRD/SLR, MEMU/MC, MEMU MC (FTM), MEMU TC, WGACCN, ACCN cum ACCW (B): LHB Coaches: LWFCZAC, LFCWAC, LWSCZAC, LWLRRM, LWFAC, LWACCW, LWACCN, LWCBAC, LWCZDAC, LWSCN, LWSCZ, LGS

[150]Linke Hofmann Busch coaches developed by Linke-hofmann-Busch of Germany (renamed ALSTOM LHB GmbH in 1998 after take over by ALSTOM). Initially some AC coaches were imported from Germany. But after Transfer of Technology, RCF started manufacturing LHB coaches since 2001-02



4.2.3 Audit scope and methodology

Department wise activities of General Manager, RCF, Kapurthala were examined in Audit. Relevant files and records related to Planning, Operation and Manufacturing, Design, Mechanical, Electrical, Stores, Quality and Accounts Departments covering a period of last three years from 2011-12 to 2013-14 were also examined.

4.2.4 Audit objectives

The objectives of this audit were to obtain reasonable assurance whether:-

- Prescribed budgeting and accounting procedures[151] to ensure proper allocation and utilization of funds were followed;

[151] Rules and procedures mentioned in Chapter-III of Indian Railway Finance Code Vol. I, Chapter-XV of Indian Railway Code for the Mechanical Department (Workshops), Chapter XXXI of the Indian Railway Code for the Stores Department & Chapter –VI of Indian Railway Code for the Engineering Department

- Production activities were planned and executed with efficient Material Management and the procurement of the plant &machinery was judiciously done. An effective system of quality control existed and that the users' complaints about defects in coaches were attended to promptly. Required manpower was in position and the same utilised efficiently;

- An effective monitoring and internal control system existed

4.2.5 Audit criteria

This audit was carried out with reference to provisions of the relevant paras of Indian Railway Codes for Finance Department, Accounts Department, Mechanical Department and Stores Code as well as the instructions/ orders issued by Ministry of Railways and RDSO[152] from time to time.

4.2.6 Audit findings

4.2.6.1 Financial Management

Rules and provisions mentioned in the financial and other related codes as applicable to a production unit under the Ministry of Railways are applicable to RCF/Kapurthala for maintenance of its accounts and budget. Funds to RCF are allotted under Demand No. 16 – 'Rolling Stock' under three sub-heads viz. 7100[153], 7200[154] and 7300[155] for manufacturing of coaches whereas for creation of infrastructure and replacement of assets, funds are allotted under Capital and Depreciation Reserve Fund (Plan head 1700[156], 3600[157], 4100[158], 4200[159] and 6400[160]). Details of funds demanded, original budget allotment, final budget allotment vis-à-vis actual expenditure incurred during 2011-12 to 2013-14 are given below:

Table 4.6 (₹in crore)

Year	Funds Demanded	Revised Budget Estimate	Final Budget Allotment	Actual Expenditure	Excess (+)/Surrender (-)	
					w.r.t. final allotment and Actual Expenditure	w.r.t. Funds Demanded and Actual Expenditure
2011-12	2046.70	2012.03	2049.12	2096.47	(+) 84.44	(+) 49.77
2012-13	2342.39	2290.19	2324.72	2327.66	(+) 37.47	(-) 14.73
2013-14	2549.35	2276.18	2194.00	2193.08	(-) 83.10	(-) 356.27

Source: Records of Books and Budget section of RCF/Kapurthala

It is observed that the actual expenditure exceeded the budget allotment in the years 2011-12 and 2012-13, while there were savings of funds allotted during 2013-14. The reasons offered by the RCF Administration for the variations in

[152] Research Design and Standard Organisation
[153] Stores Suspense: Procurement of stores for manufacturing purpose
[154] Manufacturing Suspense: All expenditure relating to manufacturing activity
[155] Miscellaneous Advances: Issue of stores for fabrication
[156] Computerization: Expenditure relating to computer hardware, software, servers etc.
[157] Other Electrical works: Expenditure relating to Electrifications of Township & Service buildings etc.
[158] Machinery & Plant: Expenditure relating to procurement of Plant & Machinery
[159] Workshops including Production Units: Expenditure relating to infrastructure of Workshop & Production Units
[160] Other Specified works: Works which are not categorized chargeable to other Plan Heads

the actual expenditure with reference to the Budget provisions are indicated in the table below.

Table 4.7

Year	Reasons for the expenditure incurred in excess of the Budget provisions or actual being less than the Budget provisions
2011-12	Procurement of material at the fag end of the year due to change in the production plan and enhanced appropriation to DRF
2012-13	Receipt of unanticipated debits (demand for payment) from COFMOW, DGS&D and Central Railway on account of procurement of machines and materials.
2013-14	Due to change in the production plan

Further, wide variations were observed between fund demanded and actual expenditure ranging between ₹14.73 crore to ₹356.27 crore indicating that the requirement of funds was not properly assessed.

(a) Budget for manufacturing of Coaches

For manufacturing activity Budget Estimate is prepared on the basis of tentative production programme and at the time of Revised Estimate it is modified on the basis of approved production programme. The year wise position of manufacturing budget with reference to number of coaches at BE and RE stages and actual expenditure on manufactured coaches relating to review period is depicted in Table as follows.

Table-4.8

Budget figures in thousand ₹

Particulars	LHB Coaches		Conventional Coaches		Shells		Total	
Budget Stages	No. of coaches	Amount	No. of Coaches	Amount	No. of Shells	Amount	No. of Coaches & Shells	Amount
YEAR: 2011-12								
BE	426	9284838	1158	9255162	0	0	1584	18540000
RE	426	9520814	1158	9379505	0	0	1584	18900319
ACTUAL	326	7851854	1159	10022633	71	867016	1556	18741503
YEAR: 2012-13								
BE	693	13934059	891	6967621	0	0	1584	20901680
RE	505	10980375	1122	9688504	45	576290	1672	21245169
ACTUAL	470	10125240	1160	9993205	38	522249	1668	20640694
YEAR: 2013-14								
BE	450	10298038	1100	10302573	100	1359074	1650	21959685
RE	375	8300410	1206	10134494	157	2218974	1738	20653878
ACTUAL	387	8478681	1164	9920567	159	1772320	1710	20171568

Source: Records of workshop section of RCF/Kapurthala

From above it is observed that every year there were wide variations between the budget demanded with reference to number of LHB Coaches to be manufactured and debit raised (expenditure incurred) for actual LHB coaches manufactured with reference to their number. It is concluded that preparation of budget requirement for the coach manufacturing was not realistic**.**

(b) Excess Appropriation of Depreciation Reserve Fund

Depreciation Reserve Fund (DRF) bears replacement cost of assets. Appropriation to DRF is made every year for this purpose. As per Railway Board's instruction[161]the depreciation provision on machinery and plant(M&P) should be at 4 per cent of asset value and 1.25 per cent on civil engineering assets. Actual calculation of depreciation and its correct appropriation to DRF is hence essential to work out the correct cost of the product namely coaches. In RCF Kapurthala, the extant orders of Railway Board were not followed and excess Appropriation to DRF amounting to ₹ 82.71 crore was made during the year 2011-12 to 2013-14 as under:

Table 4.9

Year	Excess appropriation to DRF (in `)
2011-12	33,40,76,878
2012-13	26,22,94,737
2013-14	23,06,85,305
Total	**82,70,56,920**

Source: Appropriation Accounts of respective years & calculation made by audit

As Appropriation to DRF is considered a component of cost of the product, this resulted in unnecessary increase in cost of coaches, besides avoidable increase in the liability towards payment of Dividend[162] of ₹ 3.31 crore to General Revenues[163] during 2011-12 to 2013-14[164].

