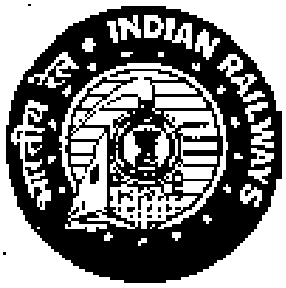


# SOUTH EAST CENTRAL RAILWAY

# OPERATING MANUAL

**(For Official use only)**

## 2008

## (FIRST EDITION)

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# PREFACE

1. The Manual is intended for the guidance not only of the operating staff but also all other staff connected and engaged in train operations. Besides it contains important guide lines which would help the staff in understanding the operating and safety practices better.

2. Instructions contained in this Manual shall be equally binding on the staff as in the case of General and Subsidiary Rules and should be read in conjuction with the General and Subsidiary Rules of this Railway. However, nothing is these Instructions should be read as cancelling, amending or modifying any of the General and Subsidiary Rules, IRCA Rules, Rules of Tariffs and Block Working Manual etc.

3. Any Addendum and Corrigendum issued should be serialy numbered and recorded in the page nominated for the purpose and pasted nearer to the corresponding Rules to which amendment is issued. Every Official to whom a copy of this Manual is given shall be responsible for maintaining it up to date.

Bilaspur

**(S. K. BUDHALAKOTI)**
Chief Operations Manager

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# SIGNALLING AND INTERLOCKING

## 1.01. Types of Fixed Signals.-

The following types of fixed signals re in use on this Railways :-

(a) Semaphore Arm Signals :-

(i) Two aspect Lower quadrant signals.

(ii) Modified Lower quadrant signals.

(b) Colour Light signals :-

(i) Manually operated multiple aspect signals.

(ii) Multiple aspect Semi-Automatic signals.

(iii) Multiple Aspect Automatic signals.

(iv) Manually operated two Aspect signals.

(c) Subsidiary Signals :-

(i) Supplementary signals :-

(a) Calling-on signals.

(b) Co-acting signals.

(c) Repeating signals.

(ii) Shunt signals :-

(a) Miniature Semaphore Arm type

(b) Miniature Semaphore on Revolving Disc.

(c) Position lights.

## 1.02 Signals between Traffic and Loco Limits .-

Signals are provided between Traffic and Loco Limits to control the movement of engines to and from the shed. Shunt signals are also have been provided in major yards for the movement of engines. Drivers must make themselves conversant with the same and move their engines according to the aspect of signals.

## 1.03 Commissioning or re-erection of signals.-

(a) For commissioning or re-erection of signals, the instructions contained in GR 3.26 and SR thereto shall be followed.

(b) The Divisional Signal & Telecom. Engineer or Assistant Signal and Telecom. Engineer will, Whenever necessary, requisition the services of a sighting committee.

(c) The sighting Committee having decided on the site and determined the height of the proposed signal or signals, all the members will sign the certificate in the prescribed form and the same will be forwarded to Sr. Divl. Signal & Telecom Engineer/Divisional Signal & Telecom. Engineer.

(d) On the date that the new signals are first brought into use, the Divisional Transportation Inspector, the Locomotive inspector and the SSE/SE/JE(Sig) will attend and jointly send message to the divisional Engineer, Divisional Mechanical Engineer, Divisional Operations Manager and Divisional Signal & Tele Communication Engineer stating whether the signals are satisfactory or otherwise, both by day and night. On

receipt of this message the Divisional Signal and Telecommunication Engineer will endorse on the space provided on the Sighting Certificate Already received.

(e) While deciding the site and determining the height of the signal the minimum visibility distance as indicated in SR 3.16.01, infringement to schedule of dimensions and the visibility of signals not being obscured by OHE masts. in electrified section should be taken into consideration by the Sighting Committee.

(f) Minor alteration to signals:-

When minor alterations to signals are required in order to provide better sighting such as increasing the height or moving the Post across the track, the Divisional Railway Manager may approve the work. Sr. DSTE / DSTE will advise the Sr. DOM / Sr. DSO / DSO of the time and, date on which the alteration will be made and manner in which it will be carried out. The Sr. DOM / Sr. DSO / DSO will then arrange to issue a memorandum detailing the work as an information to all concerned staff. ‘

**1.04. Up-keep of Signal lamps.-**

(a) Fixed type:-

The lampman / TPM / TP while existinguishing the signal lamp in the morning should remove the complete fount (or dubber) and clean the lens from inside and outside the lamp as also the red and green roundels of the spectacles. He should also remove the draught chute from inside, clean the air holes of the perforation cylinder and remove the soot from the chimney hood. The Lampman must then close the shutter of the lamp firmly before bringing the fount to the station. In the evening before replacing the founts in their respective lamp holders, the Lampman should again wipe the lenses from inside and outside, and also the roundels.

