

Organization of Rolling Stock Production & Maintenance Department

Para No.	Title <i>(Ctl + Click on Para no.)</i>
101	Corporate Objectives
102	Mission Areas for Rolling Stock Production & Maintenance Department
103	Organisation
104	Railway Board and RDSO
105	Production Units
106	Zonal Railways
107	Rolling Stock Maintenance Organization in Zonal Railways:
108	Zonal Railway workshops
109	Chief Workshop Manager (CWM)
110	Chemist and Metallurgist
111	Workshop Personnel Officer
112	Environment and Safety Manager
113	Workshop Civil Engineer
114	Workshop Electrical Engineer
115	Workshop Mechanical Engineer
116	Workshop Accounts Officer
117	Workshop Materials Manager
118	Production Engineer
119	Important duties of the Production Engineer
120	Production Engineer's office
121	Planning and Production Control
122	ERP manager
123-24	Workshop Security Officer (WSO)
125-26	Workshop Supervisors
127	Duties of Supervisors
128-29	Categorisation of shops
130	Maintenance and Inspection of Boilers
131	Maintenance of weigh bridges and weighing scales
132	Classification of staff in Workshops
133-134	Staff strength
135	Agility
136-137	Open Line divisions
138-140	Customer orientation
141	Indian Railway Conference association (IRCA) and Neutral Train Examiners
142	unitary Command and Control
143	Acts relevant to Rolling Stock Production & Maintenance Department
144	Important Codes and Manuals of Indian Railways
Annex 1.1	Mid life rehabilitation (MLR):

101. Corporate Objectives:

The corporate objectives of Indian Railways are:

- a. To provide rail transport for both passenger and goods adequate to meet demand in areas where Railway operation confers optimum benefit to the economy, having due regard to the Government's policy of development of backward areas ;
- b. To provide such rail transport at the lowest cost consistent with
 - i. requirements of the Railway users and safety operations,
 - ii. adequate provision for replacement of assets and some provision for development of business and
 - iii. the least amount of pollution of the environment ;
- c. To work in association with or utilize other modes of transportation, such as pipelines and *road* transport, and to engage in ancillary activities necessary to sub-serve the above two objectives ;
- d. To establish a corporate image of the Railways as being an up-to-date business Organization With the interest of the public and of the nation as its prime objectives ; and
- e. To develop organizationally effective personnel with pride in their work and faith in the management.

(Para 219 of the Indian Railway Code for Administration and Finance)

102. Mission Areas for Rolling Stock Production & Maintenance Department

Mechanical Department is primarily assigned with the responsibility for Design, Manufacture, deploy and maintain the Rolling Stock of Indian Railways. For certain specific areas of Rolling Stock maintenance, this responsibility is assigned to Electrical Department also. The mission areas for this activity are:

- a. Evolving optimal designs for Locomotives, Coaches and freight wagons, choosing the most economical option on a “life cycle basis”
- b. Manufacture of the rolling stock Production units or external Manufacturing Units to stringent standards in a cost effective manner
- c. Maintaining the moving assets ensuring that they give optimal operational efficiency and safety *throughout their full codal life*.
- d. Planning, procurement and maintenance of Machinery & Plant.
- e. Ensuring realization of the full potential of the assets.
- f. Adopting and maintaining the best practices in the industry with excellence in all areas of operation.
- g. Arranging relief and rescue in any unlikely event of Railway disasters.

While pursuing the above mission, the orientation of Rolling Stock Production/Maintenance Department should remain in complete consonance with Corporate Objectives of Indian Railways.

103. Organisation:

The organizational structure of the Rolling Stock production/maintenance Department is driven by the manufacture and maintenance philosophy of rolling assets and is shown in the table below. While the manufacturing practices in the Workshops are shaped by the strategies that characterize the internationally acclaimed World class industries, the maintenance philosophy balances between the two extremes of –

- a. Corrective maintenance: running the assets non-stop and attend only when they break down- thus enhancing availability at the cost of reliability.

b. Preventive maintenance: withdrawing from traffic for frequent and prolonged maintenance attention, enhancing reliability at the cost of availability.

Choosing a mid course between the two, Indian Railways contain the ineffective hours within the stipulated targets by restricting frequency and duration of preventive maintenance schedules. Emerging technologies with fit and forget components, enhanced quality conscience and principles of predictive maintenance further help in reducing the quantum of preventive maintenance with higher and higher levels of availability.