(c) Excess credit balance in Workshop Manufacture Suspense (WMS)

In Work shop manufacturing suspense (WMS) cost of labour, material and over heads are booked as expenditure under the particular work order and posted on debit side (expenditure side) of account. Credits afforded by Railway Board towards the cost of coaches are posted on the credit side (receipt side) of the WMS account of RCF.

Para 1224(3) of Indian Railway Code for Mechanical Department provides that there should be no credit items in WMS and if there are any such items they should be immediately adjusted.

A review of work shop general register for the month of year ending of 2011 to 2014 (i.e. March ending of each year) revealed that credits received (for the cost of coaches realised) were more than the available debits (expenditure booked) resulting in credit closing balances as indicated below:-

[161] letter No.86-B-314(pt) dated 28.08.1987
[162] The dividend is payable on the capital borrowed from the Government of India.
[163] Government of India (Capital investments being funded from General Budgetary Resources by GOI)
[164] On the basis of present rate of dividend 4 per cent per annum

Table 4.10

As on	Number of work orders	Amount in ₹
31-03-2011	27	4749303761
31-03-2012	31	2298269833
31-03-2013	28	5425241492
31-03-2014	25	4133430021

Audit scrutiny revealed that the appearance of credit closing balances against the work order has been due to raising of debits[165] by the RCF to Railway Board at estimated cost in place of actual cost whereas cost of labour, material and over heads etc. have been booked into WMS on actual basis. The main impact of excess credits[166] in WMS on Railways was on cost of coaches as coaches were transferred to Railways at inflated cost. In the absence of required details at RCF/Zonal Railway level, the resultant impact on the dividend liability of IR could not be verified.

When the above issue was raised by Audit (2008), RCF Administration set up a committee of three Junior Administrative Grade officers (2009) to scrutinize the system lapses and to explore the remedial steps to overcome the problem. The committee was expected to submit its report within three months. However, even after six years the report has not been finalised by the committee.

4.2.6.2 Production Plan

Initially at the Railway Board level, the assessment of requirement is done by the Mechanical Engineering department of Railway Board and the Production Plan for five years is drawn up at Railway Board. This is followed by annual Rolling Stock Programme (RSP) and Coach Production Programme finalised by Railway Board for every year. As per Para 1503 of Indian Railway Code for Mechanical department provisions for new coaching stock in the annual RSP are to be made at least two years in advance. The said para of the code also states that it is necessary to match the requirement in each year of the plan period and also to provide lead time for the procurement of raw material by the Production Units.

On the basis of approved RSP, the RCF Administration prepares their tentative internal production programme one year in advance of production by the end of March every year to facilitate timely material procurement. Tentative coach production programme is also sent to Railway Board for approval. On the basis of tentative production programme Railway Board communicates the targets for manufacturing of coaches and their distribution according to the need of respective Zonal Railways.

It is important for a Production Unit to fix production targets every year and ensure their achievement consistently. Details of the finalisation of Rolling Stock Programme (RSP) and Coach Production Programme during 2011-14 are indicated in the table below.

[165] Placing demand for realizing cost/expenditure incurred on manufacturing coaches)
[166] Amount realized from the Zonal Railways towards the cost of coaches transferred to them

Table 4.11

Year	Rolling Stock Programme(RSP)		Coach Production Programme			
	RSP due for finalization	RSP actually finalised	Due for finalization in	Coach Production Programme		
				Sent by RCF	Finalised by RB	Revision by RCF
2011-12	April 2009	February 2011	April 2010	April 2010	Feb. 2011	Oct. 2011
2012-13	April 2010	Record not furnished	April 2011	May 2011	Jan. 2012	Dec. 2012
2013-14	April 2011	February 2013	April 2012	April 2012	April 2013	Dec. 2013

From the table above it is observed that Annual Production Programme of RCF for the years 2011-12, 2012-13 and 2013- 2014 were finalized belatedly by Railway Board. Further, Railway Board changed the finally approved Production programme of RCF five times for the year 2012-13[167] and once for the year 2013-14[168]. Scrutiny of records revealed that frequent changes were due to variation in the actual requirement of coaches based on trains announced, priorities to trains in annual Budget speech. Hence, RCF was asked to produce 46 Double Decker coaches (12th June 2012) to introduce Double Decker trains in the system as per the budget announcement. Later, RCF was again advised (22 June 2012) to manufacture 1630-1650 coaches against the original target of 1600 coaches (conventional General Service type coaches) based on Hon'ble Prime Minister's approval of upward revision of coach production target from 3816 to 4000 in order to accommodate greater demand.

RCF also undertook revision of the finally approved production programme for the year 2011-12, 2012-13 and 2013-14 due to following reasons:

Table 4.12

Year	Reasons for revision of coach production programme
2011-12	The RCF Administration proposed revision in their production programme for the year 2011-12 to Railway Board (20th October2011) to manufacture only 2 left over non-RSP coaches in place of 16 non-RSP[169] Coaches sanctioned for the year as no order for these coaches was received from outside parties. Further, RCF suggested to RB not to produce 10 VPRs[170] sanctioned for the year as air-conditioning equipments were not finalized on time.
2012-13	The RCF Administration proposed to Railway Board (12th July 2012) to replace 25GSLR[171] coaches with GSLRD[172] coaches as the RCF has stopped the manufacturing of GSLR coaches since 2001-02.Subsequently, RCF proposed to the Board (22nd

[167] 06/2012 (Three times), 12/2012 (Two times)
[168] 04/2013
[169] Coaches other than Indian Railways
[170] Refrigerated Parcel Coach
[171] General sitting cum luggage coach
[172] General sitting cum luggage coach for disabled passengers

	December'2012) to reduce the production of LHB coaches(40 nos.) due to changes in design of SBC[173]of non-AC LS[174] and LWSCN[175] coaches, modification in bogie design, lower luggage rack and water tank in LS coach and uncertainty in supply of CBC[176], Axle mounted disc brake system and LHB wheel disc.
2013-14	RCF proposed to Railway Board (12th December 2013) to reduce the production of WGACCN coaches from 270 to 220 coaches due to non availability of RMPUs by compensating the same by manufacturing 80 additional GS coaches.

Audit scrutiny revealed that:-

- Production of Hybrid coaches[177] had been discontinued by Railway Board in 2011. However in RCF Kapurthala 49 items pertaining to Hybrid coaches worth₹ 1.11 crore are still lying unutilised.
- On the basis of tentative production programme for the year 2013-14, RCF started procurement of materials for 75 double decker coaches (5 Rakes). Railway Board, subsequently, advised in July 2013 not to manufacture more than 30 Double Decker coaches (2 Rakes) and no Double Decker coach was planned to be manufactured in the year 2014-15. As a result, 44 items relating to Double Decker coaches worth₹ 1.07 crore remained unutilised.

Thus, changes in Production programme by Railway Board/RCF led to procured materials such as transformers, CDTS[178], Hard Plastic sheet etc. remaining unutilised. At the beginning of April 2011, there were 1819 items of stores valuing ₹ 20.49 crore lying unutilized which increased to 2651 items valuing ₹ 31.93 crore at the end of March 2014.

(a) Targets and achievements of Production

It is important for a Production Unit that production targets fixed every year are achieved consistently. During the review period manufacturing capacity of Rail Coach Factory Kapurthala was 1500 coaches per annum. The year wise target vis-à-vis actual out turn of coaches during 2011-12 to 2013-14 is given in Table below[179]:

[173] Side Buffer Coupler
[174] General 2nd class coach LHB type
[175] Sleeper class coach LHB type
[176] Centre Buffer Coupler
[177] LHB coaches with conventional ICF Bogie
[178] Controlled discharge toilet system
[179] Para 6.1.1 relate to figures provided by Accounts Department of RCF at different budgetary stages whereas Para 7.1.1 relate to actual production figures of Mechanical Department RCF. In Para 6.1.1 and 7.1.1, there was a difference of 9 coaches between figures of actual production in the year 2012-13 and 2013-14. It was due to the fact that debit in respect of these 9 coaches shown manufactured in the year 2012-13 by the Mechanical department were actually raised during the year 2013-14.