(b) Removable type :-

The Lampman / TPM / TP while bringing and replacing the signal lamp should clean the red and green roundels of signals. They should clean the signal-lamps and their lens at the station as indicated in item (a) above.

(c) For Fixed type / removable type signal lamps :-

(i) The length of the wick should not be shorter than 175 mm and width of the wick be 9mm + 1mm.

(ii) The wick should be properly trimmed with scissors duly taking care to remove the Charred portion of the wick.

(iii) K. oil with smoke Point No.22 should be supplied and used.

(iv) It should be ensured that the quantity of K.Oil filled is not less than 3t fluid OZS for, enabling the signal-lamp to burn for the whole night.

(v) The residual oil in the fount should be drained off and fresh oil put in.

(vi) Flame guard should be intact. In case of any damage, concerned maintenance staff should be advised. The perforation of flame guard should not be blocked.

(vii) Superior type waste cotton should be used while cleaning the lenses. The cotton should be soaked in Kerosene oil whenever required so as to clean the lenses properly.

(viii) The dubbers of the signal lamps must not be interchanged normally. The lamps must.be numbered to correspond with the numbering of signals. If the

numbers become faint or obliterated the Station Master should advise the Signal Inspector to have the number repainted. The lamps should be handled carefully.

(ix) After lighting the signal lamp the Lampman / TPM / TP should make sure that the flame has settled-down to the correct height and shutters firmly closed.

(x) In addition to above, the Lampman / TPM / TP should also clean the expansion rod of such signals which are electrically repeated, otherwise the soot cakes forming on the rod would choke the flame and automatically put out the light.

(xi) The Station Master will be responsible to see the signal lamps are in good condition and burn brightly. The signal lamps should be lit at the station for testing and regulating the flames, The Station Master must inspect the lamps daily and satisfy himself that all the conditions mentioned above are fulfilled.

(d) In case of any defect to any fixed signal the procedure stipulated in GR 3.68 to 3.71 and SRs thereunder should be followed.

**1.05. Responsibility for repairing, maintenance and replacement of signals and signal lamps.-**

(a) The signal and Tele-communication department is responsible for repair, maintenance and replacement of signals, signal lamps and their fittings. In case of any damage to the signal, signal lamps and their fittings- the Station Master must intimate the SSE/SE/ JE(Sig) and signal Maintainer concerned for necessary action.

(b) Proper care must be exercised by the Traffic staff in working stots/Signals/Block Instruments as per the working procedure. The slot/ slide must be put back to “normal” after the concerned signal is put back to “on”. A slot or slide or signal lever should not be kept in the pulled condition after passage of a train. This may cause an accident or failure. Refer GR 3.36 and SR thereto.

**1.06. Similar procedure as indicated in item 1.04, 1.05 above should be followed in case of lamp of all other indicators provided at the station and yard.**

**1.07. Examination of hand signal lamps, flags and their replacement.-**

At a fixed hour daily the station Master will examine all the Hand signal lamps and flags in use and see that they are in proper order. He should take immediate action also for the replacement and repair of the hand signal lamps and flags. Any deficiency of hand signal. lamps and flags must be immediately brought to the notice of the Divisional Safety Officer and Divisional Transportation Inspector.

**1.08. Basic Principles of interlocking.-**

The basic principles of interlocking are as follows:-

(i) It shall not be possible to take ‘off’ conflicting signals at one and the same time.

(ii) It shall not be possible to take ‘off’ signals for a running line unless:-

(a) all points on the running line are correctly set and facing points locked;

(b) all points, giving access to the running line from the sidings and goods lines are set against the running line;

(c) level crossing gates controlled by interlocking are locked across the roadway.

(d) The running line referred to above should include adequate distance also.

(iii) Once a signal lever is pulled to take 'off' signal, it must lock or back-lock, as necessary, the levers operating the points & gate locks referred to above.

(iv) When a signal is in the 'on' position, all points which would be locked by taking it 'off'must be free for shunting purposes.

(v) It must be impossible to take 'off' a warner signal, until all the relative stop signals in advance have first been taken 'off' and when 'off' it must back lock all such signals.