Activities		Function of
a.	Evolve specifications and designs of the Locos and rolling stock and choosing the most economical option on a "life cycle basis".	Railway Board and RDSO
b.	Manufacture	Production Units, Zonal Railway Workshops and external manufacturers
c.	Periodical major overhauls and mid life rebuilds (MLRs) (see annexure 1.1)	Zonal Railway Workshops and MLR shops
d.	Top overhauls and minor schedules, Intermediate and routine overhauls	Locomotive sheds and the carriage and Wagon depots
e.	Cleaning, topping up supplies, yard or pit line examination attention	Locomotive sheds and the carriage and Wagon depots, fuel pads and outstation depots

104. Railway Board and RDSO:

Various directorates in Railway Board in charge for specific areas of rolling stock viz., traction, coaching including EMU, Freight, Workshops & Development functions, not only stipulate the philosophy for manufacture and maintenance, but also keep a close watch on the performance of the Railways. The motive power, coaching including EMU, wagon and testing directorates in the RDSO act as the depository of all technical knowledge in their respective domains and issue technical directives to the Production Units and zonal Railways, balancing between maintainability and ease of manufacturing.

105. Production Units:

Production units are headed by *General Managers/Chief Administrative Officers (CAO)* assisted by Heads of Departments in Mechanical, Electrical, Accounts, Engineering, Security, Stores and Personnel Departments at appropriate level. Since design and quality are very important, there shall also be Chief Design Engineers. Other broad organizational set up of Workshops as discussed in Paragraphs 108 to 133 below will apply mutatis-mutandis, to Production Units.

106. Zonal Railways:

The General Manager of Zonal Railway is the head of the administration and the organization. In discharge of his duties he is, assisted by a number of Principal Officers who are departmental heads of their respective departments.

107. Rolling Stock Maintenance Organization in Zonal Railways:

The Chief Mechanical Engineer (CME) is the Principal Head of the Mechanical Department reporting directly to the General Manager. His important function is maintenance of the rolling stock and other mechanical equipment of the Railway in good repair, as on this depends the safety and reliability of railway transportation to a very large extent. To enable him to carry out this duty, Mechanical Department of the Railways have within their control one or more workshops, in which locomotive, carriages & wagons are periodically examined, repaired and overhauled before being placed back on the line. Day to day maintenance of the rolling stock is done in Locomotive Sheds, Coaching Depots, freight depots or other outstation maintenance points, all forming part of the divisional set up. The CMEs assisted by heads of departments as shown below:

- a. **Chief Workshop Engineer (CWE):** The direct control on the affairs of the workshops in the Zonal Railway is exercised by the "Chief Workshop Engineer" who is the administrative head of the department for workshops. In all matters relating to policy formulation which concerns workshops in general and the Mechanical Department in particular, the CWE issues instructions in consultation with the CME, who is the Principal Head of the Department. Responsibility for budgetary controls in the workshop rests with the CWE.
- b. **Chief Motive Power Engineers (CMPE)** - CMPEs exercises technical control over the maintenance of diesel locomotives in Locomotive sheds and shops and ensure
 - i. On line performance of the locomotives are above the levels fixed by Board from time to time, especially relating to reliability and availability.
 - ii. MLR, POH and other preventive maintenance schedules on the Locomotives are carried out in time and to prescribed quality standards.
 - iii. Supplies (fuel, sand, water, oil etc) and spares are arranged for the Locomotives in sheds and outstation depots
 - iv. Locomotive and crew links are made to maximize utilization without jeopardizing maintenance and safety.
 - v. Crew management including timely recruitment and training, running rooms and other operational safety related items
 - vi. Cadre management for maintenance staff including timely recruitment and training.
 - vii. Disaster management including readiness and battle worthiness of Breakdown Cranes and other equipment.
- c. **Chief Rolling Stock Engineers (CRSE)** - CRSEs exercises technical control over the coaching depots and freight depots as also C&W activities in yards and outstations. Depending upon the levels of passenger or freight traffic handed by a Railway there may be one or more CRSEs posted exclusively for Coaching or Freight. CRSEs ensure that
 - i. Availability and reliability of the Rolling stock are above the levels fixed by Board from time to time.
 - ii. MLR, POH and other preventive maintenance schedules on the Locomotives and breakdown cranes and trains are carried out in time and to the prescribed quality.
 - iii. Ready availability of spare parts and supplies for Rolling stock in sheds and outstation depots

- iv. Rake links are made to maximize utilization without jeopardizing maintenance and safety.
- v. Cadre management for maintenance staff including timely recruitment and training.