Table-4.13

Type of Coaches	2011-12		2012-13		2013-14		Total	
	Target	Actual	Target	Actual	Target	Actual	Target	Actual
LHB Coaches	426	326	693	470	395	387	1514	1183
Conventional Coaches	1062	1047	795	1026	1072	1060	2929	3133
MEMU MC/TC	112	112	112	136	112	102	336	350
Shells for RBL	60	71	75	45	150	152	285	268
Total	**1660**	**1556**	**1675**	**1677**	**1729**	**1701**	**5064**	**4934**

Source: Railway Board orders, records of FA&CAO & CME office

From the above table it may be seen that:

- Although the production of coaches was more than the installed capacity during the year 2011-12 and 2013-14 production targets fixed were not achieved whereas during the year 2012-13 production targets were achieved by manufacturing more conventional coaches in lieu of LHB coaches.
- Against the total target of 1514 Nos. LHB coaches fixed by the Railway Board the actual outturn by RCF was 1183 coaches (78 *per cent*). On the other hand, 3133 conventional coaches were manufactured against target of 2929 coaches (107 *per cent*).

Initial targets fixed for manufacturing of LHB coaches have not been achieved by RCF. During the production years 2011-12, 2012-13 and 2013-14 against the target of 426, 693 and 395 RCF could manufacture only 326, 470 and 387 LHB coaches respectively whereas a project for complete switchover to LHB stainless steel coaches had already started in April 2008.Further, in February 2012, High level safety review committee in its report had recommended complete switchover to LHB type coach production and stopping the production of conventional type of coaches due to safety reason. The report of the Expert Group for modernization of Indian Railways has also recommended modernization of rolling stock by manufacture of LHB type coaches with speed potential of 160/200 kmph. Despite investing ₹ 49.80 crore up to March 2014 for augmenting the LHB coach production, RCF was not able to manufacture more than 470 LHB coaches till date in any production year and majority of coaches produced in RCF are still of conventional type. The relatively higher production of conventional coaches goes against the objective of phasing out of conventional coaches.

4.2.6.3 Costing System

(a) Cost comparison between manufacturing in house and procurement from trade

The basic objective of job costing in Railway Workshops as envisaged in Para 902 of Indian Railway Code for Mechanical Department is – (a) to compare the cost of similar articles manufactured from time to time in workshop and finding out reasons for variations in cost and (b) to compare the cost of articles

manufactured in workshop with those manufactured in other Railway or with the market price of similar articles. In order to comply with the above codal provisions, working out the cost of shop manufactured items is essential. A review in Audit revealed that:-

Cost documents such as Job cards, Route Card, Idle Time Cards and Cost Sheets etc. were not maintained. Further, every year shop manufactured items were off- loaded to trade without taking into account the cost of in-house production. In the absence of above records, cost analysis of Shop Manufactured items and procurement made from trade could not be carried out in Audit.

(b) Non-implementation of Codal provision for costing of coaches

Various types of coaches manufactured in RCF are mainly intended for use in Indian Railways. As such, while transferring the rolling stock to various railways, the cost thereof is also debited[180] to them through Railway Board by RCF. This transfer is done on 'no profit no loss basis'. Two different methodologies are adopted for fixation of transfer prices[181] viz. (a) where lines of Production have been stabilised and (b) where lines of production are yet to be stabilised[182].

Production of coaches in RCF having been stabilised long ago, the Zonal Railways are required to be debited[183] with the actual cost of production from time to time. However in RCF codal provision[184] for costing of coaches was not being fully observed as transfer of coaches to Railways is done at estimated cost. On this being pointed out in audit, RCF administration stated that the transfer cost price of coaches supplied to Zonal Railways is worked out taking material cost based on Unit Material schedule and manpower cost including overheads. The cost worked out by this method is fairly correct as it takes into account all the items required for manufacture of coaches and system to work out batch cost is less accurate compared to unit material cost. This reply is not acceptable as the codal provisions should either be followed or got suitably modified.

(c) Payment of excess Excise Duty

As per provisions[185] contained in Indian Railway Code for Mechanical Department, cost reports are to be finalized within 10 weeks after the issue of completion certificate for a Batch order in order to finalise the actual cost of the coaches produced by RCF. However in RCF above codal provisions are not being followed as costing is done at estimated price.

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[180] Raising the demand for getting payment for the coaches manufactures and transferred to respective Zonal Railway

[181] Cost at which manufactured coach is transferred to Zonal Railways (incidentally it is not the actual cost

[182] Paragraph No. 1348 of Indian Railway Code for Mechanical Department (Workshops)

[183] Placing demand for realizing cost of manufacture

[184] Chapter No. 13 & 14 of Indian Railway Code for Mechanical Department (Workshops)

[185] Paragraph No. 1337 to 1343 of Indian Railway Code for Mechanical Department (Workshops)

Non adherence to the codal provisions resulted in Central Excise Department charging excise duty on 110 per cent of transfer price instead of 100 per cent w.e.f. 20.04.2011[186]in terms of Rule 11 of Central Excise Valuation (Determination of price of excisable goods) Rules, 2000 which provides that "If the value of any excisable goods cannot be determined under the foregoing rules, the value shall be determined using reasonable means consistent with the principles and general provision of these rules and sub –section (1) of Section 4 of the Act." The reasonable means to determine the assessable/transaction value under the side rule 11 appeared to be application of the method given in Rule 8 of Central Excise Valuation (Determination of price of excisable goods) Rules, 2000 i.e arriving at the assessable value at 110 per cent of the cost of manufacture of the goods.

As a result of this an amount of ₹ 8.25 crore had been paid up to 31st March 2014 towards avoidable differential excise duty.

4.2.6.4 Procurement and performance of Plant & Machinery

Plant and Machines are essential for efficient and proper production/maintenance as well as manufacturing of different kinds of parts and components of Rolling Stock.As per assets register of Rail coach Factory 2035 plant and machines costing ₹ 429.80 crore are available for production activities. It was observed that CNC Press Brake 650-T machine and Cut to Length Line Machine were procured in the year 2009 and 2012 respectively but could not be utilised due to their non- commissioning. Further some surplus machines were lying at RCF for want of disposal or transfer to other Railway. The details are discussed below:-

(a) Cut to Length Line Machine (M/s DIMECO, France)

A Cut to Length Line Machine was procured from M/s DIMECO, France[187].The Machine was received at RCF in October 2012. As per terms of contract 80 per cent payment amounting to ₹ 8.87 crore was made to firm. After installation, trials for commissioning conducted from 08 to 14 November 2013 and again from 26 February to 05 March 2014 were not successful. COFMOW was advised (by RCF) to reject the machine on 26 March 2014. An expenditure of ₹ 11.62 crore towards 80 per cent cost of machine, inspection fee, freight and COFMOW' share was made by RCF but all the expenditure is unproductive so far.

(b) CNC Press Brake 650-T (M/s Hindustan Hydraulics)

RCF procured this machine from M/s Hindustan Hydraulics PVT. Ltd. Jalandhar at a cost of ₹ 1.32 crore (excluding excise duty and sales tax). The

[186] As per Central Board of Excise and Customs (CBEC) Notification of March 1995 (General Exemption No.16 vide notification No.62/95-CE dated 16.03.1995), Rolling stock (Locomotives, Coaches and Wagons) manufactured in production units of Indian Railways for Zonal Railway's use were exempted from payment of Excise Duty and accordingly no such duty was paid by them. However, vide their Notification of 20th April 2011, CBEC withdrew the exemption given to these Rolling Stocks etc and imposed Excise Duty with effect from 20.4.2011.