**1.09. Indirect and Direct Interlocking.-**

(a) Indirect interlocking means that the points are set and locked from one place and the signals are operated from another place and another lever frame; the interlocking is effected by means of keys carried or transmitted from one place to the other.

(b) Direct interlocking means that all levers, viz the points levers, the points lock levers and the signal levers are concentrated in one lever frame and worked therefrom; the interlocking is effected by mechanical and / or electrical means.

**1.10. Standards of Signalling and Interlocking.-**

Interlocking at stations is standardised into three different classes viz. I,ll and III. The standards ar4 follows:

**A - Two aspect signalling.**

**(a) Standard I**

(i) Speed -50 K.M. per hour.

(ii) Isolation - Isolation of the main line is recommended, but is no essential.

(iii) Points - The facing points should be provided with key locks, locking both switches independently and the switches detected independently by relative signals

(iv) Interlocking- Interlocking between point~ and signals may be carried out indirectly by means of key locks.

(v) Signals - Outer and bracketted Home signals shall be provided. The provision of Starter signals is optional. All signals shall be operated from the interlocked frame so placed as to be under the control of the Station Master on duty and provided with a key to enable the Station Master to lock the signal frame.

**(b) Standard II**

(i) Speed - 75 K.M. per hour.

(ii) Isolation - Isolation of the main line is essential.

(iii) Points - The facing points should be provided with plunger type locks, locking both switches independently and the switches and the belt should be detected independently by relative signals.

(iv) Interlocking- The interlocking between points and signal may be direct or indirect. Where indirect interlocking is used, signals shall be worked from a position under the control of the Station Master and key must be provided to enable the Station Master to lock up signal frame.

(v) Signal - Outer, Warner and bracketted Home signals must be provided and Starters where considered necessary. Where starters are not provided, the 'off' position of the Warner signal shall be dependent upon the receipt of "Line Clear" on the block instrument.

**(c) Standard III**

(i) Speed - Maximum permissible speed of the section as mentioned in the Working Time Table.

(ii) Isolation - Same as for Standard II.

(iii) Points -

(iv) Interlocking- The interlocking between points and signals must be direct.

(v) Signals - Outer, Warner, bracketted Home signal and Starter must be provided and Advanced starter as may be necessary.

**B. Multiple Aspect Signalling.**

The Standard, their speed, requirement of isolation, equipment of points and requirement of interlocking between points and signals are the same as in the case of two Aspect signalling. The Signalling, however, should be as under:-

(i) Standard I - A Distant and a Home signal in each direction.

(ii) Standard 11 - A Distant, a Home and a Starter signal in each direction.

(iii) Standard III - A Distant, a Home and a Starter signal in each direction.

Note :- For further details see paras 170 to 174 of "Indian Railways Signal Engineering Manual".

**1.11. Non-interlocked points.-**

(a) Locks and Bolts for points:-At stations where the points are not interlocked with the signals, each set of points must be provided with a safety lock or a clamp of the approved type or screw locking bolts with nut and cotter and a padlock so as to secure the switch or tongue rail to the stock rail. In this position the switch is said to be closed. This should be ensured before allowing any movement over the point(s). Points of the marshalling yard over which trains are neither received nor despatched are not provided with padlocks. (Refer S.R. 3.39.03, 5.14.03 and 5.14.07 (a) (b).)

(b) Keys of points Lock.-The keys of points locks must not be kept in bunches, as when a bunch of keys is sent out to unlock points there may be other keys in the bunch which should be with the Station Master, and in such case it might be in the power of the pointsman or porter to unlock points that should be kept locked.

(c) Padlocking of points.- The clamp must be properly tightened to hold the tongue and stock rails together before being padlocked. Where bolts, nuts and cotters are provided the bolt should be passed through the tongue and stock rails near the nose of the closed switch, then the nut should be screwed on tightly, cottered and padlocked. If the nut cannot be screwed sufficiently tight so as to hold the tongue and stock rails together without a gap, the bolts etc, should be renewed at once.

When keys are removed from locks, care must be taken to place the key hole shields over the keyholes so as to prevent rain and dust getting into the locks.

**1.12. Explanation of certain terms.-**

(a) Permanently locked points,-In non- interlocked yards or non-interlocked portion of interlocked yards, in order to isolate the running lines from the non-running lines and vice-versa points which are permanently locked are known as permanently locked points, keys of such points shall be kept under the custody of the Station Master except when handed over for the purpose of any work at the point.

The arrangement prevents any movement between the running and non-running lines without the permission of the Station Master.