Chief Planning Engineer -- The CME (Planning) assists the CME in all matters pertaining to Investment Planning i.e. requirements of Rolling Stock, Machinery and Plant and infrastructure creation under Works Program for PUs, Workshops and Sheds). These are planned under Plan Heads 21, 41 and 42 respectively of Demand No 16 and the planning process is elaborated in Chapter 11.

These HODs are assisted by Dy.CMEs, EMEs/SMEs & AMEs in Headquarters.

Note: In consultation with CME, the activities listed above could be assigned/ shuffled among the various HODs of Mechanical Department.

Electrical Department has a similar set up of Rolling Stock maintenance wings, functioning under Chief Electrical Engineer as the head of the Electrical Department, reporting directly to General Manager. Separate wings headed by HODs of Electrical Department look after maintenance of EMUs and electric locomotives separately with field organizations consisting of maintenance sheds functioning under them. Duties and responsibilities of concerned officers of electrical department are detailed in Indian Railways Manual of AC Traction.

Workshops

108. Zonal Railway workshops

The main locomotive workshops of the railway may be either situated at the same station as the main carriage and wagon workshops or at different stations. In addition to the repairs and reconditioning of rolling stock and of plant and machinery, and manufacture of the spare parts for the repair thereof, these workshops may carry out work of the nature shown below: —

- a. Construction and assembly of—
 - i. Locomotives.
 - ii. Coaching Vehicles,
 - iii. Goods Vehicles.
- b. Manufacture of articles required by other departments of the Railways.
- c. Manufacture or repair of rolling stock or components for—
 - i. Other Government Department.
 - ii. Other zonal Railways/Production units,
 - iii. Others.

109. Chief Workshop Manager (CWM)

The Chief Workshop Manager is posted as the officer in charge of the workshop. All the officers posted in the workshop will be under his direct administrative control analogous to that Divisional Railway Managers.

110. Chemist and Metallurgist

In one or more of its workshops, each Railway zone shall have a specialized Central Material Technology (CMT) Laboratory with expertise on the following aspects:

- a. Testing and quality control (TQC): Testing chemical, physical, and mechanical properties of materials. The TQC should have adequate

infrastructure such as metrology, hardness testers, organic and inorganic lab, testing of oils and fuels, optical microscope with image analyzer, UTM etc

- b. Technical investigations including failure analysis (TIFA): Expertise in fracture metallurgy and tribology; ability to differentiate between service and process failures and suggest preventive measures.
- c. Non destructive testing (NDT): To undertake testing and certification- keep abreast of NDT technologies and maintain documentation.
- d. New materials technology (NMT): Develop facilities and knowledge to test the new materials such as polymers, composites, ceramics, additives, amorphous metals, insulating materials, etc. and to help the shed or shop exploit their special qualities to upgrade the materials and processes.

The officers (Chemists and Metallurgists) working in these specialized laboratories in Workshops and those working in the running sheds and depots [aid in](#) quality control in manufacturing and maintenance, involving special knowledge of modern chemical and metallurgical techniques. They will also help in failure analyses. The Chemist and Metallurgist who is in overall command of the Laboratory will report to the CWM or the officer in charge of the shed or depot, as the case may be.

111. Workshop Personnel Officer

The open line workshops have an establishment branch under a Personnel Officer (at an appropriate level decided by the Chief Personnel Officer) working under the direct control of Chief Workshop Manager in matters of day to day working, but taking policy directives from Chief Personnel Officer of the Railway. One of his main duties is to attend to all affairs regarding staff and workshop labour. He is responsible to the workshop for all matters relating to establishment such as recruitment, payment of wages and overtime, grant of leave and passes, complaints, discharges, payment of provident fund, gratuity and compensation, maintenance of service registers and other such records. Staff welfare activities like canteen, management of railway quarters, railway schools, supports & cultural activities are also handled by him.

112. Environment and Safety Manager

In 1986, the parliament enacted the Environment Protection Act. (EP Act.) for protection and improvement of environment, which includes water, air and land and also the inter relationship that exists among and between water, air and land and human beings, other living creatures, plants, micro-organism and property. Provision of safety officers in Workshops has been separately mandated in the Factories Act. Creating a work place safe not just for the employees, but the entire neighborhood in an environmentally responsible manner is a specialized activity of the Environment and Safety Manager (ENSM)

The ENSM should be fully conversant with these Acts.