[187]vide COFMOW AT NO. COFMOW/G-563/10

machine was received on 08 May 2009. As per terms of purchase order, 90 per cent payment amounting to ₹1.44 crore (after deducting liquidated damages) was made to firm in January 2010.Clear site for installation of machine was already handed over to the firm in June 2009. Prove out trial of components conducted with Bending Manipulator on 21/02/2013 was not successful. No commitment was, however, given by the firm for completing the work and expenditure of ₹ 1.44 crore remained unproductive.

(c) Non disposal of surplus machines

Ten surplus machines costing ₹ 0.62 crore lying at RCF for want of disposal or transfer to other Railway for more than five years were not disposed off/transferred as detailed below:

Table 4.14

S.No.	Description of Machine	Original Value (in ₹)	Date of commissioning
1	CNC Oxy fuel Cutting Machine	39,00,000	07/02/1990
2	Pillar type all geared heavy duty machine	28,136	09/01/1991
3	Static Bogie Testing Machine	5,42,700	12/04/1988
4	Radial Drilling machine RM-66	1,65,708	27/06/1987
5	Mortising Chain and Chisel Double Head Heavy Machine	1,60,000	29/06/1989
6	Pneumatic Hyd cross cut Saw	1,51,000	10/12/1989
7	Pneumatic Hyd cross cut Saw	1,41,000	16/02/1989
8	Pneumatic Hyd cross cut Saw	1,51,000	10/1/21989
9	Automatic Submerged arc Welding Plant	8,00,000	24/03/1990
10	Resin Glass Spray Unit	1,79,500	24/03/1990
	Total Value	**62,19,044**	

These machines were offered to all the Zonal Railways (February 2013) but no response was received. Subsequently, due to non initiation of the condemnation process through survey committee these machines were yet to be disposed off as of September 2014.

4.2.6.5 Workers' Safety and Environmental issues

After examination of workers' safety and Environmental issues, Audit highlighted (July 2013) following issues to RCF Administration, reply of which has not been given so far (May 2015):

- Lay out plan still remains to be approved by the competent authority i.e. Director of Factories Punjab even after 25 years of setting up of RCF. Further, there is no system in place in the RCF to assess risk associated with workers' safety in the factory premises.

- Periodical medical examinations (PME) were not conducted and a number of PME were pending since the staff was not spared by the shop authorities.
- Compliance with requirements to use Personal Protective Equipments (PPE) by workers was not being monitored.
- Painting of coaches was being done outside the paint booth. Exhaust fans provided at window level in the Paint shop throw hazardous fume on the road. Heavy dust leakage was observed during shot blasting of coaches in shot Blasting Plant. Two dust extractors in Carpentry shop were out of order causing heavy wooden dust in the shop.

4.2.6.6 Materials/Stores Management

Stores play an important role in Rail Coach Factory for production activities. Effective stores management ensures timely availability of essential items for production requirement of Rail Coach Factory with minimum blocking of capital by timely ascertaining the needs of stores and arranging such material in the most efficient, economical and expeditious manner.

Stores management includes the entire range of functions that affect the flow, conservation, utilization, quality and cost of materials, receiving, transportation and disposal of scrap etc.

After receipt of confirmed coach production programme from the Railway Board for the ensuing year, Material Schedule and indents for various Mechanical and Electrical items are prepared by the Planning Department and sent to the Stores Department for procurement. The Stores Department of RCF is responsible for procurement and availability of material required for production of coaches and Machinery and Plant Items. The procurement of the various items is generally done from the open market by floating tenders. Besides, some items required for production are generated within the workshop.

For all purchases where the estimated value exceeds ₹ 5 lakhs, Advertised tenders were invited after giving wide publicity through a number of newspapers etc. Limited tenders are invited by soliciting quotations from firms of repute dealing with the subject material if the estimated value of the material to be purchased does not exceed ₹ 10 lakh and in all cases for safety items not exceeding ₹ 2 crore. Single tenders are also invited for proprietary articles on the basis of the certificate furnished by the Head of the Department that the subject material is manufactured only by a particular firm.

While considering the procurement, generally the demands are prepared four to nine months in advance before the actual requirements. In the tenders, the contractors are asked to keep their offers valid for a specific period say 90 days period from the date of opening. Material management of RCF/Kapurthala has been examined and following areas for improvement were observed:

(a) Unnecessary procurement of Material valuing ₹ 3.11 crore

A review of store items in Material Management Information System (MMIS) revealed that 157 stores items valuing ₹ 3.11 crore procured during the period 2006-2012 were never issued. It depicts lack of planning and forecasting on the part of RCF Kapurthala.

(b) Turnover ratio

Turnover ratio[188] measures the efficiency of inventory management. Excessive percentage of turnover ratio denotes lesser issues and/or more receipts during the year thereby increasing the value of closing balance of inventory at the end of the year. Since the closing balance of inventory is linked with blocking up of capital, the level of TOR should be kept to the minimum possible. Details on the projected TOR vis-à-vis actual are indicated in the table below:-

Table 4.15

Year	Projected TOR in Revised Budget Estimate (Percentage)	TOR in Final Budget Grant (Percentage)	Actual Turn Over Ratio (Percentage)
2011-12	14.74	14.35	15.86
2012-13	16.37	17.31	17.37
2013-14	19.07	19.55	19.03

Turnover Ratio has not been fixed by Railway Board.However it has been fixed at local level in each Budgetary Review at RCF. It may be seen from the above table that every year projected TOR was higher than the previous year level. It was noticed that value of stock held at the end of March 2012, 2013 and 2014 was substantial being ₹ 250 crore, ₹ 328 crore and ₹ 327 crore respectively. Out of these value of inactive items was ₹ 27.74, ₹ 28.31 and ₹31.93 crore respectively which indicates that efforts had not been made by the RCF Administration to control the TOR.

4.2.6.7 Performance of approved vendors

As per terms and conditions of purchase orders placed on approved vendors for the supply of material, the firm should complete the supplies within due date of delivery mentioned in the Purchase Order (PO). The performance of the vendors can be judged from their efficiency in this regard.

During the review period 11,281 purchase orders were placed. In case of 3484 purchase orders (31 per cent) valuing ₹ 337 crore the supplies were completed after the originally fixed delivery dates. In case of 1171 purchase orders (10 per cent) valuing ₹ 198 crore the material was not supplied at all. It is pertinent to mention here that most of the vendors on which the POs were placed were RCF approved vendors. Position of delayed supplies is indicated in the table as follows:-

[188]Ratio of year end balance of stores held in stock to total issues made during the year

Table 4.16

Year	No. of POs	Value of POs (in ì crore)	Range of delays in supplies
2011-12	632	48.00	1 day to 29 months
2012-13	1323	151.31	1 day to 23 months
2013-14	1058	110.89	1 day to 15 months
2014-15*	471	26.52	1 day to 6 months

* Up to October 2014

(a) Avoidable expenditure of ₹ 7.17 crore due to purchase from Part-I approved sources at higher rates

Railway Board has fixed eligibility criteria and condition for distribution of quantity on Part I & Part II approved firms[189] on the basis of their capacity & capability but no criteria is fixed for margin of difference in rates of Part I & Part II approved firms. Lack of clear instructions in this regard is causing recurring excess avoidable expenditure in crores of rupees. Part I approved firms quote higher rates by virtue of their approved status and secure order for 75 to 80 per cent of the tendered quantity despite quoting much higher rates than Part II approved firms. In eight cases test checked in Audit, it was observed that Part I approved firms quoted rates ranging between 15 and 93 per cent higher than the rates offered by Part II approved firms and their offers were considered for placement of Purchase order. As a consequence, RCF Administration had to incur excess avoidable expenditure of ₹ 7.17 crore.

