Report of the
Comptroller and Auditor General of India

for the year ended March 2014

Laid in Lok Sabha/Rajya Sabha on_____

Union Government (Railways)
No. 29 of 2015

CONTENTS

PREFACE

This Report (No. 29 of 2015 - for the year ended 31 March 2014) has been prepared for submission to the President of India under Article 151(1) of the Constitution of India. This Report contains the results of the review on following topics:-

1. Fire Accidents in Passenger Coaches in Indian Railways (Chapter 1)
2. Distribution and Utilisation of safety items in Indian Railways (Chapter 2)

The observations included in this Report have been based on the findings of the test audit conducted for the period 2011-12 to 2013-14 as well as results of audit conducted in earlier years, which could not be included in the previous Reports.

Chapter 1

FIRE ACCIDENTS IN PASSENGER COACHES IN INDIAN RAILWAYS

1.1 Executive Summary

In India, the Railways are the most preferred mode of transport both for the movement of people and goods consignments in bulk. Indian Railways aimed at zero tolerance to accidents through implementation of Corporate Safety Plan (CSP) (2003-13) and Indian Railways Vision 2020.

Key Findings:

- *The CSP envisaged bringing down the number of accidents by 80 per cent from 2001-02 by 2013, but number of accidents went up by 160 per cent during the above period. The loss of human lives in Fire accidents in passenger coaches steeply increased from 3 in 2001-02 to 9 in 2011-12, 32 in 2012-13 and 35 in 2013-14.*
- *The Research Designs and Standards Organisation (RDSO), the agency responsible for prescribing specifications for fire retardant materials did not have their own laboratory facilities and the proposal (2006) to create state of the art laboratory is still in nascent stage. The fire simulation software procured in 2010 at a cost of ₹1.5 crore, meant for optimisation of coach design could not be put to optimum use due to non-availability of testing facilities.*
- *There is no clear roadmap drawn by RDSO/Railway Board to match the international trends as envisaged in the XII plan document on safety. RDSO has been guided by the norms of International Union of Railways [UIC] for developing specifications for fire retardant materials. In 2006 RDSO envisaged that these specifications were only an intermediary step and ultimately fire retardant norms have to be further upgraded to the latest international norms. The present UIC norms are being phased out in major International Railway systems and being replaced with new fire safety standard EN-45545[1] which envisage testing of the coach/ assembly as a whole to see the overall impact of smoke, heat and toxic gases on passengers. However, after eight years, only the global tender to develop state of the art facilities for testing fire retardant properties was floated in February 2014.*
- *Audit noticed that RB did not enforce its instructions on shifting of junction boxes to Guard's cabin in SLRs, the removal of bottom latches of doors of passenger coaches, sufficient availability of locking arrangement*

[1] ***New fire safety standard developed by UIC to be implemented in European Railways***

for rotary switch panels in a number of coaches, non-provision of glass breaking hammers in AC coaches etc. during coach maintenance.

Joint survey conducted by Audit and Railway officials brought out the following:

- *Fire prone activities like cigarette smoking, cooking by vendors at stations, carriage of inflammable articles by unauthorised persons, accumulation of empty card board boxes and other waste materials, went unchecked, aggravating the risk of fire.*

  Besides, instances of non working of exhaust fans in non-AC pantry cars, tapping of power from fan and light through open wires to connect mobile phones, etc, food waste dumped near toilets and vestibule area, non-maintenance of boilers, electronic devices, wiring system, chimney, cooking with open flame in the pantry cars, etc, noticed during the survey indicated that these hazards which could contribute to the fire accidents were not adequately controlled.

- *As per the norms of UIC (UIC 564-2), one extinguisher in each vehicle with seated places and two extinguishers in each sleeper coach are required to be provided. Audit noticed that the fire extinguishers were placed under the seats, on the floor and inside the locked linen cabins. In SLRs, fire extinguishers were kept in a closed cupboard with one time use pad lock. In some SLRs, instead of pad locks, the doors were tied with threads which cannot be opened easily.*

- *The automatic smoke / fire detection device in the running trains are not successfully implemented. The XII Five Year Plan also stressed upon the need for induction of automatic fire alarm system in coaching trains for early detection of fire and for introduction of automatic fire detection and suppression system for power cars and pantry cars which are more vulnerable to fire accidents. Recommendations were also made by the High Level Safety Review Committee for introduction of flame detection system interfaced with Alarm Chain Pulling (ACP) equipment, in coaches which should sound hooter to warn the passengers. However, the exact date of trial and testing has not been mentioned.*

- *The loading in parcel vans was not adequately supervised to ensure booking of motor vehicles without petrol or avoidance of banned/restricted articles. The leasing agreement with private parcel operators for parcel space in brake vans did not provide for supervision of loading by railway official which is fraught with the risk of loading fire prone articles.*

- *The CSP (2003-13) observed that the maintenance staff also needed to be trained like running staff (TTE, coach attendant, catering staff etc.). Audit noticed that sizable percentage of employees have not attended training*

and mock drills and hence there is need to intensify awareness of staff through mock drills and training on fire fighting.

- *Rail users' awareness on prevention of fire accidents in trains play a significant role in reducing fire accidents in passenger trains and at railway stations. Audit assessed the level of awareness of passengers on fire safety through survey and found that regular passenger awareness programme was not conducted by RB. Moreover, fire safety stickers are also not pasted at prominent locations to reduce fire prone activities at stations and on trains. Updated list of emergency contact numbers of nearest fire station, hospital, police station, ambulance service were also not available at nine stations.*

- *Availability of fire fighting and communication facilities and preparedness of the Railway Administration is essential for timely and prompt response to fire accidents. The CSP also emphasized that Mobile Train Radio Communication (MTRC) system has an intrinsic potential in enhancing the safety and security in train operations. It was noticed by Audit that fire fighting units/fire stations maintained by respective State Governments were not available in the neighborhood of 16 stations. Further, Direct communication between loco pilot and station master through Very High Frequency (VHF) and Close User Group (CUG) was not provided at six stations of Metro Railway, Kolkata.*

- *Government of India, Ministry of Health and Family Welfare (May 2008) has issued notification for prohibition of smoking in public places as per Prohibition of Smoking in Public Places Rules 2008. This rule covers Railway premises also. However, Section 167 of Indian Railway Act 1989*[2] *was not amended prohibiting smoking in trains and railway premises and prescribing stringent punishment for violation.*

1.2 Introduction

The primary requirement of train transportation is to ensure safe, speedy, reliable and punctual movement of passengers and goods to various destinations in the country. The Corporate Safety Plan (CSP) 2003 to 2013 states the objectives, strategies and targets for which the Indian Railways (IR) would be striving and encompasses the priorities of the safety related works. CSP observed that fire accidents in trains constituted two *per cent* of total accidents and accounted for two *per cent* of total fatalities. CSP aimed at reduction in fire accidents and consequent fatalities by 80 *per cent*. IR Vision 2020 prepared in 2009 also aimed at making railway operations free of fire in

[2] ***Section 167 of Indian Railways Act 1989 stipulates that – (1) No person in any compartment of a train shall, if objected to by any other passenger in that compartment, smoke therein, (2\) Notwithstanding anything contained in sub-section (1), a railway Administration may prohibit smoking in any train or part of a train, (3) Whosoever contravenes the provisions of sub-section (1) or sub-section (2) shall be punishable with fine which may extend to one hundred rupees.***

trains by enhancing the fire worthiness of coaches and by using fire retardant materials in passenger coaches.

One of the key areas identified in the XII Plan (2012-17) was the use of furnishing materials in the coaches with superior fire retardant properties in line with international norms. The XII plan also stressed the need for induction of automatic fire alarm system in coaching trains for early detection of fire and for introduction of automatic fire detection and suppression system for power cars and pantry cars which are more vulnerable to fire accidents.

The High Level Safety Review Committee under the chairmanship of Shri Anil Kakodkar, made (2012) the following significant observations and recommendations with regard to fire accidents:

- Stopping of trains in the event of fire is an important function which should be integrated with the fire alarm system as the passengers may not be able to operate the Alarm Chain Pulling (ACP) system to stop the train. The Committee recommended introduction of flame detection system, interfaced with ACP equipment, in coaches which should sound hooter at many places in coaches to warn the passengers.
- With the existing design of emergency windows, passengers cannot jump out through them without any aid in the event of eventualities and recommended for providing a simple ladder or equivalent.
- Cooking is also dangerous in AC pantry cars as was demonstrated in the fire incident on Mumbai Rajdhani Express on 18 April 2011. Commissioner of Railway Safety (CRS) in his report has mentioned that a 'Patila'(container) filled with oil and frying spoon inside it was left on a hot plate element in the night and the staff forgot to switch it off causing major fire. It recommended strict enforcement of existing instructions prohibiting cooking in pantry cars.

IR was aiming at zero tolerance to accidents through implementation of recommendations of various committees. However, Audit observed that during the years 2011-12 to 2013-14 there were 4, 8 and 8 fire accidents in passenger coaches respectively and in five accidents alone there were 76 casualties. The number of fire accidents that happened in IR during 2001-02 was five. As per CSP, this should have been brought down by 80 *per cent* by 2013. However, it was noticed that the number of fire accidents increased to 8 during 2012-13 as well as during 2013-14. i.e. increased by160 *per cent* compared to 2001-02 . Besides, number of casualties also exceeded 30 each year in 2012-13 and 2013-14. As the objectives of CSP remained unachieved, the adequacy of the system put in place by the Indian Railways and its effectiveness was reviewed.

1.3 Audit objectives

The review of the activities relating to prevention, detection and response to fire accidents was conducted to evaluate:

- existence and effectiveness of the system for prevention of fire through procurement and utilisation of fire retardant materials meeting international specifications in the manufacture and maintenance of coaches at production units, workshops and coaching depots.
- adequacy and effectiveness of measures to prevent fire prone activities at stations/passenger trains
- efforts to mitigate the losses by effective communication, evacuation, training of staff and spreading awareness among travelling public on fire hazards

1.4 Audit criteria

Sources of audit criteria for this review:

- Corporate Safety Plan 2003-13 (Chapter V, Para No.5.3, 5.6, 5.8, 5.42, 5.43).
- Report of the High Level Safety Review Committee 2012 Para 4.6 and 4.7 (pg.57 to 59).
- Guidelines and letters issued by RDSO regarding fire safety, emergency window, automatic smoke/fire detection system.
- Guidelines and letters issued by RB on fire audit and special drives conducted by Zonal Railways (ZRs) on fire safety - 2012, 2013 and 2014.
- Indian Railway Act 1989 Section 67, 164 and 167.
- Indian Railway Catering Policy 2010, Para 9.
- Para 8 of Standard Agreement for leasing of parcel space in Brake vans.

1.5 Audit scope, methodology and sample

- The present review focuses on fire prevention, detection and control activities of IR during the three year period from 2011-12 to 2013-14. The scope of the audit extended to examination of activities related to fire prevention and detection in the manufacture of coaches in production units and electrical/ mechanical maintenance at workshops and coaching depots. The existing monitoring mechanism to prevent carriage of inflammables, smoking in trains and preparedness of Railways in timely detection and extinguishing fire and rescue operations were also studied.
- The review was conducted in 1280 coaches at 14 workshops (out of 39 workshops), 33 depots (out of 180 coaching depots), 132 stations of

different categories, joint inspection along with Railway officials in 1089 coaches, 51 pantry cars of 138 trains.

Audit examined records in Mechanical, Electrical and Commercial Departments of Zonal Railways and Production Units. Physical verification of prevalent conditions was also made at workshops/coaching depots, Railway stations and trains through joint inspections with railway officials. Further, the following surveys[3] were also conducted by Audit:

- Survey among 1007 maintenance staff at 14 workshops over 14 ZRs[4] and 33 coaching depots over all the ZRs, to assess their awareness about fire safety measures.
- Survey among 3259 passengers over 17 ZRs to assess their awareness about danger of smoking in coaches/ carriage of inflammables/explosives and how to respond to fire in trains.

The review was issued to RB on 29-January-2015. Their reply has been received 24-April-2015. RB response on Audit comments have been incorporated at appropriate places in the review.

The audit findings are discussed in the following paragraphs.

1.6 Use of fire retardant materials

The major cause for loss of life and property during fire accidents in passenger coaches is rapid spreading of fire. IR is using fire retardant furnishing materials to mitigate effects of fire and to enhance the fire worthiness of coaches since 2000.

1.6.1 Development of specifications by RDSO

Research Designs and Standards Organisation (RDSO) is the agency responsible for setting standards for the furnishing materials used in the passenger coaches. They have developed specifications for 18 fire retardant materials which included material like curtain fabric, upholstery and modular toilets with fire retardant properties. These specifications were developed and improved by using the limited laboratory facilities available with the Mechanical and Carriage Directorate. The XII plan envisaged that all the furnishing materials in the coaches should have superior fire retardant properties in line with international norms. The following points were observed in audit in respect of the development of specifications of fire retardant materials.

[3] ***Survey questionnaires issued to 25 employees in each of workshops/coaching depots test-checked and to passengers in the trains test checked.***
[4] ***No Carriage Workshops in ECR, NCR and SECR***

- RDSO has been guided by the norms of International Union of Railways [UIC] for developing specifications for fire retardant materials. These specifications have parameters like resistance to spread of flame, deterioration of visibility due to smoke, limiting oxygen and toxicity index. However, RDSO envisaged (2006) that these specifications were only an intermediary step and ultimately fire retardant norms have to be further upgraded to the latest international norms. The present UIC norms are being phased out in major European Railway systems and being replaced with new fire safety standard EN-45545[5] which envisaged testing of the coach/ assembly as a whole to see the overall impact of smoke, heat and toxic gases on passengers. RDSO mooted (2006) a proposal to develop state of the art facilities for testing fire retardant properties. In this connection, a global tender was floated in February 2014. The tenders were not finalized till July 2014. Further progress in this regard has not been communicated by RB. The delay in creation of these facilities is likely to impact the efforts of RDSO to align with global trends on specifications of fire retardant materials. Further, the delay also affected the utilization of the software 'Fire simulation with technical support and training' procured at a cost of ₹1.15 crore in March 2010 to help in design optimization of coaches and selection of combination of the materials.

  RB replied (April 2015) that the new facility would be created by September 2015.

  The XXII plan also identified the use of materials with superior fire retardant properties in line with international norms as a key area. However, in the absence of these facilities, the specifications conforming to latest norms cannot be framed and the fact that it took nine years for RB to establish the laboratory indicates that this critical area was not effectively monitored. There is a need for closely monitoring the creation of the new testing facility for testing the specifications of fire retardant materials and also to start using fire retardant materials conforming to international norms.

- GM, RCF, Kapurthala suggested (January 2013) to take corrective action against the extensive use of certain fire hazard materials like PVC, plywood, adhesives and paints (because of harmful combustion products they generate in the event of a fire) which were used in limited way in other Railway systems of the world. It was noticed in audit that these materials are still being used in IR.

  RB in their reply (April 2015) stated that these materials qualify all fire related properties including toxicity as per UIC standard. It is also stated

[5] ***New fire safety standard developed by UIC to be implemented in European Railways***

that the efforts are in hand to replace PVC and wooden panel etc. with suitable alternate material.

The reply is to be seen in the light of the fact that even after a lapse of two years since this issue was brought to the notice of RB, it is still engaged in the development of alternative materials. Hence there is need to speed up development of alternate materials to reduce fire hazards.

- RITES, the inspecting agency for fire retardant materials ensures the quality of materials supplied through the test certificates issued by the manufactures and test checking the sample materials at the manufacturer's lab facilities. In view of increased incidences of fire in passenger coaches, RITES introduced (April 2014) the practice of testing the samples collected from the suppliers at outside laboratories approved by RDSO. The revised quality assurance of fire retardant materials needs to be continued on systematic basis.

- Status of procurement and utilisation of fire retardant materials by ZRs was not monitored by RDSO. Feedback[6] on the performance of fire retardant materials, which helps in further development of fire retardant properties of furnishing materials, was not obtained periodically from ZRs and production units.

  RB replied (April 2015) that RDSO has developed a web portal for performance monitoring of the materials in 2011 and ZRs advised for regular feedback on the performance.

  The reply is not convincing. Audit has been informed by the production units and ZRs that they are not sending any feedback on the performance of fire retardant materials to RDSO. Unless and until the feedback is received, no further improvement on the fire retardant materials could be taken up. In view of this RDSO should regularly get the feedback on the performance of fire retardant materials from Production Units and ZRs.