The water- Prevention and Control of pollution Act 1974

The Air- Prevention and control of pollution Act 1981

The Environment (Protection) Act. 1986

The Hazardous Waste (Management, Handling and Trans Boundary Movement) Rules 2008

Factories Act, 1948

Municipal Solid Waste (Management and Handling) Rules 2000. (These acts are reckoned in EMS 14001 and OSHAS 18001)

The responsibilities of the Environment & Safety Managers (ENSM) inter alia, are listed in Annexure 5.3 & 5.4 as Administration's duties & Responsibilities to workers. He will report to the Chief Workshop Manager and will oversee/inspect/control the activities of various departments on the subjects of environment protection & industrial safety. Industrial safety and adherence to the legislations like pollution act, factory act etc and assisting the CWM in his duties as the factory occupier are his functions. Based on the strength of staff, required number of safety officers to work under ENSM will be provided.

For environment protection and industrial safety, a similar but smaller and lower level organization can be provided in bigger open line establishments like Loco sheds/Coaching Depots, as the impact of these subjects will be going up in the years to come.

113. Workshop Civil Engineer

Each workshop shall have an exclusive civil engineering department headed by an appropriate level officer, to ensure construction and maintenance of various fixed assets of the Workshops like sheds, buildings, roads, permanent way, pillars and gantries, toilets & washrooms, drainage & water supply systems and other civil infrastructure. He shall work under the administrative control of CWM & technical control of PCE. The Civil Engineer shall be suitably empowered to finalize tenders also. A separate budget shall be provided for Civil engineering maintenance of workshops.

114 Workshop Electrical Engineer

Electrical Engineers in Workshops work under administrative control of Chief Workshop Manager. They are under the technical control of the Chief Electrical Engineer for technical aspects of Electrical Engineering. Apart from rolling stock related maintenance, duties of Electrical Engineers include supply and distribution of electrical energy, the maintenance of electrical plants and machinery in the workshop.

Chief Electrical Engineer is the Chief Electrical Inspector of Indian Railways, heading the inspectorial functions of Electrical power supply installations/Networks in Workshops and other Rolling Stock Maintenance Units, as per the authority given under Indian Electricity Act and related rules.

115 Workshop Mechanical Engineer

For workshops exclusively/largely meant for repair and rehabilitation of electric rolling stock, Workshop Mechanical Engineer(s) is posted under the administrative control of Chief Workshop Manager and technical control of Chief Mechanical Engineer. The Workshop Mechanical Engineer is in charge of mechanical repairs of rolling stock and other typical mechanical engineering functions.

116 Workshop Accounts Officer

The workshops have an accounts and finance branch under an Accounts Officer at an appropriate level decided by the Financial Adviser and Chief Accounts Officer. Workshop Accounts Officer is under the direct control of Chief Workshop Manager in matters of day to day working. He is in charge of all the costing and accounting of the workshops and is the Financial Adviser to the Head of the

Workshops and is responsible for rendering him all the assistance and cooperation related to Finance function that may be required by the later. He may take policy & professional directives from Financial Advisor and Chief Accounts Officer.

117 Workshop Materials Manager

The workshops have a stores branch under a Workshop Materials Manager at an appropriate level decided by the Controller of Stores. He is responsible for the custody, replenishment and distribution of workshop stores. The Officer is under the direct control of Chief Workshop Manager in matters of day to day working and his exclusive charge will be supply management of the workshop in the most efficient manner possible and to maintain all records for the correct and prompt procurement/accountal of all stores/stores transactions. He may take policy directives from the Controller of Stores.

118 Production Engineer

The head of the workshops reports to the Chief Mechanical Engineer or Chief Workshop Engineer and is assisted by a Production Engineer who is responsible for the work of the following sections —

- a. Drawing office — Design
- b. Drawing office — Plant
- c. Drawing office — Jigs and Tools
- d. Planning and rate fixing
- e. Progress office
- f. Tool Room
- g. Inspection

119 Important duties of the Production Engineer

- a. plan and ensure most economical and the best method of Production and the most economical use of machines;
- b. determine the standard time for each operation by following the analytical method of fixing rates; and
- c. Design machines and tools to suit the needs of works passing through the shops.

120 Production Engineer's office

- a. prepares design drawings and specifications for new standard parts and for the necessary jigs and tools;
- b. prescribes the nature and sequence of operations to be performed;
- c. inspects all manufactured parts: and
- d. on completion of any series of operations, compares the times actually taken with those originally estimated by it, investigates all important differences and reports as to the causes thereof and remedies therefore.