On being pointed out RCF Administration referred the matter to Railway Board but no policy decision has been taken by Railway Board so far.

(b) Rejection of material pre-inspected by RITES/RDSO

In respect of safety items being procured as per RDSO approved specification and from RDSO approved sources, the inspections before the supply of materials are conducted by RDSO. RITES conduct inspection in respect of materials where value of the purchase order exceeds ₹ 1 Lakh. In order to ensure quality of materials, stores are pre-inspected by RITES/RDSO and after ensuring the quality, the store material is supplied. As such, their quality certifications are very important as 90 per cent advance payments are made to the supplier firms based on the certification. In normal course, there should be no rejection of material supplied by firms after the issue of inspection certificates by these agencies.

Audit scrutiny revealed that stores pre-inspected by RITES/ RDSO were rejected by RCF in 1781 cases during 2011-12 to 2013-14, out of which in 1587 cases either the defects were rectified by the supplier or cost of rejected material was recovered wherever advance payment was made. As on 31st March 2014, the remaining 194 rejection cases valuing ₹ 0.43 crore had not been settled. The rejection of materials after inspection by RITES/ RDSO indicates that the inspection was not done properly by these agencies. Inspections need to be adequately strengthened as most of the items are categorised as vital or safety equipment.

[189]Director Railway Stores (IC) letter No. 99/RS(G)/709/1Pt.1 dated 29/06/2007 (RBE No. 09/2007)

4.2.6.7 Quality Control

(a) Quality assurance during production

RCF does not have an elaborate system of inspection and clearance by a separate set of Quality Control Staff at all stages of coach manufacturing. As per Integrated Management System of Quality Control approved by General Manager/RCF Kapurthala the quality assurance of the product is ensured by self-inspections. Quality control staff checks the coach only at a few nominated check points like final clearance of shell, bogie, painted shell and furnished coach and a few other intermediate stages. At all the other stages the concept of self-inspection by production staff is practiced, wherein after completion of the stage work, production staff carry out inspection of the work done and record results on Self Inspection Proformas (SIP's). The Quality control Section carries out audit checks on the self-inspected stages to ensure that self-inspection is being effectively carried out. Suitable corrective action is initiated, wherever necessary.

There are separate formats for each type of coach for each stage/group for ensuring quality control at each stage. The data regarding frequency of cases of faulty production at various stages during the review period was not provided to audit citing the reason that it was not compiled since it was quite voluminous. It was stated that defects observed by quality staff are advised to the respective Production groups for taking corrective action and after attending to the defects production staff reoffer the product for quality inspection.

(b) Quality assurance after production

Every coach produced in RCF is dispatched accompanied by a Warranty Certificate[190] also called Rolling Stock certificate valid for 06 months. In addition, RCF also has Customer Service Cell to maintain close liaison with Zonal Railways, which collects feedback on the performance of RCF coaches from various Zonal Railways for corrective action.

Detail of complaints registered, parts failed and cases of en-route detachment under warranty noticed during the review period are indicated in the table given below:-

Table 4.17

Year	Number of complaints	Cases relating to parts failed	Cases relating to En-route detachment[191]
2011-12	108	382	2
2012-13	206	1981	6
2013-14	260	1891	3

Source: Records of CQM/RCF office

From above it is seen that number of complaints registered and cases relating to parts failed have increased considerably over the years. During the review

[190]Detail of items under warranty fitted in a coach with name of suppliers

[191]Enroute detachment means detaching of coach from the rake for safety reason in case a serious defect relating to safety nature observed by the train examination staff

period there were 11 cases of en-route detachment of RCF built coaches which is a very serious lapse endangering life of passengers. Out of these, two cases relate to improper POH/IOH. In six cases firm replaced / agreed to replace the defective material being under warranty. In two cases cause of detachment was not attributable to RCF. In remaining one case poor workmanship was observed and Disciplinary and Appeal Rules (D&AR) case was initiated. Due to en-route detachment coaches remained idle till replacement of failed part/ necessary rectification.

4.2.6.8 Human Resource Management

(a) As per installed capacity of RCF, staff strength of different categories of workers is sanctioned whereas no shop wise sanctioned strength is available in the Personnel Branch of RCF. The 'allowed time' required for the completion of job is determined on the basis of time and motion study which in turn forms the basis for payment of incentive and working out the requirement of outsourcing. RCF made projections every year of man hours required duly considering the available man-hours with reference to the production programme. The requirement of hours over and above the available man hours was proposed to be outsourced.

Industrial Engineering wing of Planning Department calculates authorized manpower for all Production Groups and Plant based on the production plan received from Railway Board. The authorized manpower is required for the purpose of Incentive calculations under Group Incentive Scheme. This calculation of authorized manpower is based on the work study of report of M/s RITES approved by Railway Board.

RCF made projections every year of man hours required in terms of GSU[192]. The targeted GSU and achievement vis-à-vis shortfall in achievement of GSU during the review period is mentioned below:

Table 4.18

Year	Target		Achievement		Shortfall in achievement of GSU (Col. 3- Col. 5)	Direct labour cost of GS coach	Total financial implication (in ₹) (Col. 6 x Col. 7)
	Nos. of Coaches & Shells	GSU	Nos. of Coaches & Shells	GSU			
1	2	3	4	5	6	7	8
2011-12	1660	2608	1623	2540	68	448400	30491200
2012-13	1675	2911	1732	2787	124	583885	72401740
2013-14	1729	2753	1604	2386	367	675315	247840605
Total	**5064**	**8272**	**4959**	**7713**	**559**		**350733545**

Source: Information provided by Planning Department of RCF (Number of coaches and GSU shown for incentive purpose)

On the basis of analysis of targeted GSU and achievement it was revealed that there was shortfall in utilisation of 559 projected GSU's man hours involving financial implication of ₹ 35 crore.

[192]GSU stands for General Sitting Unit and is calculated by planning department of RCF on the basis of total man hours required for the manufacturing of general sitting coach.

(b) Shortage of staff in the technical cadre

In Production units of Indian Railways, the technicians are engaged in Cutting, Moulding, Trimming, Fitting, Welding, Painting, Wiring and operating of machines, whereas the work of supervisor is to monitor them and Group 'D' is required to help the technicians.

In RCF, sanctioned strength in the Supervisor/Technician of the production cadre as on 01-04-2011 to 01-04-2013 was 4793, 4876 and 4876 respectively whereas working strength during this period was 4334, 4380 and 4398 leaving a shortage of 459, 496 and 478 in these years. It was observed that these vacancies in Group "C" cadre were clubbed with group "D" cadre to calculate the vacancies in group "D" cadre which was against the extant rules for recruitment in group "C" cadre. As per the recruitment rules, recruitment in group "C" cadre was done through Railway Recruitment Board whereas recruitment in group "D" cadre was done at the General Manager level. As a result of incorrect procedure followed by RCF Administration, 185 to 519 Group D staff were appointed in excess[193] of the sanctioned strength by the General Manager during the period from 2011-12 to 2013-14.

The excess Group 'D' staff appointed has been assigned the job of helpers. Initially, they are deployed in the non-production Department i.e. General Branch, Stores Department, Electrical maintenance, Medical and Personnel Department etc. After regularisation through screening and after engagement of next batch, they are deployed in production cadre. The fact, however, remained that instead of initiating action for filling the vacancies in the technician and supervisor cadre, Group 'D' staff appointed in an irregular manner were assigned the job of technicians which was also a compromise with the safety.

(c) Irregular creation of work charged posts

Railway Board has fixed yardsticks for creation of work charged posts of Gazetted cadre[194]. A review of Gazetted cadre position during 2011-12 to 2013-14 revealed that the yardsticks fixed by Railway Board were not being followed at RCF and 19 to 23[195] officers of different grade in different departments were working in excess of the yardstick fixed for work charged posts resulting in extra avoidable expenditure of ₹5.49 crore during the review period.