1.6.2 Availability of fire retardant materials

The availability of these fire retardant materials for manufacture and maintenance of passenger coaches was examined and it was found that these materials were available at Production units and workshops. However, the units were facing difficulty in getting supplies due to inadequate approved sources of supply as explained below:

- RDSO has developed only two to four sources for supply of fire retardant materials like Curtain fabric (2), NFTC sheets for roof paneling (4), pre-laminated shaded compreg sheets (2-partII), upholstery and densified thermal bonded polyester blocks (4-part II)

[6] ***RDSO letter No.QAM/Vendor Policy dated 08/10/2010.***

for use in coach seats. Due to limited sources of approved suppliers, ICF was facing difficulty in getting material in time.

- In the workshops (ECoR, SR, SER, WCR, NFR, NWR, WR, NR) the supply of fire retardant materials like PVC upholstery/PVC flooring sheets, Vane relay & Wood based compreg, stain proof fire retardant upholstery cloth was not adequate, Due to non-availability of materials, coaches with slightly worn out rexine/vinyl flooring were allowed to form part of running trains resulting in ineffective maintenance.

Thus, Audit observed that adequate fire retardant materials were not available at some of the production units and workshops to ensure effective maintenance.

RB replied (April 2015) that they were developing more sources by floating expression of interest on regular basis.

However, the fact remained that the number of suppliers for these critical materials is still limited. Hence RB should take expeditious action to develop more suppliers.

1.6.3 Design and development

The CSP observed that the goals of new technologies were to improve safety through reduced human dependence and improved asset reliability at reduced costs. Coaches are required to be designed in such a way as to ensure adequate safeguards for prevention, detection and response to fire accidents in passenger trains. Further, designing appropriate system of fire barriers, fire suppression, smoke detection, raising alarm, automatic emergency braking and emergency exit windows are essential to prevent, detect, extinguish and respond to fire.

Audit noticed that the Integral Coach Factory (ICF) developed[7] a new design of cabin doors which could be opened to both inside and outside as against the present design where door opens only inside making it difficult for evacuation of passengers in the event of accident. As a trial measure, these doors were introduced (August 2014) in five AC coaches over four ZRs (SWR, NER, WCR & CR-2).

Audit observed that in the following instances there was delay in accepting the proposals for design changes by RB:

- RDSO prepared (2010) drawings for fire retardant coated stainless steel (SS) paneling which could be used in gangways and doorways.

[7] ***ICF letter No.MD/Fur./W&D/98 dated 04/08/2014***

RB replied (April 2015) that ICF has turned out three coaches with SS paneling as a trial measure and is planning to provide this in 100 coaches in 2015-16.

The original drawing was finalized in 2010 and after a lapse of five years, RB stated that they are planning to provide this in 100 coaches in 2015-16 on trial basis. If this system was introduced earlier, i.e. within one/ two years of finalization of the drawings, then its shortcomings could have been made good and further improvements achieved by this time. Hence RB should prepare detailed time bound action plan to provide this feature in all coaches and also ensure that the target of 100 coaches is achieved by 2015-16.

- International Union of Railways (UIC) specification envisaged fire barriers of 15 minutes at the end of the coaches and 'shutting down of fans coupled with emergency brake on detection of smoke' and RDSO sent the proposal in this regard to RB in 2010.

RB stated (April 2015) that all LHB[8] coaches having vestibule are provided with fire barriers around auto closing vestibule doors to restrict spread of fire from one coach to another.

The above reply is to be seen in the light of the fact that LHB coaches running in IR were few compared to non-LHB coaches. As the feature of auto closing of vestibule doors would effectively prevent the spread of fire, RB should extend this feature to all non LHB coaches with a time bound action plan.

- RDSO proposed (August 2008) to RB to develop fire suppression system for use in coaches. Though, a contract was awarded (January 2009) to a private firm to develop the system, trials on the system were not completed. RB again directed (Dec 2012) to submit estimate for developing the system and to conduct trial on a condemned pantry car. The system was yet to be developed and tested (September 2014).

  RB replied (April 2015) that automatic fire and smoke detection system integrated with automatic application of brakes in case of fire has been successfully tried out by RDSO and provided in Jammu Tawi Rajdhani Express.

  The proposal made in 2008 by RDSO for providing automatic fire and smoke detection system was still on trial and hence indicates laxity on the part of RB to bring design changes that would effectively prevent fire. The RB should explore measures on priority basis to implement this feature in all trains.

[8] ***Linke Hofmann Busch – Hybrid coaches of German design***

IR has not made much progress in the following areas of development of fire safety measures in passenger coaches:

- RDSO advised (August 2004) all Railways and Production units (PUs) that non AC main line coaches should have two Emergency Openable Windows (EOWs) in First Class and Second Class Luggage-cum-Guard Van (SLR) and four EOWs in Second Class coaches. RDSO submitted (May 2011) a proposal to RB showing location of EOWs for non AC coaches. The High Level Safety Committee (2012) also noted that passengers could not jump out without any aid during eventuality as existing size of EOWs in non-AC coaches was not adequate. Therefore, three is a need for change in the design of EOWs.

  RB replied (April 2015) that the proposal was not approved as present norms were considered adequate.

As human life is more important irrespective of the class of journey, it is imperative that the design of the EOWs in sleeper coaches need to be reviewed to make it effective and practically usable during emergency. This has also been substantiated by CRS, in his report on the fire accident in train No.12622 Tamil Nadu Express of 30-July-2012. Hence, RB should revisit the proposal on design change of EOWs in sleeper coaches for effective and early evacuation of passengers in case of fire.

1.6.4 Maintenance of passenger coaches at workshops and coaching depots

The Railway Board instructed (January 2014) that adequate and proper maintenance of electrical appliances, junction boxes etc need to be ensured during the Periodical Overhaul (POH). Keeping PVC flooring in good condition, preventing gaps in panels, providing glass breaking hammers, ensuring joint-less wiring, shifting junction boxes from luggage area, removing unwanted bottom latches of doors, locking of switch panels are part of maintenance of coaches[9] in workshops and coaching depots. In order to avoid probable incidence of electrical short circuit inside luggage compartment of SLR, RB advised (2002) to modify the layout. Existing

Table No. 1.1
Coaches test checked at workshops and coaching depots – 1280

AC Coaches	511
Non AC Coaches	586
Metro	9
Pantry Cars	54
Power Cars	31
SLRs	89

[9] ***As per RB letter dated 05/05/2010 regarding removal of bottom latches and Annexure to RB letter No.2003/Elect.(G)/113/2 Pt. dated 30/12/2009 (locking of switch panels, sealing of fuse distribution board etc.)***

electrical switches inside the luggage compartment were to be shifted to the guard portion.

Audit conducted joint inspection of 1280 passenger coaches in various workshops, coaching depots and 1089 coaches in trains to ascertain whether aspects relating to fire safety were given due attention during maintenance of passenger coaches in workshops and coaching depots.

Audit observed that in electrical circuits of passenger coaches, fuses procured from OEMs/approved sources were used and joint less wiring to prevent short circuits and sparks were provided in coaches during maintenance in workshop and coaching depots test checked. However, Audit noticed short comings in the following areas:

Table No. 1.2 Deficiencies in maintenance

Sl. No.	Deficiencies noticed	Zonal Railways
1	Junction boxes[10] were not shifted to guard's portion in 62 out of 184 SLRs checked (in workshops, coaching depots and passenger trains) even after 13 years of issue of RB orders in (2002).	ER-15, ECR-2, NCR-2, NFR-16, NR-3, SCR-1, SER-4, SECR-9, WCR-9, WR-1
2	The bottom latches of doors of passenger coaches, which are a bottleneck in evacuating passengers during emergencies, were not removed in 63 out of 2369 coaches	NR-15, WR-4, SECR-1, CR-1, ER-6, NFR-12, NWR-24
3	The fitment, skirting and beadings inside the coaches were not maintained to avoid gaps which would allow discarded waste to penetrate behind the panels in 116 out of 1280 coaches	CR- 4, NFR-59, NWR-26, NR-5, SR-22
4	Emergency windows were not provided in 24 coaches	CR-2, NFR-3, NR-2, NWR-3, SER-2, SWR - 8, WR – 4
5	The number of emergency windows provided was less than the number specified by RDSO in 147 coaches	CR - 31, ECR - 11, ECoR - 2, NFR - 22, NR- 2, NWR - 4, SECR - 22, SCR - 2, SER - 18, SWR - 8, SR - 23, WR - 2)
6	Non provision of indication plates on the ceiling in aisle/corridor indicating the location of emergency windows as instructed by RDSO were not provided	252 (CR-13, ECoR-35, ER-6, NCR-49, NFR-45, NR-4, NWR-15, SCR-10, SECR-18, SWR-40, WR-17).
7	Glass breaking hammers were not provided in 132 coaches out of 702 AC coaches, where such hammers were required to be provided to break open the emergency window glass panel in case of emergencies.	SER-12, WCR-10, NR-3, SR-44, CR-5, ECoR-23, NWR-19, WR-4, SECR-12
8	Locking arrangement for rotary switch panels and FDBs were not available in 233 out of 1,089 coaches	CR-11, ECoR-150, NFR-7, SCR-14, SR-17, WCR-14, WR-20

[10] ***An electrical junction box is a container for electrical connections, usually intended to conceal them from sight and deter tampering.***

Thus, the RB instructions regarding fire safety during maintenance remained to be complied with in a significant number of coaches. Inadequate compliance indicates the existing system of monitoring was not effective/ inadequate.

Gaps in fitment in coaches at Coaching Depots/BBQ

RB replied (April 2015) that ZRs have been instructed (January 2014) that adequate and proper maintenance of electrical appliance etc. are part of maintenance of coaches in workshops and coaching depots.

The reply is not convincing as the instances pointed out indicate that RB instructions were not followed scrupulously. As many as 28 out of 49 fire accidents (57 *per cent*) during the period from 2011-12 to 2013-14 took place on account of short circuits which could have been avoided by strict enforcement of RB instructions on coach maintenance. Hence, RB should closely monitor the strict adherence to these instructions.

1.6.5 Measures to prevent fire prone activities at stations/passenger trains

Sections 67 and 164 of Indian Railway Act 1989 prohibit carriage of dangerous goods at railway premises and in trains. Section 167 of Indian Railway Act 1989 authorises Railway Administration to prohibit smoking in trains. Further, as per Para 7.1 of Indian Railway Catering Policy 2010, there should be no cooking on platforms at suburban stations and other stations should progressively reduce cooking on stalls and trolleys on the platforms, except for items which could be prepared through electrically operated equipment only. Para 811 (i), Chapter VIII of Indian Railway Works Manual states that it is also necessary for boundary walls to be extended right from the station outwards along with tracks of vulnerable locations within town so that outsiders do not find an easy access to the stations. As per RB instructions (2008), baggage scanners were to be provided at entry points in stations.


Remains of half burned fire wood at Chennai Central (SR)

The adequacy in enforcing of Sections 67, 164 and 167 of IR Act 1989 at 132 Railway stations and 1089 coaches of 138 trains across 17 ZRs[11] was checked through joint inspection by Audit with Railway Officials and the results are summarized below:

Table No. 1.3: Fire safety measures at Stations

Sl. No	Observation	Zonal Railways
1	Existence of Unauthorized entry points	101 stations (ECOR-7, ER-3, NER-9, NFR-6, NWR-7, SCR-8, WR-7, CR-7, ECR-2, SER-9, SWR-4, WCR-6, NCR-6, SECR-6, SR-8, NR-6).
2	Non provision of baggage scanners	105 stations (CR-4, ECOR-5, ECR-7, ER-5, NCR-7, NER-9, NFR-4, NR-7, NWR-5, SCR-8, SECR-6, SER-9, SR-7, SWR -7, WCR-6, WR-9).
3	Only one/two baggage scanners provided at stations with multiple entry points	17 (ECoR-1, ER-1, NWR-1, MR-5, SCR-1, CR-5, WCR-1, SECR-1 SR-1)
4	Only three baggage scanners	HWH(ER) having 16 entry points.
5	Only two baggage scanners	KYN (CR) having 16 entry points.
6	Sale of cigarette	Tapti Ganga Express (19045) WR
7	Eight to ten remains of burnt cigarettes in HA1 coach	Train No.18240 – Nagpur - Bilaspur Shivnath Express(WR)
8	Cooking by vendors	Manmad(CR), Kharagpur (SER), Karauta (ECR), Gonda (NER), Varanasi (NR), Ajmer, Nagaur, Phulera & Merta Road (NWR), Karauta (ECR), Chennai Central(SR).
9	Explosives(Defence Dept.) kept in open area along with other luggage	Pune station platform (CR)

Vendor selling cigarettes on Train (WR)

Cooking at platform at Gonda (NER) and vendor carrying kettle with flame at Karauta (ECR)

Audit also conducted a survey among 3259 passengers in 132 stations and 138 trains across 17 ZRs and the summarised results are as below:

[11] ***Audit conducted joint inspection of 132 Railway stations of various categories and 138 different types of trains like Rajdhani Express, Duronto, Shatabdi, Passenger coaches etc.***

- 400 (12 *per cent*) out of 3105 passengers who had expressed their opinion stated that they noticed carriage of inflammable articles by unauthorised persons.
- 902 (28 *per cent*) out of 3152 passengers who had expressed their opinion stated that they noticed sale of cigarette/beedis in Railway stations.
- 512 (19 *per cent*) out of 2647 passengers who had expressed their opinion stated that they noticed cooking in station premises.

Explosives along with other luggage at Pune (CR)

- 871 (27 *per cent*) out of 3128 passengers who had expressed their opinion stated that they had come across cases of consumption of liquor[12] by passengers in trains/ stations.

It could be seen from the above that the enforcement of Railway Act/Manual was not effective and the passenger survey also confirmed inadequate prevention of fire prone activities at stations and trains.

RB stated (April 2015) that regular drives were being conducted by Railway Protection Force (RPF) against persons involved in unauthorized activities and ZRs have been advised to keep watch on smoking.

The large number of deficiencies mentioned above point to the inadequacy of monitoring the enforcement of RB instructions on fire prone activities and carriage of inflammables at stations and trains. These activities pose a huge fire risk threatening the lives of travelling passengers and RB needs to ensure zero tolerance to such activities through adequate checks and deterrent punishment.

[12] ***Liquor is also inflammable and can cause fire in passenger coaches. In the case of fire accident in 3A of 13009 UP Howrah-Dehradun Express on 22/11/2011, it was concluded that the fire was caused by throwing of lighted cigarette butt on the floor of the coach which ignited clothes around followed by spread of fire to the curtains of the coach. The spilled over liquor already present on the floor of the coach also got ignited and aggravated the fire.***

1.6.6 Pantry Cars

IR Catering Policy (2010) states that mobile catering services were to be provided from suitably designed pantry cars fitted with state-of-the-art technology equipment in such a way as to ensure fire suppression and for progressive switch over from open flame gas burner to safer electrically powered equipment in mobile catering units. The Policy also provides for ensuring serving of pre-cooked food in Rajdhani Express trains, Duronto trains and that there should be no cooking in Shatabdi and Duronto trains. RB, from time to time, instructed ZRs to ensure proper maintenance of pantry cars and upkeep of electrical devices (such as wiring system, junction boxes, over voltage protection devices, Miniature Circuit Breakers etc.) gas manifold, refrigerators and fire extinguishers. The Railway Board instructed (September 2011 and October 2013) that pantry cars were to be checked to prevent fire in pantry cars.

Open flame cooking in Pantry Car-12779 Goa Express (SWR)-

The safety measures and maintenance of devices and equipment were checked through joint inspection by Audit alongwith Railway Officials in 51 pantry cars (29 in Express and 22 in Rajdhani/ Shatabdi/ Duronto) of 15[13] ZRs and the following instances of non-compliance with RB's instructions were noticed:

Table No. 1.4: Deficiencies in Pantry cars

Sl. No	Deficiencies noticed	No. of pantry cars
1	Cooking with open flame gas burner	30 (CR-3, EcOR-3, ECR-2, ER-3, NER-3, NFR-3, SCR-2,SER-2,SWR-2, WCR-1, WR-2, SECR-3, SR-1)
2	Cooking in pantry cars of express trains	25 (CR-3, ECoR-2, ECR-2, NER-3, NFR-3, SCR-2, SER-2, SWR-1, WCR-1, WR-2, SECR-3, NR-1) out of 29
3	Cooking in Rajdhani/ Shatabdi/ Duronto trains.	17 (CR-1, EcoR-2, ECR-1, ER-4, NFR-2, NWR-1, SCR-1, SR-1, SWR-2, WR-2) out of 22
4	Gas manifold that connect more than one gas cylinder in pantry cars not maintained in good condition	5 (CR-1, NER-1, SR-1, WR-2).
5	Gas leakage test certificates for gas companies not obtained	5 (NER-1, SWR-2, SR-1, WCR-1).