121 Planning and Production Control

The efficiency of a Railway Workshop or a Production Unit is largely dependent on an efficient planning and production control organization. The broad functions of this department comprise of:

- a. **Pre-planning:** Study of drawings and specifications, preparation of cost and details Books for each component; drawing up of lists of raw material or component requirements for ensuring its availability; maintenance of data

- for installed capacity; booked load; spare capacity, etc. for each machine group etc.
- b. **Drawing office:** Scrutiny of drawings received; preparation of part drawings to facilitate manufacturing operations, designing various jigs and fixtures, templates, gauges, etc. for economical manufacture of components; maintenance of drawings for standard cutting tools etc., placing manufacturing orders on Tool Room, when required, etc.
 - c. **Planning:** This office plans the activities connected with production to ensure fullest use of the plant and other means of production; It makes all arrangements to work as smoothly and efficiently as possible. The functions of this office are broadly divided as under:
 - i. **Processing:** The functions include preparation of scroll process sheets indicating sequence of operation, quantity of material to be used, the section or load centre where the operation is to be carried out, the requirement of machine groups, jigs, fixture and gauges, etc.
 - ii. **Rate fixing:** The functions include maintenance of synthetic data for fixing rates (time) for individual operation, indicating allowed time in the process sheet for each of the operation involved; to scrutinize all completed piece work cards, issue of excess time cards etc.
 - iii. **Efficiency:** This section deals with matters of general efficiency of the shops. Its activities comprise of review of existing practices, suggest improvement, keeping constant watch on off cuts and rejected materials lying on the shop floor or stores scrap yard in order to suggest suitable usage of that materials etc.
 - d. **Production control:** Release of work orders for components assemblies etc. well in advance of the schedule of production; preparation of production schedule and distribution thereof in advance to all concerned for their guidance, arranging with stores departments for reservation of required material before actual release of work orders etc.
 - e. **Progress office:** This office keeps constant watch of Production of components, assemblies, erection etc. as per schedules laid down, preparation of monthly report of production and their deliveries, keeping liaison with shops and stores departments in the drawal of raw material and finished parts. Intersection and inter-shop movement of components; maintenance of records for number of orders received, orders completed for each batch etc.
 - f. **Inspection:** To inspect components, assemblies etc. on completion of each operation to ensure conformity to drawings and specifications, bringing to the notice of concerned authorities of deviation from drawings; and specifications for rectification and rejection; certification on the job card, and Route cards regarding quantities passed or rejected in respect of each operation etc. Inspectors are also deployed where ever required in checking materials or assemblies received from suppliers, for conformity to drawings and specifications.

122 ERP manager

With the introduction of ERP in workshops, each workshop shall have a Manager for Enterprise Applications and Industrial Automation (*EA&IA*) with a CORE team for implementation, change management and user support as a part of the production control organization in the workshops and PUs.

123 Workshop Security Officer (WSO)

Each workshop shall have a security officer from the Railway Protection Force (RPF) at an appropriate level, as decided by the Chief Security Officer of the Railway;

He will work under the direct control of Chief Workshop Manager in matters of day to day working, taking policy directives from the Chief Security Officer.

124 As an officer entrusted with the Industrial security, the WSO is expected to

- a. protect the railway premises and to safeguard railway Property; ensure that the shop gates are kept under continuous watch, perimeter walls are robust and properly lit in the nights and adequately patrolled and the shops are free from thefts
- b. Gather crime intelligence and take security arrangements to protect Railway Property so as to insure that shops remain sterilized and impervious to terrorists and thieves at all times; and free from intrusion by unauthorized persons, especially those with criminal intents or mala-fide intentions of theft of technology secrets
- c. put in a system of screening and recording of all incoming and outgoing vehicles and materials
- d. Equip the CWMs with intelligence reports, in real time, on emerging labour problems with a potential to manifest into works stoppages or disruptions and to assist the shop administration during strikes and lockouts.
- e. provide assistance to the shop officers particularly in conducting auctions or in matters pertaining to law and order by liaising with the local police officers, etc

By providing entry and exit into workshops governed by biometric identification, the role of the RPF should be limited at the gates in just overseeing the staff entry /exit, thus enabling them to concentrate on their designated industrial security duties.

125 Workshop Supervisors

Along with officers as listed above, supervisors are posted in different grades. Each workshop is sub-divided into 'Shops' and sub-divisions and is supervised by Senior Section engineers (SSEs) and Junior engineers (JEs). Supervisors are technically qualified "Shop Floor Managers" acting as an interface between management and the workmen.