4.2.6.9 Monitoring and effectiveness of internal control

Following major weaknesses in the monitoring system of RCF were observed which resulted in blocking up of precious financial resources of Indian Railways.

[193] The cost (pay and allowances) of excess appointed Group D cadre w.e.f. 1st April 2011 to 31st March 2014 has been worked out to ₹18.24 crore.

[194] Railway Board letter No. 2011/E&R/3/1 dated 11/02/2011

[195] SAG -3, GAG -5 and SS -15

(a) Inordinate delay in dispatch of finished coaches

All finished coaches should be handed over to station master, Northern Railway, Hussainpur for onward dispatch to the allottee Zonal Railway soon after their manufacturing. The average time allowed for turning out of coaches is approximately one to two weeks. A test check of records revealed excess detention ranging between one to ten months over the prescribed time in respect of 286 coaches manufactured. Thus inordinate delay in dispatch of finished coaches resulted in loss of earning capacity amounting ₹46.14 crore to the Indian Railways as the coaches could not be put in service for train operations.

Railway Administration furnished following main reasons for delay in dispatch of coaches:

- Delays in rake formation,
- Requirement of minimum number of coaches in one shunt when coaches are turned out loose i.e. without rake formation,
- Non-availability of coach number from Railway Board,
- Non-availability of power from Northern Railway for pulling out coaches from RCF, and
- Coaches were being considered for dispatch even if these were in advance stage of completion during the particular month.

Above reasons are not tenable in Audit as delay in dispatch of different types of coaches during review period was attributed to non-availability of material for coaches shown as complete in outturn statement. RCF could not meticulously plan their production programme so as to minimize delay in rake formation of coaches. RCF contended that percentage of coaches delayed is only 6 per cent of the total outturn of RCF and loss of earning capacity was only notional but the fact remains that capital expenditure amounting to ₹414.40 crore could not be utilised timely due to detention of coaches for a period ranging from one to ten months which deprived the earning capacity amounting ₹ 46.14[196] crore to Indian Railways. This situation could have been avoided had the RCF administration efficiently chalked out their production programme and shown only finished coaches in the outturn statement.

(b) Non-disposal of surplus items amounting to ₹21.53 crore

Store is considered as surplus to the requirement of the railway only if they have not been issued for a long time (24 months). In RCF Kapurthala 1901

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[196] Calculation of loss due to inordinate delay in dispatch of coaches

Per day earning of passenger BG coach= Total earning from passenger carried during the year (BG)*
Total passenger carriages (BG) x Total No. of days during the year**

= 27908094300 = 17757
43059 x 365

Total Loss = 25982 x 17757 = ₹46,13,62,374

* Statement No. 6 of Annual Statistical Statement 2011-12 of Indian Railway

** Statement No. 24 of Annual Statistical Statement 2011-12 of Indian Railway

items of store components valuing ₹21.53 crore were lying unutilised without issue for more than 36 months as on 31st March 2014. These items were not declared as useable/scrap as Survey committee had not surveyed these unutilised items, resulting in non-disposal of these stores items. These remained unproductive and also resulted in avoidable payment of dividend to General Revenue.

(c) Loss due to non-recovery of recoverable amount of ₹9.32 crore in respect of advance payment for rejected store and pending risk purchase cost

Despite issue of instructions from time to time by the Railway Board for expeditious finalization of cases relating to rejected stores and recovery of risk purchase cost, suitable action is not being initiated by RCF Administration. An amount of ₹9.32 crore on account of advance payment for rejected store (₹3.89 crore) and pending risk purchase cost (₹5.43 crore) was outstanding for recovery noted before 31/03/2014 and pending up to date (i.e. 11/10/2014).

(d) Non recovery of General Damages

Purchase orders for supply of material were placed on various firms without obtaining required security deposit. Subsequently these firms failed to supply the material within the stipulated or extended delivery period and as such their Purchase orders were cancelled after imposing General Damages.

A review of records generated from Financial Accounting System (FACT) of Rail Coach Factory for the period 2000-01 to 2013-14 revealed that an amount of ₹ 1.56 crore on account of General Damages was outstanding for recovery from various firms who had failed to supply the material. On scrutiny it was noticed that every year the figure of recoverable outstanding amount was increasing but no effort was made for recovery of outstanding General Damages.

(e) Irregular lying of coaches in RCF

Four coaches had been lying near scrap yard in the workshop area of Rail Coach Factory Kapurthala for a long period of time (more than five years) as detailed below:

Table 4.19

S.No.	Coach No.	Railway	Coach Type	Built by RCF during the year
1	02155/AB	N.R.	AC Chair Car	2002
2	16002	N.R.	GS	1988
3	41345	W.R.	AC 3 Tier	2005
4	No number mentioned on coach		AC chair Car	Year not mentioned

These coaches were received in RCF for removal of some defects but suitable action has not been initiated. The matter regarding these coaches not being attended to at RCF was taken up with RCF administration but no reply was furnished.

(f) Non-finalisation of stock sheets within stipulated period

Para 3261 of Indian Railway Code for the Stores Department Vol. II stipulates that Stock sheets should invariably be finalised within a period of 6 months and where an employee responsible for shortage is to retire, this matter should be finalised before his retirement so that suitable punitive action, if any, can be initiated. Considering the fact that despite several instructions and clear codal provisions in this regard, cases of loss to Railways on account of non-finalisation of stock sheets continue to be reported, Railway Board reiterated that the codal provisions in this regard may be scrupulously adhered to. Position of Department wise outstanding stock sheets as on 30/09/2014 revealed that six stock sheets were pending for finalisation as indicated in the table below.

Table 4.20

Stock Sheets Pending	Number of Stock sheets pending	Value (₹in Lakh)
> 6 months and < one year	1	(-) 0.44
> 1 Year < 2 year	2	(-) 91.6
> 2 Year	2	(-) 132.07
> 19 years	1	(-) 4.84

It is a clear violation of codal provisions mentioned above. There is possibility that non-finalisation of stock sheets for such a long period may result in loss to Railways. Despite clear cut instructions in this regard, RCF administration has failed to put in place a proper mechanism to ensure that shortages are accounted for/recovered in time from delinquent staff following due process of rules.

(g) Non-maintenance of records as required under Codal provisions

It was observed that Purchase Suspense Register, Sale Suspense Register and Register of Stock Adjustment Accounts were not being maintained in the prescribed codal formats. These records are necessary to keep close watch over the sales and purchase of various stores items being procured by the Stores department. Non-maintenance of proper records relating to transactions made in bulk may lead to cases of fake sales and payment orders.

4.2.7 Conclusion

Rail Coach Factory, Kapurthala was set up in 1986. It has been carrying out the responsibility of design, development and manufacturing of coaches. It is equipped with *state-of-the-art* Plant and Machinery having specialized facilities like laser cutting, plasma cutting, robotised welding and spot welding facilities.

Provisions for new coaching stock in the annual Rolling Stock Programme (RSP) which were to be made at least two years in advance were finalised by Railway Board with delays. Similar delays were observed in the approval of the coach production programme of RCF. Further, Railway Board made frequent changes in respect of the Production programme already approved by it. The changes made in the approved production programme led to stores/materials worth ₹ 31.93 crore remaining unutilised.

The project of complete switchover to production of LHB stainless steel coaches that started in April 2008 was not successful as RCF was not able to manufacture more than 470 LHB coaches till date in any production year and majority of coaches produced in RCF were still of conventional type which went against the objective of phasing out the conventional coaches.

Excess appropriation to DRF was debited[197] to cost of Product resulting in unnecessary increase in cost of coaches and avoidable increase in the liability towards payment of Dividend of ₹ 3.31 crore to General Revenues.