[13] ***except MR & NCR***

6	Accumulation of empty card board boxes and other waste materials	7 (CR-1, NER-3, WR-2, SR-1).
7	Exhaust fans not in working condition in non-AC pantry cars	2 (NER-1, NFR-1)
8	Tapping of power from fan and light through open wires to connect mobile phones etc.	5(CR-2, NER-3)
9	Suitable space for stocking and servicing meals not earmarked	12 (CR-1, ER-7, SWR-1, SECR-2,SR-1)
10	Food wastes dumped near toilets and vestibule area	11 (ER-2, NER-2, NFR-2, SER-1, NR-2, SR-2).
11	The maintenance and upkeep of refrigerators, boilers, electronic devices, wiring system, chimney and junction boxes not done during maintenance	14 (CR-3, NER-3, NFR-2, SER-2, SECR-3, SR-1).

The above deficiencies/ non-compliance indicated that the monitoring mechanism to prevent fire in pantry cars was not effective posing a threat of fire to the travelling public.

RB replied (April 2015) that a policy to provide precooked food to passengers and another project to enable passengers to book meals of their choice through internet/SMS has been initiated to ensure reduction in onboard cooking. It was also stated that to curb the fire hazards in pantry car, RB issued guidelines for upkeep of pantry cars.

It is apparent from the above instances pointed out in Audit that enforcement of RB instructions was weak and needed to be strengthened to eliminate these fire prone activities through surprise checks and deterrent punishment. Further, the reply does not specify the number of trains where the facilities of booking pre-cooked food was available. Hence, RB should ensure strict compliance to existing instructions till the new schemes were introduced in all trains.

1.6.7 Provision of Fire extinguishers

As per the norms of UIC (UIC 564-2), one extinguisher in each vehicle with seated places and two extinguishers in each sleeper coach are required to be provided. Though UIC norms for this purpose were not adopted by IR, RDSO stated (January 2014) that fire extinguishers – two in each air-conditioned coach, six in each power car, four in each pantry car and two in SLR were provided. RDSO has not stipulated any provision of fire extinguishers in Sleeper class, Second seating and General Compartments.

- Audit verified the statement of RDSO regarding provision and upkeep of fire extinguishers in 577 coaches and 50 pantry cars of 138 trains across 17 zonal railways and found that fire extinguishers, as stated by RDSO, were not provided in fifty coaches as given in Table below:

Table No. 1. 5 - Provision of fire extinguishers

Type of coaches	No of coaches test checked	Fire extinguisher provided	Not provided
AC coaches	440	421	19
SLR	88	76	12
Power cars	49	47	2
Pantry cars	50	47	3
Total	627	591	36

Table No. 1.6 Provision of fire extinguishers

Sl. No	Observation	Zonal Railway
1	Fire extinguishers not provided	19 AC coaches (ECoR-5, NER-1, NFR-7, SCR-2, CR-1,SER-1, NR-2) 12 SLRs (ECoR-2, NFR-6, NWR-1, WR-1, SECR-1, NR-1) 2 Power cars (NFR-2) 3 Pantry cars (NER-1, SER-2)
2	Provided one fire extinguisher instead of two	25 AC coaches (CR-1, ECoR-8, NER-2, NFR-2, NWR-10, SCR-1,SR-1) 3 SLRs (NFR -2, CR-1) 1 Pantry car(NR)
3	Provided two fire extinguishers instead of six in power cars	10 (ECoR-2, NER-2, NFR-2 SR-2, WCR-2)
4	Provided three fire extinguishers instead of six in power cars	4 (ECoR-1, NFR-2, SR-1)
5	Provided four fire extinguishers instead of six in power cars	18 (ECoR-1, NR-1, NWR-4, SER-2, SR-4, SWR-4, WR-2)
6	Fire extinguishers not placed at appropriate locations	105 Coaches (ECoR-12, ER-5, NER-7, NFR-4, SCR-5, CR-8, SWR-11, WCR-2, NCR-19, SECR-6, SR-20, NR-6) 16 Pantry cars (ECoR-4, ER-5, NER-1, NFR-4, NR-1, SR-1)
7	Instructions for use of fire extinguishers not available	375 (ECoR-64, ER-8, NER-7, NFR-25, NWR-3, MR-16, SCR-23, WR-11, CR-18, SER- 26, SWR-68, WCR- 4, NCR-31, SECR-20, SR-41, NR-10).
8	Fire extinguishers overdue for refilling	8 (SER-1, SWR-4, SR-3)

Fire extinguishers in locked condition in 2A-Train No. 22639(SR) and kept in Linen cabinet under the Caretaker's berth in 3A-Goa express (SWR)

- Audit noticed that the fire extinguishers were placed under the seats, on the floor and inside the locked linen cabins. In SLRs, fire extinguishers were kept in a closed cupboard with one time use pad lock. In some SLRs, instead of pad locks, the doors were tied with threads which cannot be opened easily. Hence, during emergency these fire extinguishers could not be easily accessed.
- High Level Safety Committee in its Report observed that, at present Railways rely on Dry Chemical Power (DCP) type portable fire extinguishers which are available for use by Railway staff during fire in coaches. The Committee felt that this type of rudimentary arrangements have generally proved to be insufficient in the event of fire accidents and only the fire brigades under the local authorities have played a major role in extinguishing fire. IR continues to use DCP type of fire extinguishers and reply (April 2015) of the RB was silent on this aspect.

The provision and maintenance of fire extinguishers in coaches is essential and deficiencies highlighted in the table are only those noticed on the 627 coaches (including pantry cars) test checked.

RB replied (April 2015) that decision has been taken to provide fire extinguishers in GS and non-AC coaches on trial basis.

The reply does not spell out any time frame for provision of fire extinguishers in all passenger coaches. Non compliance of UIC 564-2 norms in provision of fire extinguishers would expose the travelling public to enhanced fire risk and delay the dousing of fire in passenger coaches. RB should closely monitor the provision of fire extinguishers with time bound action plan.

1.6.8 Automatic fire/smoke detection system

The XII Five Year Plan stressed upon the need for induction of automatic fire alarm system in coaching trains for early detection of fire and for introduction of automatic fire detection and suppression system for power cars and pantry cars which are more vulnerable to fire accidents. Recommendations were also made by the High Level Safety Review Committee for introduction of flame detection system interfaced with ACP equipment, in coaches which should sound hooter to warn the passengers.

Audit noted that as per Railway Convention Committee's suggestion (2010), fire alarms based on smoke detection in trains were introduced in only two rakes of Train No.22823/22824 Bhubaneswar Rajdhani Express (ECoR) on a trial basis. After successful trial, implementation was to be done in 20 rakes of Rajadhani /Shatabdi Express. RDSO issued a specification in this regard in December 2012 and modified it in May 2013. However, the provision had been introduced only in two rakes of Rajdhani Express. It was also observed that though stopping of trains in the event of fire is an important function

which should be integrated with fire alarm system, automatic smoke/ fire detection devices in the running trains remain to be successfully implemented.

RB replied (April 2015) that RDSO has developed technical specification for Automatic fire and smoke detection system for AC coaches and the process of providing them is under progress and ICF has been advised to try out this system in non-AC coaches initially for trial.

RB has not specified any time frame for providing Automatic fire and smoke detection system in non-AC coaches. They have also not specified when ICF has been advised to try out this system in non-AC coaches. RB should come out with strict time frame for implementation of the system in all trains.

1.6.9 Parcel Vans

As per Para 8.1 of 'terms and conditions of agreement' for leasing of parcel space in brake vans/parcel vans, Railway staff were not required to supervise loading/ unloading of parcels at originating/destination/intermediate station. In absence of supervision, the lease holder could load any items including inflammables/banned items into the parcel vans. This also leads to compromising safety of passenger trains.

RB directed (May 2012) ZRs to conduct a special drive to check irregularities in loading of parcels in the brake vans/ parcel vans, loading of banned/ restricted articles, overloading, etc. Audit reviewed the results of periodical surprise checks of parcel vans[14] that were conducted and found as following:

- Loading of two wheelers without emptying petrol (ER, ECR, NCR, SCR, SER, SR, SWR)
- loading of parcels without leaving gap between the parcels and roof of SLR (CR, SCR, SR, SER)
- loading of motor cycles and other packages in a haphazard manner (CR, SR)
- non-working of electric lights and instances of electrical wires hanging freely in SLR (SR)
- loading of reed diffuser (inflammable article) (SWR).

In one instance, during joint inspection with Railway officials, Audit found that petrol was not emptied from a motor cycle booked for loading at Madurai Junction (SR) on 11 August 2014

The above instances indicate continued violation of RB instructions on loading of inflammable materials. Audit also noticed from the accident report that two

[14] ***As per Para 8.1 f terms and conditions of agreement for leasing of parcel space in brake vans/ parcel vans, loading/ unloading would not be supervised by railway staff. If the supervision was done by the Railway officials, cases of overloading and inflammables could have been avoided.***

fire accidents occurred in 2012 due to loading of inflammable articles in parcel van. (CR, SR).

RB replied (April 2015) that necessary instructions were issued to ZRs for corrective action.

The reply is general in nature and the instances pointed out indicate inadequacy in the system of enforcement of RB instructions. As there is no supervision of loading of parcel van by Railway staff the risk of fire due to loading of inflammable items cannot be ruled out. Hence, RB should revisit the agreement (Para 8.1 f) with the leaser of the parcel space in brake vans/ parcel vans to incorporate provision for supervision or impose stringent penalty for violation along with strengthening surprise check mechanism.

1.6.10 Training on fire safety

The CSP (2003-13) observed that the maintenance staff also needed to be trained like running staff (TTE, coach attendant, catering staff etc.).

Audit review of awareness of employees (1,007 employees) on fire prevention aspects to be kept in mind during maintenance of passenger coaches at workshop (WS) and coaching depots (CD) at various zones through survey questionnaire revealed the following:

Table No. 1.7 Survey – Maintenance staff

Sl. No	Survey question	Awareness of employees & ZRs
1	Importance of coach maintenance work carried out by them	95 *per cent*
2	The fact that any lapse in coach maintenance may lead to fire accidents in running trains	88 *per cent*
3	Not attended any training on firefighting	41 *per cent* in 13 ZRs (CR, ECoR, NCR, NER, NWR, SCR, WCR, SECR, SER, SR, MR, NR, ER
4	Not attended any awareness program on fire safety across	33 *per cent* in 16 ZRs (CR, ECoR, ER. ECR, MR, NCR, NER, NFR, NR, NWR, SCR, SECR, SR, SWR, WCR, WR)
5	Not attended any mock drill on fire fighting	47 *per cent* in 12 ZRs *(*CR, ECOR, NCR, NWR, SCR, SECR, ECR, WCR, SR, MR, NR, ER).
6	No knowledge to handle fire fighting equipment	11 per *cent* 11 ZRs (NER, ECOR, NWR, SCR, SECR, SWR, WCR, WR, SR, MR, ER).

As a sizable percentage of employees have not attended training and mock drills, there is need to intensify awareness of staff through mock drills and training on fire fighting. Non-awareness about fire risk resulting in fire accident was also reinforced by two fire accidents at Carriage workshop (SR) on 12-February-2012 and 15-February-2014 in a passenger coach. In both the

incidents the cause of fire was non removal of inflammable materials inserted in the gaps in the coaches walls before gas cutting. Awareness through training to the maintenance staff on the fire risk posed by the inflammable materials left behind in the coach would have averted the above two accidents.

- Audit checked the adequacy[15] of training imparted to station staff in prevention and control of fire at 132 stations and found that the awareness programmes and mock drills for both staff and passengers were not adequate as tabulated below:

Table No. 1.8 Survey – Station staff

Sl. No	Training/Awareness	Not conducted at Stations
1.	Fire fighting and rescue operations	6 stations (NWR-Gulabpura, SCR-Yakutpura and Bitargunta, SER-Amta, SWR-Malleswaram and Annigeri)
2.	Awareness programme for staff	64 stations (CR-9, ECR-3, ER-4, MR-4, NCR-6, NER-1, NFR-4, NR-4, NWR-6, SCR-7, SR-2, SWR-3, WCR-2, WR-9).
3.	Awareness programme for passengers	107 stations (CR-9, ECoR-7, ECR-7, ER-6, MR-5, NCR-7, NER-2, NFR-2, NR-7, NWR-7, SCR-8, SER-9, SECR-6, SR-4, SWR-5, WCR-7, WR-9)
5.	Mock drills for preparedness on fire safety at stations	114 stations (CR-9, ECoR-6, ECR-3, ER-8, MR-6, NCR-6, NER-8, NFR-6, NR-5, NWR-6, SCR-9, SECR-6, SER-8, SR-8, SWR-5, WCR-7, WR-8).

RB replied (April 2015) that necessary instructions were issued to ZRs for corrective action and fire fighting is part of the initial training curriculum of RPF staff.

The fact that six out of 49 fire accidents that occurred during 2011-13 to 2013-14 were due to human failure indicates the significance of training to maintenance staff. The reply of RB is only reiteration of their earlier instructions. Hence, RB should put in place a system to train all the maintenance staff to improve awareness on fire safety aspects.

1.6.11 Passenger Awareness Programme

Rail users' awareness on prevention of fire accidents in trains play a significant role in reducing fire accidents in passenger trains and at railway stations. Audit reviewed the level of awareness on fire safety aspects among passengers of 138 trains and in 132 stations across 17 ZRs and the efforts taken by IR in creating awareness on fire accidents among Railway passengers (3259). The results of review through physical verification and survey are given below:

[15] ***At stations, register of training are maintained and from those registers audit collected the details.***

Table No. 1.9 Training and awareness programmes

Sl. No.	Observations	No. of stations	No. of coaches in trains
1	Fire safety awareness programmes not conducted	107 (CR - 9, ECoR – 7, ECR – 7, ER - 6, M(R – 5, NCR – 7, NER – 2, NFR – 2, NR - 7, NWR – 7, SCR – 8, SER – 9, SECR – 6, SR – 4, SWR – 5, WCR – 7, WR - 9)	
2	Non-display of Fire safety stickers	88 (CR-2, ECoR-7, ECR-3, ER-3, MR-4, NCR-5, NER-4, NFR-6, NR-5, NWR-6, SCR-5, SECR-6, SER-8, SR-8, SWR-7, WCR-4, WR-5	149 coaches (CR-17, ECoR-69, ER-11, NR-4, NWR-1, SCR-2, SER-40, SR-5)
3	Clubbing of fire safety instructions with other warnings	26 (CR-6, ECR-2, ER-5, NCR-2, NER-3, NFR-1, NR-1, NWR-1, SCR-1, SER-1, WCR-3)	695 out of 948 coaches
4	Properly displayed only at 10 stations	10 (ECR-1,ER-1,NER-1,SCR-2,SECR-1,WR-4)	-

Fire safety stickers pasted in trains

Vestibule area in coach No.05106(3A)- Train No.15960 and SL coach No.14202- Train No. 12506 on 29/07/2014(NFR)

- The corridors and vestibule area were blocked with luggage, bundles of bed rolls, ice boxes, dust bin etc. hindering free movement of passengers in 65 coaches (CR-3, ECoR-9, ECR-11, ER-4, NFR-5, NR-6, NWR-7, SECR-10, SR-4, WCR-3, WR-3). In the passenger survey, 66 *per cent* of passengers were of the opinion that corridors and vestibule area were blocked with luggage, bed rolls etc.

Audit assessed the level of awareness of passengers on fire safety through survey and found that a large percentage of passengers were aware of the risk of carrying inflammables and smoking in trains and availability of emergency windows.

RB replied (April 2015) that duty list of TTE includes assisting passengers in depositing heavy luggage in the luggage booth and further stated that instructions also exist that ticket checking staff should ensure that no baggage obstruct movement of passengers to the doors and passenger could easily reach the gate. RB also stated that necessary instructions were issued to ZRs on display of fire safety stickers at stations and integrated stickers were provided near entrance of the coach.

The reply is general in nature. Although a large percentage of passengers were aware of the risk of carrying inflammables and smoking in trains, yet carriage of inflammable items and fire prone activities at stations and trains were noticed. Hence, RB should conduct passenger awareness programmes and display fire safety stickers at prominent locations to reduce fire prone activities at station and trains.

1.6.12 Preparedness of IR in detection and response to fire incident

Availability of fire fighting and communication facilities and preparedness of the Railway Administration is essential for timely and prompt response to fire accidents. As per Para 5.17 of CSP, Mobile Train Radio Communication (MTRC) system has an intrinsic potential in enhancing the safety and security in train operations.