126 Assisted by the other supervisors and clerks, the senior most supervisor of a shop (generally an SSE) exercises overall command of the affairs of the shop. He ensures that his shop remains current in paperwork and achieves the desired outturn and quality. **SSEs** have a special responsibility to instill discipline and resolve conflicts; and hence they have to remain neutral and unbiased and equidistant from the staff unions/Associations.

127 Duties of Supervisors

The shop supervisors have a definite function in enforcing/overseeing the under-mentioned aspects:

- a. Allocation of work and deployment of Staff
- b. Verification of timely and proper opening and closing of job cards
- c. Enforcing quality through Supervision of work and stage inspections
- d. Ensuring availability of tools and materials
- e. Ensure economy in use of raw materials.
- f. Ensure punctuality in attendance, discipline and also presence of workers at the work spot during duty hours.
- g. Ensure supply of safety kits to workers and ensure adherence to safety regulations and safe work practices.

- h. Ensure timely completion of work as per target set by the management.
- i. Ensure proper up-keep and safety of Railway's assets - both immovable and movable.
- j. Ensure cleanliness of work premises and ensure good house-keeping by eliminating trash, filth, and foreign matters creating a cleaner workplace. Inculcate cleaning as a form of inspection and establish a clean-up time every day.
- k. Ensure correct handling of material so that damage does not occur due to mishandling.
- l. Inculcate and maintain proper work culture amongst staff.
- m. Design and establish an efficient and neat layout so that one can always get just as much of what is needed and whenever needed.
- n. **Design of workstations:** Design an efficient layout and ensure proper storage of tools, jigs and fixtures, raw materials, spare parts and semi-finished and finished work; and to put things in order (or organize them) according to a specific rule or principle.
- o. **Ergonomics:** To optimise tasks and workstations from the point of view of common place postures and movements such as sitting, standing, lifting, pulling and pushing with least stress on ligaments, joints and muscles of the workmen; and modify them as needed with change of activity or workmen with different anthropometric background.
- p. **Environment:** To create a conducive work environment free from avoidable heat, noise, pollution, vibrations and lack of illumination.

128. Categorization of Shops

The Zonal Railway workshops have Process Shops (i.e. Manufacturing Shops) and Job Shops (i.e. Repair shops). Amongst the Process Shops are the foundries, Forge & Smithy, welding, fabrication shops etc. All the other shops are job shops. Each shop should be allotted a shop number by which it can be distinguished. Certain "Shops" may be sub-divided usefully into "sections" or sub-divisions and this should be done wherever possible.

129. The 'Shop' or 'Section' of a shop is the unit not only for purposes of technical control, but also for those of financial and cost control. The number of jobs in progress at any one point of time in any such compact unit is comparatively small and the margin of error in booking to each job the correct time and materials spent on it as low as practical. Any method of distributing overhead expenditure (on cost) attributable to such an unit amongst the jobs undertaken would give more reliable results than what would be the case if the distribution were made, either taking the workshop as a whole or as divided up into a few large units.

130. Maintenance and inspection of boilers

Boilers are maintained in accordance with the relevant provisions in the Factories act of the concerned State as well as Indian Boiler Act. CME of each zonal railways becomes the Chief Boiler Inspector of Indian Railways, bestowed with the authority for inspection of in use/new boilers. An inspectorial organization with required number of inspectors is made available in certain workshops with earmarked Railway jurisdiction to perform the duties of inspection and certification of Boilers in use in various Railway units. These inspectors are specially trained and may be working as a part of the Mechanical millwright/M&P maintenance organizations of such workshops. The authority of CME as Chief Boiler Inspector will be exercised by an officer of not less than senior scale level, who is also in charge of M&P maintenance activities in such workshops. With steam locos having been removed from service in

most of the Railways, the expertise for maintenance of boilers need to be sustained as a special skill/trade by exclusive training of selected supervisors & staff.

A Headquarter organization of Chief Boiler Inspector should also be available functioning under the workshop organization of HQs reporting to CWE. He will oversee the functioning of Boiler maintenance organizations of workshops. He will invoke the powers of CME as Chief Boiler Inspector to serve notices for non compliance based on the stipulated acts on maintenance of Boilers.

131. Maintenance of Weigh Bridges & Weighing Scales

Weigh Bridges & Weighing Scales which are in commercial use in various Railway units have to be maintained in accordance with the relevant Acts on 'Weights & Measures', currently in vogue. In many Railways, Mechanical Department is given the responsibility for maintenance and certification of these Weigh Bridges & Weighing Scales. M&P maintenance organization of Railway Workshops are generally charged with this responsibility, either through their in-house expertise or through certified outside agencies. In some Zonal Railways, this responsibility is given to the Divisional Mechanical Department.