RCF failed to comply with the codal provisions relating to finalization of the cost reports resulting in raising debits[198] at the estimated cost. Further, RCF had to pay excise duty at 110 per cent of the estimated cost in the absence of the actual cost of production.

As many as 286 manufactured coaches were not dispatched in time and detained ranging between one to ten months beyond the prescribed time limit. This delay in despatching the finished coaches resulted in the investment of ₹ 414.40 crore remaining unfruitful. This further led to avoidable loss of earning capacity of ₹ 46.14 crore which indicates ineffective monitoring mechanism.

Shortage of manpower in the technical cadre was dealt with in casual manner by appointing Group 'D' in excess by General manager and deploying them in place of technicians and supervisors for which higher technical qualifications are required and are recruited by Railway Recruitment Board.

The matter was brought to the notice of Railway Board in February 2015; their reply has not been received (May 2015).

[197] Loaded or added to the cost of coaches
[198] Realising the cost of manufacture from Zonal Railway

Paragraphs related to Mechanical department of Indian Railways

4.3 Diesel Locomotive Works,Varanasi, Rail Coach Factory, Kapurthala and Integral Coach Factory, Perambur : *Non-availing of the benefit of CENVAT while paying Excise Duty on Rolling Stock*

Imprudent decision of Railway Board and Production units to opt for payment of Excise Duty on Rolling stock manufactured by them without availing the benefit of CENVAT resulted in total avoidable payment of ₹ 313.70 crore during the period 2011-12 to 2014-15(February 2015) on Excise Duty in DLW, Varanasi, RCF, Kapurthala and ICF, Perambur alone resulting in financial loss to Railways.

As per Central Value Added Tax (CENVAT) Credit Rules 2004, a manufacturer of final product shall be allowed to take credit of Excise Duty paid on Plants and Machineries (Capital Goods) and input materials if they were used for the manufacturing of the final product. As far as imported Capital Goods/inputs are concerned, the Countervailing Duty (CVD) [199]paid on them is also eligible for CENVAT benefit. CENVAT credit can be availed on production of Duty payment documents such as Bill of Entry[200].

Diesel Locomotive Works (DLW), Varanasi is a production unit of Indian Railways (IR), manufacturing Diesel Electric Locomotives for Indian Railways. Capital Goods and inputs obtained domestically as well as imported are used for manufacturing the Locomotives for which Excise Duty/CVD is paid. As far as payment of CVD is concerned, it is paid by Eastern Railway [201]on behalf of DLW.

As per Central Board of Excise and Customs (CBEC) Notification of March 1995[202], Rolling Stock [203] manufactured in Production units of IR for use of Zonal Railways were exempted from payment of Excise Duty (ED) and accordingly no such Duty was paid by them. However, vide their Notification of 20th April 2011[204], CBEC withdrew the exemption given to these Rolling Stocks and imposed Excise duty with effect from 20.04.11 under one of the following two options:-

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[199] This Duty is imposed on the imported items to offset the subsidy effect of imported items wherever it is applicable to protect the domestic product.(Customs Tariff(Identification, Assessment And Collection of Countervailing Duty On Subsidized Articles And For Determination Of Injury) Rules, 1995)

[200] Bill of entry is the legal document filed by importer or his customs house agent to complete import customs clearance procedures to take delivery of imported cargo. Normally three original copies are made. 1 copy is retained by Custom Department and two by parties

[201] Out of two copies of Bill of Entry received by Eastern Railway, 1 copy is retained by them for passing Custom Duty and second copy is sent to DLW. The copy received by DLW is sent to SBI, Varanasi for onward transmission to RBI as proof of receipt of imported material and Xerox copy of the same is retained in Account section.

[202] General Exemption No 16 vide notification No.62/95-CE, dated 16-03-1995

[203] Locomotives, Coaches and Wagons

[204] Vide notification No.32/2011-CE dated 20.04.2011

1) ED @ 1%+ Cess 3% in case CENVAT is not availed and 2) ED@5 % +Cess 3% in case CENVAT credit is availed.

DLW, Varanasi being a production unit was legally responsible for payment of ED, but they did not pay the ED and waited for Railway Board's instruction in this regard.

Railway Board belatedly, in October 2011 instructed Production units including DLW to pay this Duty by opting for ED without availing CENVAT benefit (Option 1). Railway Board did not indicate the reasons for electing Option 1in the said letter. Based on this, DLW started paying Excise Duty on Locomotives sold to Zonal Railways under Option 1 since November 2011 along with arrears (₹10.87 crore) for the period from April 2011 to September 2011. DLW has also paid ₹ 0.94 crore as interest for the delayed payments of ED for the period mentioned above. CBEC in March 2012 revised [205]the rates as follows:

1) ED @ 2%+ Cess 3% in case CENVAT is not availed and 2) ED @ 6% +Cess 3% in case CENVAT credit is availed.

Railway Board, in April 2012 asked the Production units and Zonal Railways to continue the payment of ED under Option 1 again without giving any reason for that. Nevertheless, Railway Board, in June 2012, instructed production units to conduct an analysis of the two options. DLW upon analysis recommended to the Railway Board in July 2012 that Option 1 without availing benefit of CENVAT is beneficial to them. However, it was observed by Audit that while taking into account the possible CENVAT benefits, DLW factored Capital Goods and input materials purchased domestically and did not take into account the imported ones on which CVD was paid. This mistake and substantial advantage in opting for ED with benefit of CENVAT (Option 2) was brought to the notice of the Management of the DLW by Audit in August 2012[206]. DLW stated (January 2013) that for availing CENVAT benefit, original copy of Bill of Entry was essential which was not readily available with them. This was, through efforts, made available since October, 2013. RB in March 2014 asked all production units again to work out the net liability of excise duty under option 2. Based on such exercise carried out, DLW requested (April/May 2014) Railway Board's permission to pay ED under Option 2 on account of substantial saving.

Railway Board, in August 2014 asked all Production Units to be ready with all required documents to switch over to Option 2 with effect from 1st April 2015.

Audit observed that there was an avoidable payment of ₹ 207.46 crore on Excise Duty during the period from April 2011 to December 2014 at DLW due to wrong option. The matter was taken up with Railway Board by Audit in March 2015. Subsequently Audit observed that two more Production units viz Railway Coach Factory (RCF), Kapurthala and Integral Coach Factory (ICF), Perambur have reported avoidable payment of ED due to having opted for Option 1. Avoidable payment of ED was ₹ 67.17 crore in respect of RCF,

[205] Vide Notification No 16/2012-CE dated 17.03.2012
[206] Special Letter issued by Audit on 30.08.2012

Kaputhala for the period 2011-12 to 2014-15(February 2015), while it was ₹ 39.07 crore in respect of ICF, Perambur for the period 2011-12 to 2013-14. Thus the total avoidable payment of ED in three production units alone was ₹ 313.70 crore during the period 2011-12 to 2014-15. ICF, Perambur has started availing the CENVAT credit (Option 2) from April 2014 onwards while DLW, Varanasi and RCF Kapurthala had opted for it from April 2015.

In reply to Audit, Railway Board in April 2015 stated that proper and systematic up keep of original invoices and other specified documents was necessary for availing CENVAT credit. DLW could obtain the original copy of Bill of Entry for availing the CENVAT on CVD from October 2013 only. Being a new development it took some time to understand the implication of the scheme for which an expert was engaged (05.07.2012) who concluded (10.10.2012) that Option 1 was beneficial to Railways. They further stated that DLW had followed the instruction of Railway Board and there was no loss to Central Government in this case since the payment of ED went to Consolidated Fund of India.