- Fire fighting units/fire stations maintained by respective State Governments were not available in the neighborhood of 16 out of 132 stations.
- The updated list of emergency contact numbers of nearest fire station, hospital, police station, ambulance service were not available at nine out of 132 stations test checked [Yakutpura and Hi-tech city (SCR), Gulabpura (D) station (NWR), Raipur station (SECR), Bhagatanwala (NR), Phulwari Sharif (ECR), Haveri and Malleswaram (SWR), Bhopal (WCR)].
- Direct communication between loco pilot and station master through Very High Frequency (VHF) and Close User Group (CUG) was provided in all ZRs except six stations of Metro Railway (MR).

RB replied (April 2015) that necessary instructions were issued to ZRs for corrective action.

The reply is general in nature. Stations must be equipped with adequate fire fighting facilities to act immediately in the event of any fire. RB instructions on display of updated list of emergency contact numbers of hospitals; police stations etc. should be implemented.

1.6.13 Accident Relief Medical Van (ARMV)

As per Para 8.3 of CSP, ARMVs would be turned out within the stipulated time and ensuring that they get precedence over all other trains. ARMVs would be given priority in the return direction also, as they may be required at other locations too. Reliable and effective communication channels would be established at the site of accident to be in contact with divisional and zonal headquarters on arrival of ARMV at site.

Audit inspection of ARMV of 36 divisions of 16 zones (no AMRV at MR) of IR revealed that:

- Periodical trial runs[16] of 25 ARMVs (ECR-3, ER-4, NCR- 5, NFR- 3, NR-1, NWR-2, SECR-4, SER-3) were not conducted in IR.

- The position of quarterly inspection of ARMVs by Divisional Medical Officer and submission of reports is given in Table below.

Table No. 1.10 – Position of Quarterly inspection of ARMV

Quarterly Inspections conducted	Report not submitted to Chief Medical Director
All divisions of CR, ECoR, ECR, NCR, NFR, NR, NWR, SCR, SECR, SER, SR, SWR, WCR and WR and Lucknow division of NER.	Howrah and Sealdah - ER, Lumding - NFR, Jodhpur and Ajmer-NWR, Adra - SER, Agra and Allahabad - NCR, Bilaspur and Raipur-SECR and Ambala–NR

Source : Records on ARMV

- Water drums in medical relief special were not kept filled with chlorinated water in two divisions – Ratlam (WR) and Ambala (NR). There were no records to verify weekly replacement of chlorinated water in the water drums of four ARMVs at Jolarpetai (SR) Santragachi and Adra (SER) and Rajkot (WR).

- The surgical light in ARMV located at Jolerpatai (SR) was not working and the register showing the details of medicine, expiry date etc. was not periodically updated. Equipment and medicines were not replaced periodically in Merta Road (NWR).

- ARMV coach No. 8227 (NR) was under POH from November 2013.Medical items were shifted in July 2014 to another ARMV No. 6662 which was not equipped with beds, operation theatre, cabin for doctor/staff, racks for stores and water taps in bathroom/toilets.

[16] ***As per Para 706 of Indian Railway Medical Manual, monthly inspection by medial officers is to be conducted.***

- There was leakage in the roof of the three ARMVs and the water was dripping in the van during rainy season at Igatpuri (CR), Sambalpur and Bhadrakh (ECoR).
- The ARMV at Ernakulam South station (SR) was stabled at the end of Platform No.2 with single side exit which could result in loss of precious time in the event of any fire related exigency. At Hubli (SWR) and New Bongaigaon (NFR), the location of ARMVs was not easily accessible during emergency.
- Equipment provided was not sophisticated and not easy to handle during disaster/accidents at Sambalpur (ECOR).

Audit also noticed that the Inquiry Committee took serious note of not ordering ARMV by JHS division (NCR) on two fire accidents in Train No.11123 on 14-01-2013 and Rajdhani Express on 16-04-2013.

RB replied (April 2015) that the necessary instructions were issued to ZRs for corrective action.

The reply is general in nature and doesn't indicate the specific action taken on instances pointed out in Audit. In the event of any fire accidents it is the duty of the Railway Administration to provide ARMVs in the shortest possible time at the spot. Hence, RB should ensure that ARMVs are maintained properly and stabled at easily accessible locations.

1.6.14 Instances of fire accidents

Safety department of each ZR has to ensure the adequacy of safety measures for prevention of fire accidents in passenger coaches at workshops/depots, stations, trains and in pantry cars and power cars. As per Section 113 (2) of Indian Railway Act 1989, the Railway Administration within whose jurisdiction the accident occurs, as also the Railway Administration to whom the train involved in the accident belongs, shall without delay, give notice of the accident to the State Government and the Commissioner of Railway Safety.

Audit review on the fire accidents that occurred in IR during the review period revealed the following:

(i) Accidents in passenger coaches reported as 'Fire accidents'

During the review period (2011-12 to 2013-14), 20 incidents of fire were reported as fire accidents (CR-3, ECR-2, ECoR-1, NR-1, NCR-4, NFR-1, SCR-1, SER-1, SWR-1, WR-3, WCR-2).

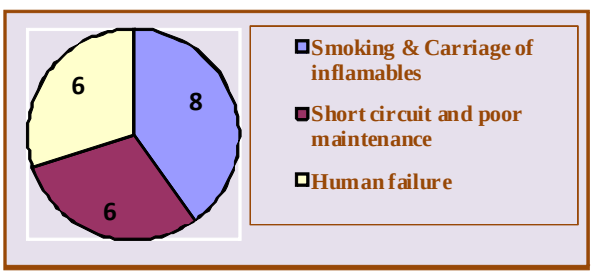


Table No. 1. 11– Causes of accidents in passenger coaches - Reported as 'Fire Accidents'

Sl. No.	Causes of accidents	Number of accidents	ZRs where accident occurred
1.	Smoking and carriage of inflammable articles	8	SCR, WR, CR (2), ECR, NCR, SER, WCR
2.	Short circuits and poor maintenance	6	ECOR, NCR (2), NFR, WR, NR
3.	Human failures	5	ECR, NCR, SWR, WCR, WR

Source: Accident investigation reports

Out of the above, the causes of the five[17] major fire accidents were not concluded as detailed below:

1. The fire in III AC coach of train No.13009 on 22-11-2011 was *most probably caused* by throwing of lighted cigarette butt on the floor of the coach which ignited clothes around followed by spread of fire in curtains of the coach. The spilled over liquor present on the floor of the coach also got ignited and aggravated the fire. (ECR).

2. The incident of fire in S-11 coach of train No.12622 on 30-07-2012 was *most probably caused* due to accidental igniting of fire crackers being carried in the coach (SCR).

3. The accident of fire in coach No.SC99480 GS on 16-10-2012 in Train No.57660 was *most probably caused* by pouring petrol and setting themselves on fire by unknown persons inside the toilet of the coach (CR).

4. The fire in AC three tier coaches of 16594 on 28-12-2013 was *most probably* caused by advertent act or by an act of negligence on the part of unidentified passengers or persons (SCR).

5. The incident of fire in train No.19019 on 08-01-2014 occurred due to *inadvertent act or by an act of negligence on the part of passengers or persons*. (WR).

In view of the above, RB needs to ensure that the causes of fire accidents are established conclusively to take effective corrective action for prevention of recurrence.

(ii) Other instances of fire in passenger coaches

In addition, Audit came across 29 other fire related accidents in passenger coaches (in running trains/workshops/coaching depots) which occurred during the period 2011-12 to 2013-14 and were not reported as fire accidents.

[17] ***Howrah-Dhanbad Exp.(22.11.2011), Tamil Nadu Exp.(30.07.2012), Hyderabad-Solapur Exp.(16.10.2012), Nanded Exp.(28.12.2013), Bandra-Dehradun Exp.(08.01.2014)***

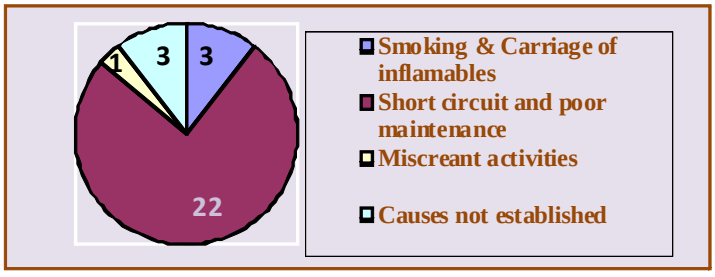
CRS also flagged this issue of non reporting of the fire accident in Delhi-Mumbai Duronto express of 11 November 2012 between Rauti and Bhairogarh stations (WR).

The causes for these 29 instances of fire (SR-12, MR-6, SCR-2, NR-2, SWR-2, WR-2, CR-1, ECOR-1, NER-1) were short circuits, smoking, miscreant activities and negligence during maintenance as detailed below:

Table No. 1.12– Causes of accidents in passenger coaches - not reported as 'Fire Accidents'

Sl. No.	Causes of accidents	No. of accidents	ZRs where accidents occurred
1	Short circuits and poor maintenance	22	SR (9), MR (6), WR (2), CR, SWR, NR (2), SCR
2	Smoking and carriage of inflammable	3	SR (2), SCR,
3	Miscreant activities	1	ECoR
4	Causes not established	3	NER, SR, SWR

Source: Accident investigation reports



RB replied (April 2015) that necessary instructions were issued to ZRs for corrective action.

The reply is too general in nature. Non reporting of these incidence as fire accidents deprived the Railway Administration from taking corrective action. RB should strictly ensure that all instances of fire are reported as fire accidents and initiate corrective remedial action.

1.6.15 Need for amendment of Railway Act, 1989

Government of India, Ministry of Health and Family Welfare (May 2008) has issued notification for prohibition of smoking in public places as per Prohibition of Smoking in Public Places Rules 2008. This rule covers Railway premises also. However, Section 167 of Indian Railway Act 1989 was not amended prohibiting smoking in trains and railway premises. Further, the inquiry Committee on the fire accident in train No.12809 on 06-01-2014 (CR) has also recommended for the amendment to Section 167 of Indian Railway Act 1989.

RB has not yet amended Section 167 of Indian Railway Act to prohibit smoking in trains and railway premises and provide stringent punishment for violation.

1.7 Conclusion

Though IR has initiated use of material with fire retardant properties, it is yet to develop state-of-the-art testing facilities for testing the materials to conform to the latest international norms. The fire simulation software procured in 2010 at a cost of ₹ 1.5 crore, meant for optimisation of coach design could not be put to optimum use due to non-availability of testing facilities. Status of procurement and utilization of fire retardant materials by ZRs was not monitored by RDSO. There is also shortage of number of suppliers of some of the critical fire retardant materials.

The feature of auto closing of vestibule doors which could contribute to avert the spread of fire in an accident has not been extended to non LHB coaches. The High Level Safety Committee (2012) had noted that passengers could not jump out without any aid during an eventuality since existing size of EOWs in non-AC coaches was not adequate. They had, therefore, recommended a change of design of EOWs. However, nothing in this regard has been mentioned by RB in their reply (April 2015). Automatic fire and smoke detection system in non-AC coaches were also not provided.

Para 8.1 of 'terms and conditions of agreement' for leasing of parcel space in brake vans/ parcel vans does not specify anything about scrutiny by Railway officials in loading of parcel vans, etc. This para is not modified to ensure that no inflammables/ banned items were loaded into the parcel vans which lead to compromising safety of passenger trains.

Sizable percentages of employees have not attended training, awareness programme and mock drills on fire fighting. Regular passenger awareness programme was not conducted by RB. Fire safety stickers are also not pasted at prominent locations to reduce fire prone activities at stations and trains. Further, the instructions related to smoking, carriage of inflammable articles were not implemented effectively.

Short circuit and poor maintenance is also one of the major causes for fire accidents. Cooking and fire prone activities continued in pantry cars. As per the norms of UIC (UIC 564-2), one extinguisher in each vehicle with seated places and two extinguishers in each sleeper coach are required to be provided. However, fire extinguishers were not provided in the sleeper Class, Second sitting, General Seating Compartments. Section 167 of Indian Railway Act 1989 was not amended prohibiting smoking in trains and railway premises.

1.8 Recommendations

In order to prevent fire accidents Ministry of Railways (Railway Board) should:

- *Closely monitor creation of facilities at RDSO for testing fire retardant materials and intensify efforts to align the present specifications with the international norms to match with the railways system worldwide, continue their efforts to cross check the quality of the supplies by testing the samples at outside laboratories.*
- *Revisit the agreement (Para 8.1 f) with the lessor of the parcel space in brake vans/ parcel vans to incorporate provision for supervision by Railway staff or impose stringent penalty for violation along with strengthening surprise check mechanism.*
- *Explore possibility of provision of reliable fire detection and warning/ public address system in the coaches, parcel vans, brake vans etc.*
- *Review the system of monitoring of implementation of accepted recommendations of various Committees (High Level Safety Review Committee, CRS / SAG / other Inquiry Committees etc.) to ensure their proper implementation.*

Chapter 2

DISTRIBUTION AND UTILISATION OF SAFETY ITEMS IN INDIAN RAILWAYS

Executive Summary

Indian Railways (IR) runs 21598 trains (passenger and goods) daily using 5633 electric and 4823 diesel locomotives, 66392 passenger coaches and 245267 wagons. These assets are being maintained in 87 loco sheds and 201 wagon repairing shops which are located throughout its network. The extent of its operation and maintenance activities require efficient distribution and utilisation of safety items for safe running of trains and the safety of millions of passenger. An effective inventory management system ensures timely and uninterrupted availability of essential safety items of desired quality. The present review focuses on the performance of the Stores Departments of IR in distribution and utilisation of safety items.

The review was conducted during 2014-15 by examining the records of office of the Controller of Stores, Chief Mechanical Engineer, Chief Electrical Engineer, FA&CAOs of Zonal Railways and Stores Depots attached to Workshops, Loco Sheds and Carriage and Wagons Depots of 17 Zonal Railways. In addition to selection of six production units, 130 out of 338 workshops, sheds, coaching and wagon depots were selected for detailed study. The important audit findings are detailed below:

i. *The categorisation of safety items was not uniform across Zonal Railways. Their numbers ranged between 197 and 833 as against 468 safety items categorised by Railway Board. Fire retardant materials were not categorised as safety items by all the Zonal Railways.* ***Para 2.6.1***

ii. *Unified Price List Number for the safety items is essential for their efficient monitoring across Zonal Railways. It was, however, observed that the assignment of unique Price List Number was not completed by the Zonal Railways and the stock position of various safety items was not effectively monitored both at the Zonal level and Railway Board level resulting in either shortage of some safety items or procurement of some other items in excess of requirement.* ***Para 2.6.1***

iii. *Railway Board's instruction to place purchase orders at least three months ahead of the commencement of the contract period[18] to ensure*

[18] ***The 12 months period for which the requirement is estimated is called "Contract Period".***

supply at the beginning of the contract period was not followed by the Zonal Railways. Several instances of significant delay in preparation of estimates and issue of purchase orders resulted in shortage of safety items which not only caused idling of rolling stock but also resulted in extra expenditure due to emergency purchase to recoup the shortfall. ***Para 2.6.2 and 2.6.4***

iv. *There were instances of failure of safety items even after inspection by the nominated inspecting agencies RDSO and RITES.* ***Para 2.6.5***

v. *There were instances of en route detachments of coaches and wagons due to use of inferior quality of safety items which had not only affected the safe running of trains but also caused detention of rolling stock..* ***Para 2.6.7***

vi. *There were no uniform guidelines of Railway Board for periodic revision of Buffer Stock Limits of safety items. Non-revision of buffer stock limits in 13 Zonal Railways resulted in accumulation of safety items valuing ₹ 381.50 crore in excess of requirement.* ***Para 2.6.8***

Based on the above audit observations following recommendations were made:

i. *Uniformity in categorization of safety items as per Railway Board directives needs to be ensured in a time bound manner to facilitate better co-ordination among Zonal Railways with regard to procurement, distribution and utilization of safety items.*

ii. *Railway Board needs to issue guidelines specifying the limits of lead time at different levels for procurement of safety items. Action needs to be initiated for revision of Buffer Stock Limit suitably in all Zonal Railways to maintain optimum level of stock.*

iii. *Material Management Information System (MMIS) needs to be effectively utilised for ensuring prescribed level of stock of safety items across Zonal Railways.*

iv. *Monitoring mechanism both at the Zonal and Railway Board level needs to be strengthened for efficient distribution and utilization of safety items.*

2.1 Introduction

Safety items are defined as those items of stores and spares which are directly related to safety of train operations. Failure of safety equipments accounts for 3.81 *per cent*[19] of rail accidents. However, ensuring timely availability / procurement / zero failure has significant impact on safe running of trains and safety of passengers. The Stores Department of Indian Railways (IR) is primarily responsible for planning, procurement and supply of various types of stores required for its operations, maintenance and in-house production activities. The user departments such as Mechanical, Electrical, Signal and Telecommunication etc. are responsible for proper utilisation of safety items procured by the Stores Department.