132 Classification of staff in Workshops

The staff employed in Railway workshops, other than Ministerial staff, may be classified under the following broad categories:

(i) Helper
(ii) Technician. Gr III
(iii) Technician Gr. II
(iv) Technician Gr. I
(v) Senior Technician
(vi) Junior/Senior Supervisors(JE/SSE)

133 Staff strength

Maximum number of staff in each grade that may be employed on a shop, under normal conditions should be fixed by the General Manager. Any variation in the number so fixed will require appropriate sanction.

Note: If the existing number of staff is in excess of the normal strength so fixed, vacancies shall not be filled up until the strength fixed for the workshop is reached.

134. Within the staff strength limits prescribed by the General Manager or any lower authority empowered to do so, the detailed distribution of staff under each trade category will be made by the CWM. This will be the sanctioned strength of each shop. The CWM should communicate to the Workshop Accounts Officer any variations made in the strength so fixed.

135. Agility

The annual orders of rolling stock (both numbers and variety) placed on the Production Units is driven by the emerging traffic needs, and shall not be constrained or expanded to match the production capacity. Likewise POH workload on the workshops, number and types of locos or coaches based in sheds and depots will be customer driven and not capacity driven.

In order to meet such fluctuations, Production units, workshops or sheds, must be agile like world class organizations i.e. capable of "quickly" adjusting to changing

workload (*such as product mix or product volumes*) and thrive under conditions of constant and unpredictable change. Such agility is consciously built in by

- a. Incorporating flexible production systems and creating flexible structures,
- b. Creating a strong base of multi skilled staff, cross trained to handle a variety of jobs; Para 541 of Chapter 5 may be referred for details. It shall be the endeavor of the Chief Workshop Managers to get every skilled artisan trained in more than one trade. After the employee passes the prescribed training course for the new skill, the same will be entered in the personal database of the employee.
- c. Instant mobility of staff between sections, made smooth and seam-less, without establishment hurdles or delays
- d. As the volume of work decreases or increases necessitating contraction or expansion of staff strength, fixing numbers in each shop with reference to the minimum requirements of the shop, making temporary additions for a limited period
- e. Fall back plans to quickly outsource critical items of work when the demand exceeds capacity

136. Open Line divisions

Locomotives and rolling stock, on being inducted on line are allotted to loco sheds, coaching or freight car depots in open line divisions. Thereafter, the Home sheds or depots look after these assets during their entire codal life (para 1107 refers) and keep them operational by-

- a. Ensuring availability of spares and supplies (fuel, sand water etc) for locomotives and coaches
- b. Undertaking preventive maintenance of locomotives and ensuring their outage and deployment
- c. Maintenance of carriages, wagons and other items of rolling stock keeping the ineffective stock to the minimum.
- d. Safety examinations and unscheduled attention as necessary arising on line and at satellite sheds and outstation depots
- e. Timely withdrawal from traffic and dispatching to nominated workshops for Periodical Overhaul and Mid life rehabilitation to MLR shops
- f. Planning facilities for induction of additional assets or new trains

137. In addition, open line divisions have the following important functions:

- a. To ensure that punctuality of trains remains unaffected by defects in the rolling stock or Locos
- b. Maintenance of crew booking points
- c. Proper maintenance of running rooms
- d. Ensuring coordinated disaster management and maintenance of rolling stock and equipments needed for deployment in disasters
- e. Ensuring effective manpower planning
- f. Ensuring training of staff.
- g. Ensure passenger amenities in trains like proper cleaning, provision of good quality linen, pest control, watering etc.,

138. Customer orientation

Generally speaking, Passengers spend more time in coaches than in terminals. The need for making customer friendly coaches with all amenities cannot therefore be overstated. Likewise, freight once loaded has to reach destination without damages and en-route detachments. RDSO, PUs and the zonal workshops contribute greatly in

this effort, but it is the Divisions that act as a window to the customer and it is their performance that ultimately decides customer satisfaction.