The reply is not acceptable due to the following reasons:

i). IR is a commercial entity with a separate Budget and even borrows money for expansion of operations. As such any avoidable payment is a loss to Railways and affects its functioning to that extent. The critical lapses leading to substantial avoidable payments over a period of 4 years (₹ 313.70 crore so far came to notice) cannot be ignored by the assertion that the ED went to Consolidated Fund of India

ii). Railway Board in October 2011 and again in April 2012 instructed Production Units to pay ED under Option 1 without analyzing whether such an option was beneficial to them. Though Production Units were better suited and were capable to work out the beneficial option for them, it was only in June 2012 that RB instructed them to carry out such an analysis.

iii). ICF, Perambur on their own switched over to Option 2 from April 2014 onwards which shows that being the legal entity responsible for payment of ED nothing prohibits Production Units in ensuring that the ED payment was under beneficial option. However, DLW followed the instruction of Railway Board in this case without even examining and ensuring that the Option was beneficial to them. In fact, DLW later in July 2012 recommended Option 1 as beneficial to them without taking into account the important factor of CENVAT credit on CVD. Though this lapse was pointed out by Audit in August 2012, it was only in April 2014/May 2014 that DLW sought permission to switch over to Option 2. Therefore, the stand taken by DLW and RB that DLW Varanasi had simply followed Railway Board's instruction in this case is seen by Audit as an effort to dilute the accountability aspect.

iv). The systematic upkeep of Accounts and related documents of bills paid is a primary duty of Railway Accounts Department and should have been readily available. The importance of original copy of Bill of Entry for claiming the CENVAT benefit was a factor known [207] to DLW and could have been kept with them from the beginning, therefore cannot be accepted as a valid justification for any delay on this issue.

In view of above facts, there is no justification for the Railway Board to take more than three years to select the beneficial option (August 2014) and further giving another 6 months to Production Units (April 2015) to operationalise it while allowing avoidable payment of ED all through this period.

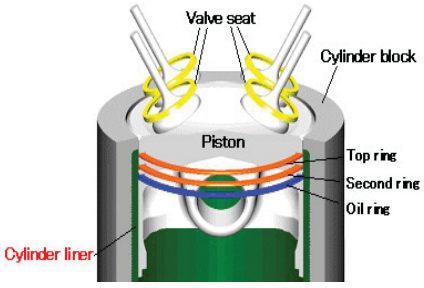
As such Railway Board may assess the avoidable payment made on this account by all production units till March 2015 and take action either to recover the ED from Excise Department along with interest, if possible, or take action to treat the amount as financial loss for the Railways.

Thus imprudent decision of Railway Board and Production units to opt for payment of Excise Duty on Rolling stock manufactured by them without availing the benefit of CENVAT resulted in total avoidable payment of ₹ 313.70 crore during the period 2011-12 to 2014-15(February 2015) on Excise Duty in DLW, Varanasi, RCF, Kapurthala and ICF, Perambur alone resulting in financial loss to Railways.

4.4 Southern Railway (SR): Defective honing and consequent reworking on cylinder liners

Use of obsolete honing machine for cylinder liner plating due to delay in timely installation of new machines led to deficiencies in honing and reworking (re-honing) of cylinder liners which resulted in wasteful expenditure of ₹7.70 crore

A cylinder block is a portion of the frame of a diesel locomotive, which supports the cylinder liners. Liner forms the wall of the combustion chamber and it also guides the movement of piston inside it. The cylinder liner is a replaceable bore in which the piston rides and is used to propel a locomotive engine. Liners get cracked, broken and distorted due to overheating, corrosion and improper installation. Ridges at the top of the liner are formed due to normal wear and tear. This may cause damage to the piston and the ridges need to be removed to ensure smooth and effective functioning of the piston. Hence, new and old cylinders are subjected to lining. This process is called plating process. The plating process requires honing machines for the operations viz., cast iron (CI) honing (prior to plating), diamond honing (post



[207] In an earlier case pertaining to the period 01/2001 to 09/2003 in which CENVAT credit was taken by DLW against photo copy of Bill of Entry was later objected by associated Audit and consequently penalty was imposed on which a review petition is pending with Commissioner , Central Excise.

plating) and polishing. Diamond honing is done by using vitrified stones to remove excess chromium after plating to achieve desired specification and polishing.

Honing is a high-tech precision operation involving bore sizing of the cylinder liners as per required specification. The performance and life of the plated liners, apart from plating quality, is highly dependent on this high-tech precision operation. Precise operation of honing machine would prevent defective honing and consequent reworking of defective liners.

Cylinder liner plating shop (CLP shop) at Golden Rock Workshop (WS/GOC), Ponmalai in Southern Railway undertakes plating process for new cylinders and old cylinders reclaimed from diesel locomotives received from various zonal railways. CLP shop had three vertical honing machines viz. HM3, HM4 and HM5. These machines were outdated and could not hone with precision as discussed below:

1. The HM3 machine, procured in 1984, was condemned (July 2007) after expiry of eight years of completion of its codal life of 15 years in 1999. The proposal for its replacement was also made late in 2008-09 for which fund was provided in July 2010 and order was placed in April 2011 to an USA based firm through COFMOW. The machine was received in June 2013 as against the scheduled date of April 2012. The delay in shipment was attributed to non-availability of steamer conforming to COFMOW's requirement.

2. Though the HM3 was commissioned (December 2013), the inadequacies/ deficiencies noticed during commissioning were yet to be rectified (April 2014). As such the machine has not yet been put to effective use.

3. The plating process for cylinders was carried out with the remaining two honing machines (HM4 and HM5), which were commissioned during 1997. It was stated (July 2010) by the Workshop authority that these two machines working with three shifts had already outlived their codal life of nine years (in 2007) in three shift working. Consequently, the HM4 machine developed multiple operational problems during honing and resulted in overloading on HM5 machine, honing accuracy of which was also lost in July 2010.

4. After a lapse of five years of expiry of codal life, purchase order for replacement of HM4 was placed in November 2012 and the machine was received in July 2013. However, the new machine is yet to be commissioned (April 2014). As such the condemned HM4 machine was still in use. Moreover, reasons for delay in condemnation of both the machines (HM3 and HM4) were not found on record.

5. As HM4 and HM5 machines had outlived their codal life and lost their precision, defects were noticed in the honing carried out by these machines. Out of 99,299 liners plated, deficiencies such as bore oversize, peel off and tool marks were noticed on 11,844 liners (12 per cent) during the period from April 2007 to March 2014.

When the matter was taken up with the Southern Railway Administration (May 2014), they stated (September 2014) that the HM3 machine has been put in service since its commissioning (December 2013) and is being utilized effectively. They further stated that the rejections are not caused entirely by defective honing, but also due to consequential effects of the process. However, they remained silent about the additional expenditure incurred on reworking of liners.

The above replies are not convincing as deficiencies/ inadequacies intimated to the supplier during commissioning were not rectified and Proven Test Certificate was not issued (till April 2014). Moreover, the machine history of the new machine (HM3) for the period from 01.01.2014 to 11.09.2014 showed down time of 2181 hours (about 90 days). This indicates that the machine was not put to effective use till date. Further, it was evident from the letter of Golden Rock Workshop authority that the rejections were attributable to honing machine i.e. peel off, bore oversize and tool mark occurred during the processing of diamond honing only.

As such, working on outdated machines and failure to ensure timely replacement of machines led to defective honing of liners. This resulted in additional expenditure of ₹7.70 crore on reworking on liners. Besides, the workshop was not able to supply the targeted quantity of liners (12 per cent short due defective honing during April 2007 to March 2014) which may cause non-availability or delay in availability of locos in train operation. Defective liners may also cause damage to the piston and affect the smooth and effective functioning of the piston which in turn impacts smooth operation of engines and ultimately locos.

The matter was brought to the notice of Railway Board in December 2014; their reply has not been received (May 2015).