Effective monitoring ensures timely and uninterrupted availability of essential safety items of desired quality by assessing the needs of stores for various user departments. Safety items are procured by the Zonal Railways except some items such as wheel and axles, roller bearings, rails, sleepers, brake blocks etc. for which tender and contracts are finalised at Railway Board level. During 2013-14, IR procured stores amounting to ₹ 19365 crore and out of which ₹ 2229 crore[20] was spent for procurement of safety stock items. Details of organisation structure and the function of different branches of Stores Directorate at the Railway Board and Stores Department of Zonal / Divisional level are shown in ***Appendix I.***

2.2 Audit Objectives

The objectives of the Performance Review were to assess:

I. The efficiency in distribution and timely availability of safety stores to the user departments and

II. The effectiveness of monitoring mechanism to ensure proper utilization of safety stores.

2.3 Scope and Methodology

The study covered a period of three years from 2011-12 to 2013-14. It involved examination of records relating to distribution and utilisation of safety items[21] in the office of the Controller of Stores, Chief Mechanical Engineer, Chief Electrical Engineer, FA&CAOs of Zonal Railways and selected Stores Depots attached to Workshops, Loco Sheds and Carriage and

[19] ***Indian Railway Safety Performance Report of March 2013***
[20] ***Except CLW/ Chittaranjan***
[21] ***Excluding permanent way materials and fuel***

Wagons Depots of 17 Zonal Railways. In addition to selection of six production units, 130 out of 338 workshops, sheds, coaching and wagon depots were selected for detailed study. Total number of depots and production units selected for review is shown in ***Appendix-II.*** For micro study, 20 *per cent* of total number of Estimate Sheets and 10 *per cent* of total number of Purchase Orders (POs) issued by the Stores Department subject to maximum of 25 Estimate Sheets/POs per year were selected.

The Performance Review commenced with an Entry Conference (October 2014) with the Adviser (Railway Stores) and Adviser (Finance) of Railway Board. Entry Conferences were also held at the Zonal Level with the respective Controller of Stores and Financial Advisor and Chief Accounts Officers. The draft review report was issued to the Railway Board on May 01, 2015. The audit findings and recommendations were discussed with Additional Member (Finance) and officials of Stores Directorate during Exit Conference was held on 8 July 2015 at Railway Board. Similar exit conferences were also held by the Principal Directors of Audit in the Zonal Railways with the concerned authorities in the zones. The reply of the Ministry of Railways was received in July 2015 and has been incorporated in the report.

2.4 Audit Criteria

The criteria for evaluation of performance of Stores Department of IR in distribution and utilization of safety items were derived from the relevant rules and provisions contained in the Indian Railway Code for Stores Department, Indian Railway Code for Accounts Department, guidelines and orders issued by Railway Board, Zonal Railways and Production Units from time to time.

2.5 Acknowledgement

The co-operation extended by the Zonal Railways, Production Units and also by the Railway Board in conducting this review is acknowledged.

2.6 Audit Findings

Objective I: To assess the efficiency in distribution and timely availability of safety stores to the user departments.

The Stores Department of IR maintains 262[22] stocking depots spread over the entire railway network serving 17 Zonal Railways and six Production Units. The efficient distribution and utilization of safety items is of paramount

[22] ***Chapter on 'Material management' (Indian Railways Annual Report and Accounts 2012-13)***

importance for the effective maintenance and operation of Railway activities. In the 67th Conference of COS held in July 2008, a decision was taken to ensure 100 *per cent* availability of safety items.

A review of mechanism to ensure efficient distribution of safety items to the user departments revealed that the safety items were either in excess of requirement or short of requirement. The timely availability of safety items to user departments was affected due to delay in submission of Estimate Sheets, delay in issue of Purchase Orders and frequent grant of extension of delivery period to the vendors. Delayed receipt of stores resulted in shortage of safety items and idling of coaches, wagons and locomotives as discussed in the succeeding paragraphs.

2.6.1 Non- standardization of safety items

IR has been using over 1.8 lakh[23] of different types of stores of varying design, description, specification etc. Unification of PL number is vital for efficient monitoring of activites like procurement , distribution and utilisation of stores. In pursuant to Dhall Committee recommendations on public procurement, Ministry of Railways had taken up the task of unification of Price List (PL)[24] number for stores item. Safety items being of immense importance to IR, as a first step, the updated list of safety items was issued by Railway Board in March 2012 wherein the safety items were categorised under three categories[25] as detailed below:

Table No. 2.1:- Number of safety items as prescribed by Railway Board

Sl. No.	Departments	Category-I	Category-II	Category-III	Others #	Total
1.	Locomotive- Diesel	23	23	6	33	85
2.	Locomotive-Electric	44	6	50	-	100
3.	Coaching Stock	5	21	8	1	35
4.	EMUs/MEMUs/Metro/ Coaching Electrical	47	-	21	1	69
5.	Freight Stock	-	7	1	6	14
6.	Signalling	-	91	-	5	96
7.	Telecom	-	15	-	2	17
8.	Track	10	8	-	7	25
9.	Traffic	-	1	-	26	27
	Total	**129**	**172**	**86**	**81**	**468**

#Includes items other than category I, II and III such as magnet valve, hand brake assy, pivot rubber bush, slackless draw bar, wheel and axle for freight stock etc.

[23] ***Chapter on Material management (Indian Railways Annual Report and Accounts 2012-13)***

[24] ***Refers to unique number for identification of each item of stores uniformly over entire railway system***

[25] ***For vendor assessment and approval, safety items were categorized by RDSO into three categories and the same was circulated vide Railway Board's L/No. 99/RS(G)/709/1.Pt.I dated 11.03.2005.***

Scrutiny of records revealed that:

I. None of the Zonal Railways had followed the instructions of Railway Board. Zonal Railways had categorised safety items under heads which were different from the heads prescribed by Railway Board. For example in CR, safety items were categorised under the heads such as Carriage and Wagons, Construction I, Construction III, General, Electrical etc. which were not prescribed by Railway Board. In Metro Railway/Kolkata, safety items had not been categorised.

II. The number of safety items was not uniform across Zonal Railways. The numbers ranged between 197 and 833 as against 468 safety items categorised by Railway Board. Zonal Railways categorised different number of items under 5 to 10 different heads. As against 85 items prescribed by Railway Board under the category 'Locomotive- Diesel', Central Railway had categorised 205 items. Similar instances were also observed in ECoR, NR, NFR and NWR. Details of variation observed in the Zonal Railways as against the prescribed standard of Railway Board is shown in ***Appendix III***.

III. Difference in categorisation of safety items was observed in WR (660 items under 10 heads) and CR (791 items under 7 heads) even though both are headquartered in the same city and have identical operational activities. The heads adopted for categorization of safety items in WR were different from those adopted in CR. The only common head was 'Locomotive - Diesel'. However, the number of items categorised in WR and CR under this head were 123 and 158 respectively as against 85 safety items prescribed by Railway Board. On further analysis, it was observed that only 41 safety items with identical PL numbers were common in both the Railways. In absence of price list number in the Railway Board's list of safety items circulated (March 2012) to all Zonal Railways, the inclusion of appropriate safety items prescribed under the head 'Locomotive - Diesel' could not be verified.

IV. Material identification through unique number (Unified PL Number) is a standard tool in supply chain management. Unified PL numbers plays vital role for effective monitoring of the stock level and initiating procurement action for various stores items across Zonal Railways. Safety items being of immense importance to IR for ensuring safety of passengers, unified PL Number for the safety items is essential for efficient distribution of safety items across Zonal Railways so that the operations of IR are not affected due to shortage of safety items. It was, however, observed that the assignment of unique PL number was not completed by the Zonal Railways and as a result, stock position of various safety items was not effectively monitored both at the Zonal level and Railway Board level as evident from the instances of

shortage and also accumulation of safety items as discussed in sub-paragraphs 2.6.4 and 2.6.7.

V. The reasons for the wide variation between the list of safety items issued by the Railway Board's as per their circular ibid and the list of items prepared by Zonal Railways/RPUs (February 2015) were sought from Zonal Railway Administration. Reply is yet to be received from Railway Administration of 08 Zonal Railways[26] and one RPU (RCF/RBL).

Review of the replies received from other Zonal Railways revealed that:-

(i) The list of safety items includes those categorized as safety items locally (CR and WCR).

(ii) The list of safety items circulated by Railway Board include assembly items as one, while the Zonal Railway administration has categorized each item of the assembly as a separate safety item resulting in a far larger number being categorized as safety items (NWR and WR).

(iii) Safety items are categorised as per the Zonal requirements under various heads (ER/NCR/SER/SWR/SR)

The contention of the Zonal Railway Administration is not tenable as the action of the Zonal Railways for categorizing stores under different heads was not supported by any authority from Railway Board. No specific instructions have been issued by Railway Board delegating the discretionary powers to Zonal Railways for deciding the stores items as safety items other than those circulated by Railway Board (March 2012). The practice in vogue in the Zonal Railways defeated the objective of circulation of comprehensive list of safety items to all Zonal Railways for their efficient monitoring.

VI. For 80 *per cent* reduction of fire accidents and consequent fatalities, Corporate Safety Plan (2003-13) recommended use of fire retardant material in the passenger coaches. Based on International Union of Railways (UIC), RDSO modified the specifications of coach furnishing materials (between 2005 and 2011) by including properties such as resistance to spread of flame, deterioration of visibility due to smoke, limiting oxygen index and toxicity index. ***Fire retardant materials were, however, not categorised as safety items by all the Zonal Railways.***

Railway Board stated (July 2015) that the difference between the list of safety items of the Zonal Railways differed as the safety items prescribed by the Board were of generic category whereas Zonal Railways included specific safety items in their list of safety items.

[26] ***ECR/ ECoR /NR /NER/NFR/ SCR/ SECR/ Metro Railway, Kolkata***

The contention of Railway Board is not tenable as the variation in the number of safety items across Zonal Railways had adverse impact on efficient monitoring of availability of safety items. Moreover, absence of unified PL number for safety items contributed to the factors leading to inefficiency in distribution and utilisation of safety items besides ineffective monitoring of stock of safety items.

2.6.2 Delay in preparation of Estimate Sheets

The stocking depots periodically inform the inventory position to the Controller of Stores (COS) and raise indents based on the estimation of rate of consumption through Material Management Information System (MMIS). Railway Board has not prescribed any time lines for preparation of Estimate Sheets. It, however, instructed (March 2002) the Zonal Railways that POs should be placed at least three months ahead of the commencement of the contract period[27] to ensure supply at the beginning of the contract period. To achieve this, the process of preparation of Estimate Sheets should start at least one year in advance of the contract period for different items.

A test check of 4356 Estimate Sheets[28] out of total 24169 estimate sheets prepared by the Zonal Railways and RPUs for procurement of safety items such as Spring for Draw gear, Brake Blocks, Axle oil, Machinery oil, distributor valves, bearings etc. revealed that while the delay in submission of Estimate Sheets was up to 32 months, the delay in issue of POs against those estimate sheets ranged between 1 and 37 months as per details given below:

Table No. 2.2:- Range of delay in submission of Estimate Sheets and issue of POs

Year	No. of Estimate Sheets test checked		Range of delay in submission of Estimate Sheets (in Months)		No. of POs issued by COS against the ESs		Range of Delay in issue of POs (in months)	
	ZR	RPU	ZR	RPU	ZR	RPU	ZR	RPU
2011-12	1361	34	1 to 32	1 to 12	1640	57	1 to 37	1 to 32
2012-13	1441	49	1 to 20	1 to 21	1681	89	1 to 28	1 to 22
2013-14	1469	33	1 to 13	1 to 25	1666	65	1 to 28	1 to 15
	4271	116			4987	211		
TOTAL	**4387**				**5198**			

Scrutiny of records further revealed the following:

I. Delay of more than 12 months in submission of Estimate Sheets was noticed in two Zonal Railways[29] during 2011-12, in three Zonal

[27] ***The 12 months period for which the requirement is estimated is called "Contract Period".***
[28] ***20 per cent of total number of estimates subject to maximum 25 estimate sheets per year***
[29] ***SER (32 Months) and WCR (18 Months)***

Railways[30] during 2012-13 and in one Zonal Railway[31] in 2013-14. Significant delay[32] ranging between 18 months and 32 months was noticed on SER and WCR. Timely submission of Estimate Sheets was, however, observed in respect of depots test checked in CR, NFR, NWR, SR, SCR, SECR and SWR.

II. In respect of RPUs, maximum delay in submission of Estimate Sheets was noticed in RCF, Kapurthala (12 months) during 2011-12, RCF/RBL (21 months) during 2012-13 and DMW/Patiala (25 months) during 2013-14.

III. Delay of more than 18 months in issue of POs was noticed in six Zonal Railways[33] and one RPU (DMW/Patiala-32 months) during 2011-12, in six Zonal Railways[34] and one RPU (RCF/Kapurthala-22 months) during 2012-13 and in two Zonal Railways[35] during 2013-14. This implied that the POs were issued six months after commencement of the Contract Period and thus violated Railway Board instructions (March 2012) that the POs should be placed at least three months ahead of the commencement of the contract period.

Maximum delay was noticed in SR (37 months) during 2011-12, in SCR (28 months) during 2012-13 and SR (28 months) during 2013-14. In RPUs, maximum delay in issue of PO was noticed in DMW/Patiala (32 months) during 2011-12, in RCF/Kapurthala (22 months) during 2012-13 and RCF/Kapurthala (15 months) during 2013-14.

While admitting the delay in submission of estimate sheets, Railway Board stated (July 2015) that this was due to delay in submission of demand. Railway Board further contended during exit conference that the procurement of safety items was being done on the basis of demands of the users.

The contention of the Ministry of Railways is not tenable as there were several instances of either shortage of safety items or procurement in excess of requirement as pointed out in succeeding Paragraphs 2.6.4 and 2.6.7.

2.6.3 Delay in issue of Purchase Orders and receipt of stores

As instructed by Railway Board, POs should be placed at least three months ahead of commencement of contract period to ensure supply at the beginning of contract period. Permissible maximum lead time should, therefore, be nine

[30] ***SER (20 Months), WCR (18 Months) and Metro (13 Months)***
[31] ***SER (13 Months)***
[32] ***SER(32 months) during 2011-12, WCR (18 months) during 2012-13***
[33] ***SR (37 Months),SWR (33 Months), SER (28 Months), SCR (20 Months), NFR (34 months) and WR (19 Months)***
[34] ***SCR (28 Months), NFR (27 Months), SR (25 Months), SWR (25 Months), WR (20 Months) and SER (19 Months)***
[35] ***SR (28 Months) and SER (26 Months)***

months and three months for internal lead-time[36] and external lead-time[37] respectively.

Test check of 1132 POs[38] relating to safety items such as Composite Brake Block, M.S. heavy duty seamless tube, Transformer oil, Gear case assembly, etc. procured in 17 Zonal Railways revealed delay[39] in internal lead time ranged between 01 month and 26 months in respect of 424 POs (37 *per cent*). Delay in external lead time ranging from 01 month to 33 months was also noticed in case of 721 POs (64 *per cent*).

In respect of RPUs, test check of 225 POs revealed that there was delay in internal lead time ranging between 01 month and 20 months in case of 75 POs (33 *per cent*). Further, in 161 POs (72 *per cent*), delay in external lead time ranged between 01 month and 23 months. Year-wise range of lead time is shown in Table below:

Table No 2.3: Delay in lead time for procurement of Safety Items

	Zonal Railways						
Year	**No. of POs test checked**	**Delay in Internal lead time (in months) after allowing permissible period of 09 months**			**Delay in External lead time after allowing permissible period of 03 months**		
		No. of POs	**Min.**	**Max.**	**No. of POs**	**Min.**	**Max.**
2011-12	382	121	01	26	228	01	33
2012-13	385	160	01	19	245	01	25
2013-14	365	143	01	21	248	01	18
Total	**1132**	**424**			**721**		
	Railway Production Units						
2011-12	74	28	01	07	55	01	23
2012-13	87	33	01	20	73	02	20
2013-14	64	14	01	07	33	01	11
Total	225	75			161		
G.Total	**1357**	**499**			**882**		

Scrutiny of record relating to delayed cases in respect of external lead time and internal lead time across 17 Zonal Railways and six RPUs revealed that:

(i) In 17 Zonal Railways, 417 cases out of 545 (77 *per cent)*, longer external lead time pertained to Category I and II items[40] and 418 cases

[36] ***Time gap between the date of identification of requirements till placing of supply order***
[37] ***Time taken by the supplier to supply the item from the date of placement of order.***
[38] ***10 per cent per year subject to maximum 25 per year***
[39] ***Allowing permissible period of nine months***
[40] ***For vendor assessment and approval, safety items were categorized by RDSO into three categories and the same was circulated vide Railway Board's L/No. 99/RS(G)/709/1.Pt.I dated 11.03.2005.***

out of 657 (64 *percent*) pertained to POs of A and B category[41] of safety items.