139. Some of the instances that provoke customer complaints are:

- a. Introduction of new or special trains without creation of supporting manpower and infrastructure,
- b. failure of Coach or linen cleaning and watering contracts coupled without any spareable departmental staff to take over,
- c. failure of watering systems,
- d. theft of amenity fittings and damages by miscreants etc.,

140. Empowering Coach Maintenance & Disaster Management Wings

In an environment of inelasticity in creation of posts (and placing in position skilled persons at short notice) it is necessary that the officers in the open line heading coaching depots/Operation (Running) are given adequate special powers for the following:

- a. fall back options while designing cleaning and watering contracts in connection with maintenance/servicing of rolling stock
- b. hiring of mobile crane, welders, bulldozers etc across the counter at accident sites.
- c. Execution of Composite contracts for Passenger amenity works

Such empowerment has been recommended by Railway Safety Review Committee (RSRC) also. Schedule of Powers in Zonal Railways should have necessary provisions for empowering the field officers on the above.

141 Unitary Command and Control

The unitary command & control of different wings/departments of loco sheds & mega coaching depots must function in manner similar to the practice in workshops as outlined in para 109.

142. Acts relevant to Rolling Stock Production & Maintenance Department

Officers and staff of the Mechanical department must be familiar with the following Acts which have a bearing on their day to day functioning.

- a. Factories Act
- b. Industrial Disputes Act
- c. Workmen's Compensation Act, 1923
- d. The water- Prevention and Control of pollution Act 1974
- e. The Air – Prevention and control of pollution Act 1981
- f. The environment (Protection) Act , 1986
- g. The hazardous waste (management, handling and trans boundary movement) Rules 2008
- h. Municipal solid waste (Management and Handling) Rules 2000.
- i. Indian Boiler Act
- j. Weights and Measures Act
- k. The Electricity Act 2003.

Copy of Bare Acts can be downloaded from Government of India website 'www.indiacode.nic.in'

143 Important Codes and Manuals of Indian Railways

Officers and senior supervisors of Mechanical department must also be conversant with the salient provisions in the following Manuals and Codes and abide by them in discharge of their duties:

PART A - Codes	PART B - Manuals
Indian Railways Administration and Finance an Introduction	Indian Railways Establishment Manual Volume-I
Indian Railways Code for the Accounts Department Part - I	Indian Railways Establishment Manual Volume-II
Indian Railways Code for the Accounts Department Part - II	Indian Railway Commercial Manual Volume-I
Indian Railways Finance Code Volume - I	Indian Railway Commercial Manual Volume-II
Indian Railways Finance Code Volume - II	Operating Manual for Indian Railways
Indian Railways Establishment Code Volume- I	Indian Railways Work Manual
Indian Railways Establishment Code Volume - II	Indian Railways Permanent Way Manual
Indian Railways Code for Traffic (Commercial) Department	Indian Railways Manual of AC Traction Maintenance and Operation Volume- I
Indian Railways Code for the Stores Department Volume - I	Indian Railways Manual of AC Traction Maintenance and Operation Volume-II (Part- I)
Indian Railways Code for the Stores Department Volume - II	Indian Railways Manual of AC Traction Maintenance and Operation Volume-II (Part-II)
Manual of Statistical Instructions Vol- I	Indian Railways Manual of AC Traction Maintenance and Operation Vol - III
Manual of Statistical Instructions Vol - II	Signal Engineering Manual Part - I
Indian Railways Code for the Engineering Department	Signal Engineering Manual Part - II
Indian Railways Code for the Mechanical Department	Indian Railway Telecommunication Manual
Railways service (Pension) Rules - 1993	
Indian Railway Medical Manual Volume-I	
Indian Railway Medical Manual Volume-II	
	Accident Manual of Concerned Zonal Railway
	Wagon Maintenance Manual
	Coach Maintenance Manual
	Diesel Locomotive Maintenance Manual

Mid Life Rehabilitation (MLR):

Except for the mainframe and superstructure of a Locomotive or rolling stock, rest of the components gets invariably renewed or repaired during Periodical overhauls (POHs) in workshops. Thus only the physical life of frame and structure has been central to decisions on codal life of the Locomotives or rolling stock, which once inducted, therefore stay for long years in service (25 to 40 years).

But the technology moves on and today's equipments come with many superior and cost effective features than that of yesteryears. Stand alone equipments are renewed piecemeal, whenever the renewal is warranted; however systems such as engine, propulsion or brake circuits, flooring and upholstery, wagon bodies etc are renewed en-block in line with latest technology in the middle of the codal life. Using this opportunity, the locomotive or rolling stock is also modernized, while getting a new lease of life. The Mid Life Rehabilitations are carried out either in exclusive MLR shops or in nominated Railway Workshops as decided by Board.