(ii) While in six RPUs, 92 cases out of 174 (53 *per cent*), longer external lead time pertained to Category I and II safety items, 103 cases out of 111 (93 *per cent*), pertained to POs of A and B category of safety items.

(iii) In 265 cases out of 366 (72 *per cent*), delay in internal lead time was observed in respect of POs of A and B category store items.

(iv) In respect of RPUs, delay in internal lead time in all 22 cases pertained to POs of A and B category store items.

Scrutiny of records further revealed that the delay in external lead time was due to frequent extension of delivery periods to the suppliers. It was revealed that:

I. Extensions for more than 60 days were granted in 334 cases out of 517 (65 *per cent*) across Zonal Railways and in 83.33 *per cent* cases (85 cases out of 102) in respect of RPUs. The main reasons for grant of extensions were suppliers' request, delay in inspection by inspecting agencies etc. Table below shows the number of extensions granted and the range of period of extension.

Table No. 2.4: Number of extensions granted to the suppliers and their range

Year	No. of POs. test checked		No. of extensions granted		Number of POs. where extensions granted ranged between (in days)					
					1-30		31-60		Above 60	
	ZR	RPU	ZR	RPU	ZR	RPU	ZR	RPU	ZR	RPU
2011-12	298	73	329	59	27	4	24	3	108	31
2012-13	313	76	371	61	39	4	31	1	128	37
2013-14	274	63	235	40	38	3	24	2	98	17
Total	885	212	935	160	104	11	79	6	334	85
ZR+RPU	**1097**		**1095**		**115**		**85**		**419**	

Scrutiny of records further revealed that:

I. In 17 Zonal Railways, 1011 POs pertaining to 57 depots were 'Overdue'[42] for more than six months as on 31 March 2014 and 199 of them were cancelled. In eight Zonal Railways[43], the number of overdue POs which were cancelled subsequently ranged between 25 *per cent* (WCR) and 62 *per cent* (CR).

[41] ***'A'category items are high value items which constitute 70 per cent of total value of all items stocked; 'B'category items are medium items constituting 20 per cent of total value of all items; and C' are low value items which constitute 10 per cent of total value of all items***

[42] ***Para 769 to 772 of Indian Railway Code for the Stores Department***

[43] ***CR (62.37 per cent), ECR (40.43 per cent), NR (36.84 per cent), NFR (29.17 per cent) , SR (35.59 per cent), SER (46.30 per cent , SECR (42.86 per cent)) and WCR (25.30 per cent)***

II. 11 Zonal Railways[44] and two Production Units (DMW/Patiala and ICF/Perambur) had to resort to emergency purchases due to vendor's failure to supply, faulty estimation, shortage of stock, excess drawal etc. In 132 cases out of 300, safety items were procured at higher rates as compared to purchase of similar items in the normal course during the same period with nearly the same lead time as indicated in ***Annexure I***. This indicated inefficient distribution and monitoring by the Zonal Railways as well as Railway Board as the latter receives monthly report of availability of safety items from the Zonal Railways for monitoring.

III. In RPUs, 49 POs were overdue and in 36 cases, COS of Production Units failed to initiate action against the defaulting suppliers.

IV. In 17 Zonal Railways, 64 *per cent* of the cases (457 cases out of 706) pertained to the Category I and II items and 63 *per cent* of the cases (19 cases out of 30) pertained to Category I and II items in respect of RPUs.

In respect of extensions of delivery period in excess of 60 days with reference to category as well as value of safety items, it was observed that:

I. 206 cases out of 288 (72 *per cent*) pertained to the category I and II safety items and 70 *per cent* of the cases (216 cases out of 307) pertained to A and B category items.

II. In RPUs, 66 *per cent* of the cases (38 cases out of 58) pertained to the category I and II safety items and 84 *per cent* of the cases (36 cases out of 43) pertained to A and B category items.

Railway Board cited that delay in getting response from the vendors, quotation of higher rates, shortage of fund etc. were some of the factors contributing to the delay in issue of POs. Regarding grant of extension of delivery period, Railway Board stated (July 2015) that the extensions are granted to ensure availability of supply as the time required for fresh purchases is more than the extensions solicited by the firms. Railway Board further stated that the emergency purchases are resorted for reasons such as unanticipated increase in requirement, failure of vendors, delayed inspection, rejection etc.

The contention of Railway Board is not acceptable as the availability of safety items *at the right time* was not ensured which lead to shortage of stock of safety items as brought out in Para- 2.6.4 below. The reasons cited by Railway Board in respect of emergency purchase indicated that adequate priority was not assigned to ensure timely availability of safety items.

[44] ***CR , ECR, ECoR, NWR, SR, SCR, SER, SECR, SWR, WR and WCR***

2.6.4 Impact of delay on availability of safety items

A review of the impact of delay on the availability of safety items revealed that:

I. In 117 Stocking depots over 17 Zonal Railways, 3254 safety items were out of stock for periods upto 25 months as per details given below:

Table No. 2.5: The range of period of out of stock position of Safety items

Year	No. of safety items out of stock (Cumulative fig.)	Shortage of quantity of safety items (Cumulative fig.)	Period for which there was no stock of safety items (in months)
2011-12	936	412111	1 to 24
2012-13	1048	473592	1 to 16
2013-14	1270	354136	1 to 25

II. Three Zonal Railways (ECR, NFR and SR) accounted for 68 *per cent* of the total number of out of stock safety items as detailed below:

Table No. 2.6: Maximum number of Out of Stock of Safety items

Name of Zonal Railways	No. of safety items out of stock	Shortage of quantity of safety items (in numbers)
ECR	121	192417
NFR	505	284680
SR	1219	371069
TOTAL	1845	848166

III. In 10 Zonal Railways[45] 814 coaches, wagons and locomotives remained idle for periods upto 668 days for want of safety items resulting in loss of earning capacity of ₹ 348.37 crore as per details given below***:-***

Table No 2.7: Loss of earning capacity due to idling of assets

Year	No. of workshop/sheds where assets remained idle	No. of assets remained idle	Range of idling period (in days)	Loss of earning capacity (₹ in crore)
2011-12	14	222	1 to 513	38.34
2012-13	14	293	1 to 570	88.99
2013-14	15	294	1 to 668	221.04
Total	**43**	**809**		**348.37**

[45]***CR, ECR,NER, NFR,SR,SCR,SER,SECR, SWR and WCR. The idling of rolling stock due to shortage of safety items was not noticed in the remaining seven Zonal Railway.***

Railway Board stated (July 2015) that out of stock of safety items caused by various factors such as drawal of stores more than the anticipated annual consumption, non-supply in time by vendors, delay in inspection etc.

The contention of Railway Board is not acceptable as the Zonal Railways failed in effective utilisation of MMIS which facilitate faster data collection and easier assessment of requirement. Since safety items are procured from established regular sources approved by RDSO and inspected by RDSO/RITES, failure of vendors to timely supply the stores and delay in inspection was indicative of improper vendor assessment and inefficiency of Zonal Railways in ensuring availability of safety items at the beginning of the contract period as instructed by Railway Board in March 2002.

Audit Objective II: To assess the effectiveness of monitoring mechanism to ensure proper utilization of safety items.

At Zonal Railway level, monitoring of utilization of safety items is being done through monthly meeting of COS with Heads of user departments and weekly meeting of depot-in-charge with user department at workshops/loco sheds/Coaching and Wagon depots etc. The information provided to the COS of Zonal Railways by the Depot officers was not effectively utilized to initiate remedial measures after discussion in the monthly meeting with the officers and HODs of the user departments.

Railway Board monitors the utilization and availability of safety items by the Zonal Railways through a monthly report. The objective of this reporting is defeated as there were several instances of stalling/detention/*en route* detachment of coaches, wagons and locomotives due to failure of safety items which are being procured from RDSO approved sources and utilized after clearance by the Inspecting agencies such RDSO and RITES.

A test check of utilisation of safety items of desired quality revealed instances of poor quality of inspection of safety items before their utilization which had adverse impact on the operation of trains and safety of passengers as discussed in the succeeding paragraphs.

2.6.5 Rejection after clearance by the Inspecting Agency

Whenever a consignee finds that the material inspected by RITES/ RDSO/ DQA does not meet the requirement of the PO, Rejection Advice is sent to the inspecting authority. Thereafter, joint inspection is carried out by the representative of inspecting authority, supplier and consignee.

Scrutiny of records relating to rejection of safety items, after inspection by the nominated agency in selected depots of Zonal Railways revealed that:

I. In 16 Zonal Railways (except in NCR) and four RPUs (except in ICF/Perambur and RCF/ Raibareli), 319 rejection cases (31 items under Category – A, 75 items under Category – B, 137 items under Category – C and 76 items under 'Other' Category) worth ₹ 8.55 crore were noticed as the supplies did not conform to the required specification;

II. Out of 61 cases where joint inspections were conducted, no inspection certificates were submitted by the nominated Inspecting agencies in respect of 25 rejected cases (2 items under category A, 1 item under category B, 9 items under category C and 3 items under other category) of six Zonal Railways[46] and in one RPU (DLW/Varanasi-10: 1 item under category A, 4 items under category B and 5 items under category C)

III. Out of 319 rejected cases, in 258 cases of 11 Zonal Railways[47] and three RPUs[48], no joint inspections were carried out to settle the rejection cases. In 10 Zonal Railways[49] and two RPUs[50], 120 rejection cases pertained to receipt of stores from Category I items.

2.6.6 Rejection by the Consignee

During inspection by the consignee, substantial numbers of consignments get rejected due to breakage, damage and supply of defective materials. It was observed that there were 1395 rejection cases in 27 Stores Depots during 2011-14. Out of 1395 cases, 921 were settled and the balance 474 cases involving money value of ₹ 4.02 crore were outstanding (March 2014) in 11 Zonal Railways[51] and four RPUs[52]. Of these outstanding cases, 163 cases involving money value of ₹1.79 crore were more than two years old in eight Zonal Railways[53] and in DLW/Varanasi as indicated in ***Annexure II.***

2.6.7 Failure of safety items during warranty period

The vendors are liable to replace such stores which fail prematurely within the warranty period. It was observed that:

[46] ***ER (3), ECR (3), NFR (2), NWR (1), SER (3) and WCR (2).***
[47] ***CR (6), ER (3), ECR (39), ECoR (2), NFR (5), NWR (1), SCR (6), SER (19), SECR (15), WCR (3) and Metro Railway/ Kolkata (6)***
[48] ***DLW (140), CLW (10) and DMW (3)***
[49] ***ECoR (2), NR (2), NFR (1), NWR (1), SR (1), SCR (1), SER (12), SECR (7),SWR (3) and WCR (1)***
[50] ***DLW/ Varanasi (80) and CLW/Chittaranjan (9)***
[51] ***CR, ER, ECR, NER, NFR, NWR, SCR, SER, SWR, WR and WCR***
[52] ***DLW/Varanasi, CLW/Chittaranjan, RCF/Raibareli and DMW/Patiala***
[53] ***ER, ECR, NER, NWR, SER, SWR, WR and WCR***

I. In the Zonal Railways and RPUs, 36327 safety items[54] worth ₹ 8.41 crore failed during the warranty period and the same were not replaced by the firms for different periods upto 34 months from the date of their failures. The delay in replacement was more than 12 months in six Zonal Railways [55] and two RPUs[56]. Safety items worth ₹ 5.03 crore (62 *per cent*) pertained to four Zonal Railways[57].

II. In six RPUs, 3821 safety items[58] valuing ₹ 1.60 crore failed during the warranty period and the same were not replaced (March 2014) by the vendors. Out of these, safety items worth ₹74.50 Lakhs (46 *per cent*) pertained to ICF/Perambur alone.

III. On examining the outstanding warranty claim cases as on 31 March 2014 with reference to category as well as value of safety items, it was observed that:

(i) In the Zonal Railways 235 cases out of 298 (79 *per cent*) pertained to Category I and II items and 79 *per cent* of the cases (372 cases out of 470) pertained to A and B category items; and

(ii) In RPUs, 94 *per cent* of the cases (137 cases out of 145) pertained to the category I and II items. 50 cases out of 147 (34 *per cent*) pertained to A and B category items.

(iii) The proposals for black listing of 19 firms were sent to RDSO/Railway Board by three Zonal Railways[59] (NR – 6, NER – 10 and SER – 3). Out of these, 15 firms (NR – 2, NER – 10 and SER – 3) were banned for business for three to five years. These firms had submitted forged authorisation letters/inspection certificates, supplied substandard equipments/machines etc. Response of RDSO/Railway Board is awaited in the remaining four cases pertaining to NR.

While no responsibility was fixed for deficient inspection by the inspecting agencies, the use of inferior quality of safety items resulted in stalling of trains, on-line detentions to locomotives, detachment of coaches/ wagons from running trains etc. It was observed that:

I. Test check in 44 Coaching and Wagon Depots revealed that 210 Passenger trains and 670 Goods trains including attached locos were

[54] ***Such as Silent Blocks for Anchor Link, Distributor valves, Buffer Casings, draft gear , brake head, safety hook assembly, hand brake wheel , knuckles , air hoses etc.***
[55] ***CR- 34 months, ECoR-16 months , NFR-29 months, NWR-16 months, , WR 34 months and WCR - 29 months***
[56] ***DLW/ Varanasi- 34 months and CLW/Chittaranjan – 14 months***
[57] ***SWR -₹2.15 crore; SCR- ₹1.81 crore; ECoR-₹63 lakh and NFR-₹44 lakh***
[58] ***Such as master controller, elastic rings, pinion etc.***
[59] ***No case of black listing of firms citing rejection of safety items was noticed in other Zonal Railways and RPUs.***

stalled/ detained *en route* for detachment of sick Coaches/ Wagons due to failure of safety items[60] as detailed below:

Table No. 2.8: Hours of detention of passenger and goods trains

Year	No. of Passenger Trains stalled/ detained		No. of Goods Trains stalled/ detained		Total Detention Hours (Hours-Minutes)		
	No. of Depots	No. of trains	No. of Depots	No. of trains	Passenger	Goods	Locos
2011-12	**24**	65	**20**	261	48-00	1658-34	266-12
2012-13	**24**	66	**20**	188	37-56	717-01	274-08
2013-14	**24**	79	**20**	221	87-48	840-38	435-57
Total		**210**		**670**	**173-44**	**3216-13**	**976-17**

Similarly, 1902 locomotives had suffered on line detentions due to failure of safety items in all the Zonal Railways which also resulted in detention of the connected passenger and goods trains as indicated in the table below:

Table No. 2.9: Hours of detention of Locomotives

Year	Detentions to Locos		Total No. of Locos detained	Total Detention (Hours-Minutes)		
	Diesel	Electrical		Locos	Passenger	Goods
2011-12	377	107	484	384-28	537-01	1968-12
2012-13	602	127	729	713-54	1222-56	647-23
2013-14	560	129	689	613-43	762-30	1117-34
Grand Total	**1539**	**363**	**1902**	**1712-05**	**2522-27**	**3733-09**

II. It was observed that there were instances of *en route* detachments of coaches and wagons due to use of inferior quality of safety items[61]. A total of 12245 coaches[62] and 39551wagons[63] suffered *en route* detachments in 14 Zonal Railways. Some of the coaches and wagons were detached within 100 days of their Periodical Overhauling (POH). The detachment of coaches and wagons from running trains due to failure of various materials/ equipments affected the safe running of trains besides loss of earning capacity of the rolling stock. Year-wise Position of *en route* detachments of wagons/coaches is indicated in the table below:

[60] ***Such as Wheel linear, Bolster, Spring gear, Cartridge bearing, CBC Rod, Distribution Valve, LB Spring, Brake gear, Brake cylinder, Shock absorber, Brake binding, Compressor, Roller bearing, Anchor link etc.***

[61] ***Such as CBC Draft gear, CBC Shank, CBC yoke, Knuckle, Anchor link, Distributor valve, Equalizing stay, Side buffer plunger, Coil Spring, Pivot, Secondary spring, Roller bearing, Brake beam, Centre Pivot etc.***

[62] ***CR, ER, ECoR, NR, NER, NCR, NFR, NWR, SR, SCR, SER, SECR, SWR and WCR. In the remaining three Zonal Railways, cases of enroute detachment was not noticed.***

[63] ***CR, ER, ECoR, NR, NCR, NER, NFR, NWR, SCR, SER, SECR, SWR, WR and WCR. In two Zonal Railways ECR and MR/Kolkata, no cases of enroute detachment noticed.***

Table No. 2.10: *En route* detachment of coaches and wagons

	Detachment of Coaches/ Wagons after POH					
Year	**Coaches within 100 days**	**Coaches after 100 days**	**Total Coaches**	**Wagons within 100 days**	**Wagons after 100 days**	**Total Wagons**
2011-12	**236**	**3272**	**3508**	**5569**	**8126**	**13695**
2012-13	**244**	**3576**	**3820**	**1383**	**11808**	**13191**
2013-14	**185**	**4732**	**4917**	**1188**	**11477**	**12665**
Total	**665**	**11580**	**12245**	**8140**	**31411**	**39551**

III. In nine Zonal Railways[64], the safety items which failed on the running trains were under the category of 'must change' items during POH/ ROH/ IOH which was indicative of use of inferior quality of safety items ignoring the safety concern.

IV. In five Zonal Railways[65], the requirements of safety items were made good by using old serviceable stores or by reclaimation of old stores with added risk of failure during operation. Out of total 507 cases of accidents across the Zonal Railways during the period from 2011-12 to 2013-14, 16 accidents were due to failure of safety stores in respect of seven Zonal Railways[66] resulting in loss of life in two cases (ER and NFR) and a loss of property to the extent of ₹ 25.01 crore.

Railway Board stated (July 2015) that all the safety items are normally inspected by nominated inspecting agencies for ensuring quality and compliance to the ordered specification. The reasons for failure of safety items were, however, not elaborated in the reply of Railway Board. The practice of use of old serviceable stores or by reclaimation of old stores were not supported by any provisions in their codes and manuals particularly for safety items.

2.6.8 Buffer Stock Limit

Buffer Stock refers to inventory which is held in addition to regular inventory to guard against uncertainty in demand or lead time. Railway Board communicated (March 2002) to all Zonal Railway that the Buffer Stock Limits for stock items other than indigenous Wheel Tyre and Axles (WTA) items may be decided by the COS in consultation with Associated Finance.

In November 1997, IR introduced Material Management Information System (MMIS) to enable faster assessment of requirement of users and minimise the time taken for procurement and distribution of safety items by initiating procurement action through Indian Railway E-Procurement System (IREPS).

[64] ***CR, ER, ECoR, NR, NCR, NER, NWR, SER and SECR***
[65] ***WR,SR, SCR, SER and SWR***
[66] ***ER (2), NR (2), NCR (1), NFR (5), SR (1), WR (3) and Metro Railways (2)***

Buffer Stock Limits followed traditionally should also, therefore, undergo periodical revision to match the changing need of the users so that the level of stock does not fall short of requirement or in excess of the requirement.

Audit observed that both the Zonal Railways and the Railway Board failed in monitoring the trend of consumption of stores by user departments and time required for their replenishment. While in two Zonal Railways (WR and SWR) Buffer Stock limits were revised, in two other Zonal Railways (SR and Metro Railway/ Kolkata), buffer stock limits had not been prescribed at all. The existing Buffer Stock limits were not periodically reviewed and revised in 13 Zonal Railways[67]. Non-revision of buffer stock limits resulted in avoidable accumulation of safety stock worth ₹65.46 crore during 2011-14 as shown in the table below:

Table No. 2.11: Accumulation of stock due to non revision of Buffer Stock Limits.

(₹ in crore)

Year	No. of Pos. test checked	Buffer Stock Value (Before Revision)	Buffer Stock Value* (After Revision)	Excess Buffer Stock Value (Col.No.3-4)
1	**2**	**3**	**4**	**5**
2011-12	300	38.99	17.74	21.26
2012-13	309	43.42	20.02	23.40
2013-14	289	38.76	17.96	20.80
TOTAL	898	121.17	55.72	65.46

* ***Financial implication worked out by audit with reference to the revised Buffer Stock Limit adopted by WR. This amount includes ₹ 53.30 lakhs on account of upward revision of Buffer Stock by SWR for 'C' category items during the year 2012-13 and 2013-14. Specific reasons for upward revision of Buffer Stock Limit for C category items were not available on record.***

Scrutiny of records relating to status of stock of safety items during 2011-14 revealed that:

i. In 15 Zonal Railways[68] and two RPUs[69], **'Overstock[70]** of 18853 items[71] valued at ₹159.79 crore (March 2014) were kept idle. In nine Zonal Railways[72] and DMW/ Patiala, the percentage increase in the number of over stock items ranged between 3 per cent and 223 *per cent.*

ii. In 13 Zonal Railways[73] and three RPUs[74], 'Surplus[75]' stock of 10613 items valued at ₹65.60 crore (March 2014) was held. In two Zonal

[67] ***CR, ECR, ECoR, NR, NCR, NER, NFR, NWR, SCR, SER, SECR, SWR and WCR.***

[68] ***except WCR, where the records were not made available and SECR which had not furnished data for the years -12 and 2012-13***

[69] ***DLW/Varanasi and DMW/Patiala except ICF, RCF/ Kapurthala and RCF/ RBL where there was no over stock and CLW where the records were not made available***

[70] ***Overstocks' refer to the quantities in excess of 50 per cent of total of issues made in the previous year of a particular item.***

[71] ***Some important high value over stock items were L-type Composite Brake Block, Head Light Assembly, Axle Rough Gear, Spring Coil, Gear Draft, Rod Assembly Car Body etc.***

[72] ***ER, ECoR, NR, NER, SR, SCR, SECR, SWR and WR***

[73] ***except SER, MR/Kolkata and WR; relevant records of WCR were not made available***

Railways (ECR and NER) and in two RPUs (ICF/Perambur and DMW/Patiala), Surplus Stock items ranged between 6 *per cent* and 68 *per cent*.

iii. All the Zonal Railways (except WCR[76]), and three RPUs[77], held **'Non-moving[78]'** stock of 10872 items valued at ₹156.12 crore. In seven Zonal Railways[79] and two RPUs (CLW/Chittaranjan and DMW/Patiala), number of Non Moving Stores items had increased from 6 *per cent* in the year 2011-12 to 171 *per cent* in 2013-14.

Railway Board stated (July 2015) that buffer stock is meant take care of uncertainties in procurement process and variation in consumption. They further asserted that the implementation of MMIS does not affect the uncertainty in demand and supply.

The contention of Railway Board is not acceptable as the non-revision of buffer stock limit led to holding of stock in excess of requirement of user departments. Further, MMIS should have been used as an aid to the management for judicious assessment of requirement of users and optimal holding of stock by way of proper distribution of safety items among the Zonal Railways. The accumulation of stock in excess of requirement as mentioned in ***Annexure III*** indicated that the distribution of safety items was not in conformity with the utilisation of user departments. Possibility of overstock items getting corroded / deteriorated due to passage of time and the safety hazards due to use of such items cannot be ruled out besides avoidable unproductive blocking of funds.

2.7 Conclusion

Safety items play a vital role in safe running of trains. Efficient monitoring of distribution and utilisation of safety items of desired quality is therefore essential for the safety of the passengers. Railway Board's instruction for standardisation of safety items and unification of Price List Number for uniform monitoring across Zonal Railways were not adhered to. The delay in receipt of safety items due to delay in preparation of estimate sheets, issue of POs, frequent extensions of delivery period of contract and rejection of defective safety items had adverse impact on the availability of safety items which caused idling of rolling stock, detention of trains and safe running of trains due to *en route* detachment of coaches. Non-revision of Buffer Stock Limit resulted in either shortage of safety items or holding of stock in excess

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[74] ***CLW/Chittaranjan, ICF/Perambur and DMW/ Patiala***

[75] ***The stores items which have not been issued for a period of two years but likely to be utilized in the near future are termed as 'Surplus Stock'***

[76] W***here the records were not made available to audit.***

[77] ***CLW/Chittaranjan, DMW/ Patiala and ICF/Perambur***

[78] ***Non-moving' Stores comprise stores which have not been issued for the past 24 months and are not likely to be utilized within the next two years***

[79] ***ECR, NR, NER, NWR, SER, WR and Metro Railway/ Kolkata***

of requirement. Inefficient monitoring of availability and consumption of user departments led to overstock/surplus stock of safety items.

2.8 Recommendations

Following recommendations are suggested for ensuring implementation by Railway Board:

I. ***Uniformity in categorization of safety items as per Railway Board directives needs to be ensured in a time bound manner to facilitate better co-ordination among Zonal Railways with regard to procurement, distribution and utilization of safety items.***

II. ***Guidelines specifying the limits of lead time at different levels for procurement of safety items need to be issued. Action needs to be initiated for revision of Buffer Stock Limit suitably in all Zonal Railways to maintain optimum level of stock.***

III. ***MMIS needs to be effectively utilised for ensuring prescribed level of stock of safety items across Zonal Railways.***

IV. ***Monitoring mechanism both at the Zonal and Railway Board level needs to be strengthened for efficient distribution and utilization of safety items.***

(SUMAN SAXENA)
Deputy Comptroller and Auditor General

New Delhi
Dated: 29 July 2015

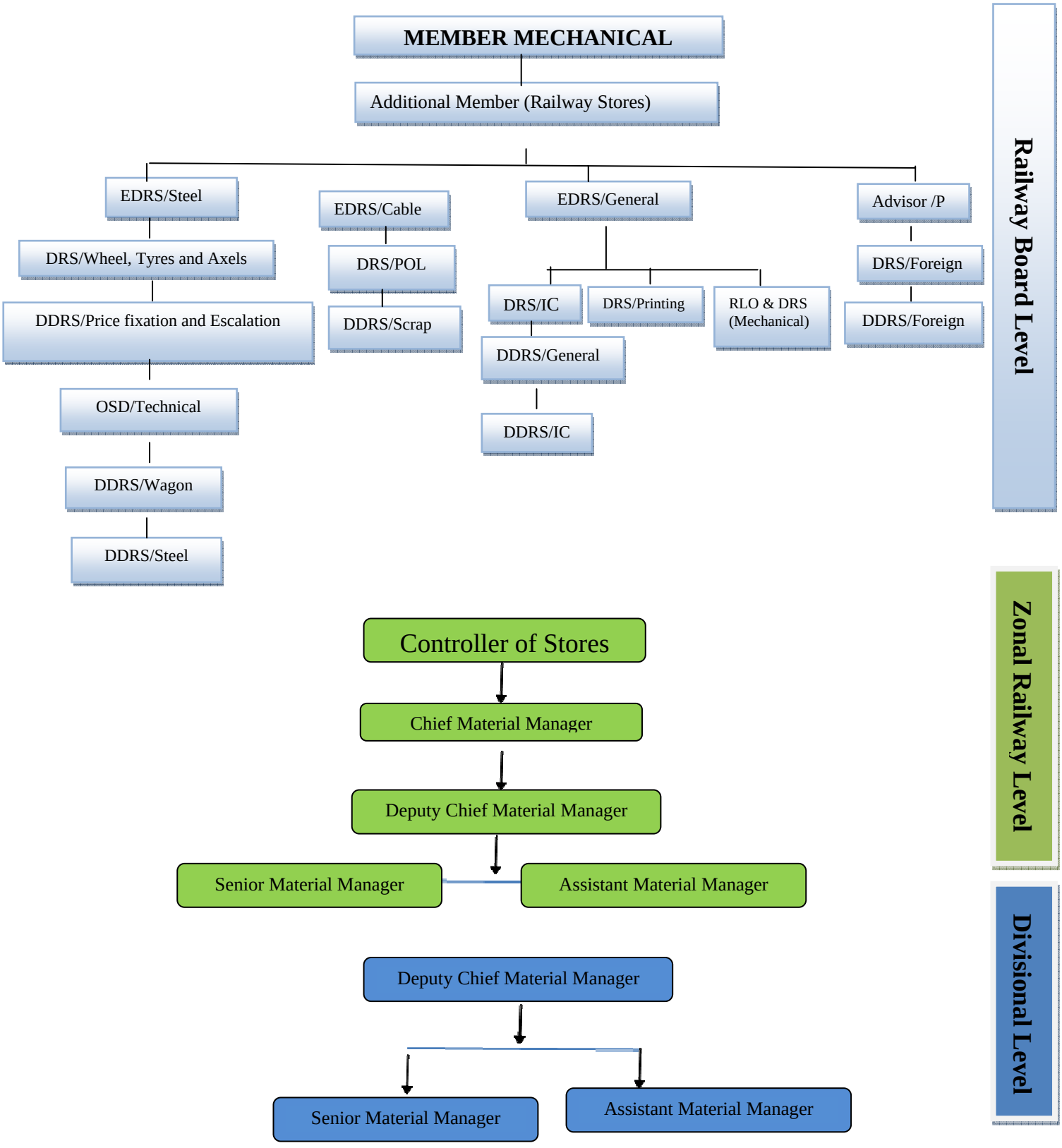
Countersigned

(SHASHI KANT SHARMA)
Comptroller and Auditor General of India

New Delhi
Dated: 29 July 2015

Appendix 1 (Ref Para 2.1)

ORGANISATION CHART OF STORES DIRECTORATE



ED - Executive Director, **D** – Director, **DD** – Deputy Director, **OSD** – Officer on Special Duty, **RS -** Railway Stores**,** **P** – Procurement , **IC** – Inventory Control, **POL** – Petroleum Oil and Lubricant , RLO – Regional Liaison Officer.

Appendix I (Ref Para 2.1)

Functions of different branches of Stores Directorate

Unit	Department	Functions
Railway Board Level	**Executive Director Railway Stores (Steel)**	Policy and procedure for indenting and procurement of steel, disposal of overstock and surplus of steel etc.
	Director, Railway Stores (Wheel, Tyres and Axels)	Planning of requirements of Wheels, Tyres and Axles etc.
	Deputy Director, Railway Stores (PF & EC)	Coordination work between commercial, Stores Directorates, wagon builders, RDSO, traffic, mechanical and commercial Directorate.
	Executive Director Railway Stores (Cable)	Finalisation of tender and contract relating to Railway Signaling Cable, Elastomeric Cable for Electric Locos etc.
	Director, Railway Stores (POL)	Procurement of Primary HSD, SKO, LDO, Furnace Oil etc. Oils
	Executive Director Railway Stores (G)	All policy matters pertaining to Stores Code correction, COS Conference, Complaint cases of Railways & PSUs etc.
	Director, Railway Stores (Printing)	All matters relating to Printing Presses of Indian Railways.
	Director Railway Stores (M)/RLO	Work related with coordination, monitoring and logical implementation of MMIS and IREPS over Zonal Railways.
	Advisor, Railway Stores (Procurement)	Procurement of locos from BHEL, Manpower planning and establishment matter of stores department.
	Director Railway Stores (Foreign)	Procurement of Wheels, Axles, locomotives and wheel sets etc.
Zonal Railway Level	**Controller of Stores (COS)**	Planning, procurement and distribution of stores, monitoring availability and utilization of stores by the user departments.
	Chief Material Manager and Deputy Chief Material Manager	Support COS in discharging his functions and responsibilities, implementation of policies and guidelines of Railway Board, inventory control etc.
Divisional Level	**Deputy Chief Material Manager, Senior Material Manager and Assistant Materials Managers**	Distribution of stores, monitoring inventory and utilization of stores, disposal of surplus/overstock/Non-moving stores etc.

Appendix – II (Ref Para 2.3)

Statement showing the selection of sample size for Test Audit					
Sl. No.	Description	Size	Total	Sample size selected	Per cent of Sample size selected
1	Workshops- (Mechanical and S&T)	50 percent subject to a maximum of two workshops	50	29	58.00
2	Sheds (EMU/ MEMU/ DEMU Car Sheds)	One Diesel Loco Shed and one Electrical Loco Shed subject to maximum of two sheds. (If any Zonal Railway is having two or more Diesel Loco Sheds and no Electrical Loco sheds, two Diesel Loco sheds is selected or vice versa.)	87	32	36.78
3	Coaching Depot and Wagon Depots	Two Major Depots – one Coaching depot and one Wagon depot. If there was no wagon depot, two major coaching depots selected.	201	69	34.33
4	Independent Production Units and Production units associated with Zonal Railways	100 per cent	6	6	100

Appendix – II (Ref Para 2.3)

Statement showing the details of selection of sample size for Test Audit

Sl. No.	Zonal Railway	Workshops-(Mechanical and S&T) 50 *per cent*		Sheds (EMU/MEMU/ DEMU Car Sheds)		Coaching and Wagon Depots		Production Units (100%)
		Total Nos.	Selected	Total Nos.	Selected	Total Nos.	Selected	
1	CR	3	2 CR Workshop/ MTN & Loco Workshop/PL	10	2 DLS/ Pune & ELS/KYN	26	8 CD WB,BSL,DD,DR, & WD /VDLR, BSL, Wadi, DD	
2	ER	4	2 Mechanical Workshop /KPA &LLH	4	2 DSL/ UDL & ELS / HWH	5	2 CD /TPKR & WD/ UDL	
3	ECR	1	1 Mechanical Workshop/ SPJ	5	2 DLS /MGS & ELS/ MGS	23	7 CD/RJQ,PNBC,MFP, DBG&WCC/MGS,GHZ,NRPA	
4	ECoR	1	1 CR Workshop/ MCS	3	2 DLS/VSKP &ELS/ VSKP	7	3 CD/Puri, BBS &WD/VSKP	
5	NR	5	2 C&W –JUDW & Signal Shop/ GZB	6	2 DSL/TKD &ELS/ LDH	13	4 CD/ LKO,JAT &WD/UMB,TKD	
6	NCR	1	1 WD/JHS	5	2 DSL/JHS &ELS/ CNB	16	5 CD/ ALD,CNB,AGC &WD/CNB,CAR	
7	NER	3	2 1.S&T Workshop/ GKC 2.Mech. Workshop/ IZN	2	2 DSL / GD DSL/ IZN	13	2 1. CD/GKP 2. CD/LJN	
8	NFR	2	2 Mechanical workshops NBQ &DBRT	4	2 DLS/NGC &DLS/ SGUJ	12	4 CD / NJP, GHY & WD /NJP,NGC	
9	NWR	5	2 Carriage Workshop/ Aii &Signal Workshop /Aii	3	2 DSL/ ABR &DSL/ BGKI	5	3 CD/ JP, AII &WD/MD	
10	SR	6	2 Carriage and Wagon Workshop /PER&Loco Workshop/PER	7	2 DSL/ GOC & ELS/ED	27	9 CD/BBQ,GSN,TVC, NCJ,ALLP&WD/ TNP, JTJ,HOM IPN	

11	SCR	4	2 Mechanical and Electrical /Workshop LGD& Mechanical and General/ Workshop GTPL	10	2 DLS /KZJ & ELS/ LGD	17	5 CD/ SC, HYB, TPTY & WD / RDM , GY	
12	SER	2	2 Mechanical Workshop KGP & S&T Workshop KGP	7	2 DLS / BNDM &ELS /TATA	13	4 CD/ SRC, HTE &WD/BNDM, BKSC	
13	SECR	2	1 W R S / R	3	2 DLS/ R &ELS/ BIA	9	3 CD/ BSP, DRUG &WD/ BIA	
14	SWR	2	2 CRS /UBL & CRS/MYS	2	2 DLS /UBL & DLS /KJM	9	3 CD-SBC, UBL &WD/HPT	
15	WR	6	2 C,L&W /DHD &CR workshop/ PL	11	2 ELS/ BRCY& DLS/ RTM	2	2 CD/BCT & GS/SBI	
16	WCR	2	2 CRWS / BPL & WRS /Kota	4	2 DLS/ ET ELS/ TKD	4	2 WD/ NKJ & CD/JBP	
17	MR/ Kolkata	1	1					
18	CLW/ Chittaranjan							1
19	DMW/ Patiala							1
20	DLW/ Varanasi							1
21	ICF/ Perambur							1
22	RCF/ RBL and Kapurthala							2
		Total	**50**	**29**	**87**	**32**	**177**	**59**

Appendix III (Para 2.6.1)

Statement showing number of Heads/ items categorised as safety items as per Railway Board vis-a-vis Zonal Railways/Railway Production Units.

Zonal Railways/ RPUs	No. of Heads/ No. of items categorised as per Railway Board directive	No. of Heads/ No. of items categorised by Zonal Railway/ RPU	Audit Observations.
CR	9/468	7/791	As against 85 items under the category Locomotive Diesel prescribed by Railway Board Central Railway has categorised 158 items.
ER	9/468	6/696	As against 35 items under the category Coaching Stock prescribed by Railway Board Eastern Railway has categorised 380 items.
ECR	9/468	7/586	As against 85 items under the category Locomotive Diesel and 100 items under the category Locomotive Electric prescribed by Railway Board, East Central Railway has categorised 204 & 211 items respectively.
ECoR	9/468	7/784	As against 85 items under the category Locomotive Diesel and 35 items under the category Coaching Stock prescribed by Railway Board, East Coast Railway has categorised 274 & 346 items respectively.
NR	9/468	7/533	As against 85 items under the category Locomotive Diesel and 25 items under the category Track prescribed by Railway Board, Northern Railway has categorised 137 & 102 items respectively.
NCR	9/468	04/832	As compared to 468 items under nine heads categorised by Railway Board, NCR has categorised almost double number i.e. 832 items under four heads.
NER	9/468	6/197	Number of Safety items categorised by NER are less than half of the items categorised by Railway Board.
NFR	9/468	6/595	As against 85 items under the category Locomotive Diesel prescribed by Railway Board Northeast Frontier Railway has categorised 359 items.
NWR	9/468	6/521	As against 85 items under the category Locomotive Diesel and 35 items under the category Coaching Stock prescribed by Railway Board, North Western Railway has categorised 276 & 140 items respectively.
SR	9/468	5/794	Headwise Categorization is totally different from the Heads prescribed by Railway Board.
SCR	9/468	5/303	As against 35 items under the category Coaching Stock and 14 items under the category Freight Stock prescribed by Railway Board, South Central Railway has categorised 96 & 99 items respectively.
SER	9/468	7/677	As against 86 items under the category Locomotive Electrical and 14 items under the category Freight Stock prescribed by Railway Board, SER has categorised 324 & 130 items respectively.
SECR	9/468	8/833	As against 86 items under the category

			Locomotive Electrical and 14 items under the category Freight Stock prescribed by Railway Board, SECR has categorised 222 & 220 items respectively.
SWR	9/468	6/234	As against 14 items under the category Freight Stock prescribed by Railway Board, SWR has categorised 40 items.
WR	9/468	10/660	As against 86 items under the category Locomotive Electrical and 14 items under the category Freight Stock prescribed by Railway Board, WR has categorised 222 & 107 items respectively
WCR	9/468	9/295	Though categorisation under nine heads has been done correctly , however, the numbers of items categorised are inconsistent with total number of items categorised by Railway Board.
Metro	9/468		No categorisation of Safety Items was introduced in Metro Railways.
CLW	9/468	01/122	Being a Loco Production Unit, the categorisation appears to be in line with Railway Board's categorisation.
DMW	9/468	01/35	The categorisation appears to be in line with Railway Board's categorisations.
DLW	9/468	01/289	Being a Loco Production Unit, the categorisation appears to be in line with Railway Board's categorisation.
ICF	9/468	02/333	Being a Coach Production Units, the categorisation appears to be in line with Railway Board's categorisations.
RCF, KXH	9/468	01/34	Being a Coach Production Unit, the categorisation appears to be in line with Railway Board's categorisation.
RCF, RBL	9/468	01/18	Being a new Coach Production Units with limited activities, the categorisation appears to be in line with Railway Board's categorisations.

Annexure -I (Para Reference 2.6.3)

Statement showing loss due to delayed Emergency Purchases

Zonal Railways and RPUs	Year	No. of POs for emergency purchases test checked	No. of PO issued for normal purchases within six months against same item	No. of cases where rate of normal purchases is less as compared to emergency purchases	Avoidable expenditure on emergncy purchases (₹ iin crore)	Category of items where rate of normal purchases is less as compared to emergency purchases				Category (value wise) where rate of normal purchases is less as compared to emergency purchases		
						I	**II**	**III**	**Others**	**A**	**B**	**C**
1	2	3	4	5	6	7	8	9	10	11	12	13
ZR	2011-12	100	37	31	0.39	17	6	0	6	12	4	8
	2012-13	76	46	36	0.40	7	12	0	9	26	6	2
	2013-14	75	33	21	0.06	5	4	0	10	11	6	1
Total		251	116	88	0.86	29	22	0	25	49	16	11
RPU	2011-12	18	17	17	0.52	0	0	0	0	0	0	0
	2012-13	5	4	3	0.12	0	0	0	0	0	0	0
	2013-14	26	26	25	0.42	0	0	0	0	0	0	0
Total		49	47	45	1.06	0	0	0	0	0	0	0
ZR +RPU	2011-12	118	54	48	0.92	17	6	0	6	12	4	8
	2012-13	81	50	39	0.53	7	12	0	9	26	6	2
	2013-14	101	59	46	0.48	5	4	0	10	11	6	1
Grand Total		**300**	**163**	**133**	**1.92**	**29**	**22**	**0**	**25**	**49**	**16**	**11**

Annexure - II (Para Ref 2.6.6)

Statement showing the details of Outstanding amounts towards rejected stores (As on 31.03.2014)

Zonal Railways and RPUs	No. of Depots rejected the Stores	Rejected Stores		Status of Recovery		Cases outstanding		Cases outstanding for more than 2 years (out of Col 7)	
		No. of Cases	Value (₹ in lakh)	No. of Cases	Value (₹ in lakh)	No. of Cases	Value (₹ in lakh)	No. of Cases	Value (₹ in lakh)
1	2	3	4	5	6	7	8	9	10
CR	1	2	12.72	0	0	2	12.72	0	0
ER	2	5	23.1	1	11.49	4	11.61	1	0.91
ECR	5	256	971.28	173	882.83	83	88.45	67	60.84
ECoR	0	0	0	0	0	0	0	0	0
NR	0	0	0	0	0	0	0	0	0
NCR	0	0	0	0	0	0	0	0	0
NER	1	56	162	1	4.11	55	157.89	45	94.39
NFR	6	3	4.42	0	0	3	4.42	0	0
NWR	1	3	9.12	0	0	3	9.12	2	6.61
SR	0	0	0	0	0	0	0	0	0
SCR	1	1	0.59	0	0	1	0.59	0	0
SER	1	3	21.05	0	0.46	3	20.59	1	0.29
SECR	0	0	0	0	0	0	0	0	0
SWR	2	6	3.81	0	0	6	3.81	3	0.49
WR	2	3	4.82	0	0	3	4.82	1	2.96
WCR	1	1	0.79	0	0	1	0.79	1	0.79
DLW	1	1038	280.1	735	224.35	303	55.75	42	11.43
CLW	1	14	83.25	9	54	5	29.25	0	0
ICF	0	0	0	0	0	0	0	0	0
RCF	1	1	1.63	0	0	1	1.63	0	0
RCF / RBL	0	0	0	0	0	0	0	0	0
DMW/ PATIALA	1	3	0.36	2	0.1	1	0.26	0	0
METRO/ KOLKATA	0	0	0	0	0	0	0	0	0
ZR	**23**	**339**	**1213.7**	**175**	**898.89**	**164**	**314.81**	**121**	**167.28**
RPU	**4**	**1056**	**365.34**	**746**	**278.45**	**310**	**86.89**	**42**	**11.43**
ZR & RPU	**27**	**1395**	**1579.04**	**921**	**1177.34**	**474**	**401.7**	**163**	**178.71**

Annexure - III (Para Ref 2.6.8)

Statement showing position of Overstock, Surplus stock and Non Moving Stores

Zonal Railways and RPUs	Year	Overstock Stores		Surplus Stores		Non Moving Stores	
		No of Items	Value (₹ in crore)	No of Items	Value (₹ in crore)	No of Items	Value (₹ in crore)
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
ZR	2011-12	6045	36.27	3543	7.69	2768	14.28
	2012-13	6107	49.08	2458	9.39	2440	12.84
	2013-14	5963	74.28	2552	9.11	2427	15.56
		18115	159.63	8553	26.19	7635	42.681
RPU	2011-12	192	0.0045	608	9.07	928	33.57
	2012-13	229	0.01	716	13.57	1140	40.12
	2013-14	317	0.14	736	16.76	1169	39.74
		738	0.1545	2060	39.4	3237	113.44
	Total	**18853**	**159.78**	**10613**	**65.59**	**10872**	**156.12**

ABBREVIATIONS

AAC	Average Annual Consumption
ABR	Abu Road
AII	Ajmer JN
AGC	Agra Cantt
AMM	Assistant Materials Manager
BCT	Mumbai Central
BIA	Bhilai
BBQ	Basin Bridge JN
BBS	Bhubaneswar
BKSC	Bokaro Steel City
BPL	Bhopal JN
BNDM	Bondamunda
BSL	Bhusawal Jn
BSP	Bilaspur JN
CAR	Chunar
CBC	Centre Buffer Coupler
CR	Central Railway
CLW	Chittaranjan Locomotive Works, Chittaranjan
CD	Coaching Depot
CNB	Kanpur Central
CMM	Chief Material Manager
CRS	Commission of *Railway* Safety
COS	Controller of Stores
C&W	Carriage & Workshop
DBG	Darbhanga JN
DBRT	Dibrugarh Town
DRS	Director Railway Stores
DDRS	Deputy Director Railway Stores
DGS&D	Directorate General of Supplies and Disposals
DHD	Dahod
DLW	Diesel Locomotive Works, Varanasi
DMW	Diesel-Loco Modernization Works, Patiala
DP	Delivery Period
DLS	Diesel Loco Shed
DEMU	Diesel Electric Multiple Unit
EDRS	Executive Director Railway Stores
ER	Eastern Railway
ECR	East Central Railway
ECoR	East Coast Railway
EMU	Electric Multiple unit
ELS	Electric Loco Shed
ED	Erode
FA & CAO	Financial Advisor and Chief Accounts Officer

GD	Gonda Jn.
GHY	Guwahati
GZB	Ghaziabad
GKC	Gorakhpur Cantonment
GKP	Gorakhpur Junction
GOC	Golden Rock
GY	Gooty
HTE	Hatia
HOD	Head of Department
IOH	Intermediate Overhaul
ICF	Integral Coach Factory, Perambur
IREPS	Indian Railway E-Procurement System
IR	Indian Railways
IZN	Izzatnagar
JBP	Jabalpur
JP	Jaipur
JUDW	Jagadhari Workshop
JHS	Jhansi Jn
JAT	Jammu Tawi
HPT	Hospet JN
HYB	Hyderabad Decan
HWH	Howrah JN
KGP	Kharagpur JN
KJM	Krishnarajapurm
KPA	Kanchrapara
KZJ	Kazipet
KXH	Kapurthala
KYN	Kalyan jn
LGD	Lallaguda, Secunderabad
LJN	Lucknow NE
LD	Liquidated Damages
LKO	Lucknow
LLH	Liluah
MR	Metro Railway
MD	Madar
MEMU	Mainline Electric Multiple Unit
MCS	Mancheswar
MFP	Muzafferpur JN
MMIS	Material Management Information System
MTN	Mumbai Matunga
MYS	Mysore
MGS	Mughal Sarai JN
NR	Northern Railway
NBQ	New Bongaigaon

NJP	New Jalpaiguri
NKJ	New Katni JN
NCR NDLS	North Central Railway New Delhi
NER	North Eastern Railway
NFR	Northeast Frontier Railway
NWR	North Western Railway
NRPA	Narayanpur Anant
PER	Perambur
PL	Mumbai Lower Parel
PCDO	Periodic Confidential Demi-Official
POH	Periodical Overhaul
PO	Purchase Order
PNO	Pandu
PL	Price Ledger
PVC	Price Variation Clause
PER	Perambur
PNBE	Patna Jn
ROH	Routine Overhaul
RCF/RBL	Rail Coach Factory,Rae barely
RCF	Rail Coach Factory, Kapurthala
RDSO	Research Design and Standards Organization
RDM RSP	Ramagundam Rolling Stock Progamme
RWF	Rail Wheel Factory, Yelahanka
RITES	Rail India Technical and Economic Service
RJO	Rajender Pul
RTM	Ratlam JN
RS	Railway Stores
RPU	Railway Production Units
S&T	Signaling & Telecommunications
SR	Southern Railway
SBI	Sabarmati JN
SC	Secunderabad JN
SCR	South Central Railway
SER	South Eastern Railway
SECR	South East Central Railway
SGUJ	Siliguri JN
SRC	Santragachi JN
SMM	Senior Materials Manager
SWR	South Western Railway
SPJ	Samastipur Jn
SBC	Bangalore City JN
TOR	Turnover Ratio
TKD	Tuglakabad
TPKR	Tikiapara

TPTY	Tirupati
TNP	Tondiarpet
T & A	Technical and Administration
TATA	Tatanagar JN
TWFA	Transfer Without Financial Adjustment
UBL	Hubli
UDL	Andal Jn
UMB	Ambala Cant Jn
VDLR	Vadala Road BBR
VSKP VZM	Visakhapatnam Vizianagaram Jn.
WR	Western Railway
WCR	West Central Railway
ZR	Zonal Railways