(b) Isolation.- The separation of stabling lines, loops and sidings from main running lines by means of trap points, derail switches snag dead ends or sand humps prevent stabled vehicles from running away on to the main running line. A line is said to be isolated from the adjacent line(s) when any movement on the adjoining line(s) cannot foul it.

(c) (i) Panel Interlocking.-Panel interlocking is a system of power signalling where a lever frame is dispensed with. Small thumb switches or push buttons are provided for operation of signals and points, and these are placed on an illuminated track diagram geoaraohicallv in their respective positions. The interlocking is achieved electrically by means of relays.

(ii) Route Relay Interlocking :- This is a system of Panel interlocking where the entire route is set by turning a switch or by pressing two buttons, one at the entry and other at the exit of the route being displayed on the panel. The setting and holding of the route and interlocking is achieved through electrical relays.

(iii) Electronic Interlocking:- Otherwise known as Solid State Interlocking (SSI), is a modern system of interlocking where, the interlocking is effected through customized hardware and software. This enables operation through push buttons on the panel board or by giving necessary commands on the key board/mouse by viewing the yard layout displayed on the Visual Display Unit(VDU). The choice of operation, however, rests with the Station Master.

(d) Detectors:- An electrical or mechanical device which prevents a signal being taken ‘off’ unless the points which the signals protect are correctly set and, in the case of facing points, also locked. It also prevents the points being until worked the signal has been put back to ‘on’.

(e) Facing points lock:- A plunger bolt provided at the facing points, which ensures that the points are correctly set and locked to prevent them from being moved unauthorisedly.

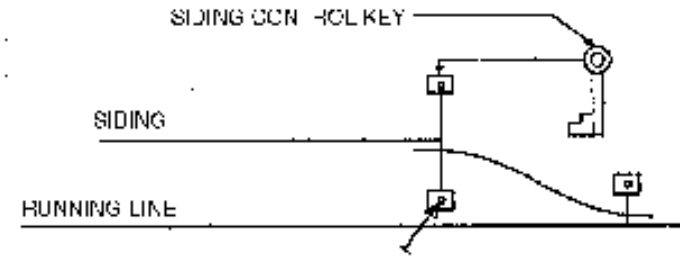
f) Facing Point Lock bar:- A metal bar fitted near the facing point alongside the running rail and connected with the facing point lock lever in such a manner that the lever is prevented from being moved so long the presence of vehicle wheels prevent the bar being raised. Lock bars must not be less than 42 feet. long for B.G. and 40 feet for N.G.

(g) Fouling bar :- A bar provided at the fouling mark between two diverging lines so as to prevent the points being set and locked for a movement over one line while a train or vehicle is standing on the other line infringing the fouling mark.

(h) Locking:- A lever is said to be locked when in the normal position it cannot be pulled over. A lever is said to be locking another lever when owing to the former's remaining in the normal or reverse position, the latter cannot be pulled over.

(i) Track circuit:- The running rails are used as conductor or electric circuit. The current is fed from one end and a track relay is connected to the rails at the other end of the track. There are two types of track circuits-closed and open. In the closed track circuit which is normally employed in yards the relay is normally kept energised. When a train enters the track circuited section the axle of wheel provides an easier path for the current with the result the track relay drops, thereby replacing the relevant signals. The open track circuits are usually of shorter lengths, being provided for release of Block Instrument locks, occupation of wagon-axle completes the circuit thereby actuating the track relay. Ref.GR 1.02(57).

( j) Standard type Siding and Succession locking:- The sketch below shows the general arrangements for securing the points and derail of a standard type of siding and succession locks:-




(k) Normally as shown above the siding points and the derail remain set and locked for straight and for the derail respectively. The derail is fitted with two single locks and the siding points with one single lock. To operate the siding, the Siding Control key must be inserted to its respective single lock at the derail. This releases the derail point to be operated to closed position when the 'succession key can be extracted from the other single lock at the derail. The succession key in turn when inserted in the single lock fitted on the siding points: releases the points to be set for the siding. In this arrangement the derail stands locked in either position when the respective key is out.

To restore the siding points for the running line, the keys must be in used reversed order, so that the Control key may be taken out from the derail to release the signal frame.

(I) Locking Facing points with Route Indication Keys at non-interlocked stations:- Each running line in a station will be designated by a fixed number; the road nearest the platfrom will be known as No. 1 Route, the next No.2. Route and so on.

All points leading to two diverging routes will be fitted with triple locks, the middle lock will be the Release Lock, the two Outer Locks will be the Point Locking Locks.

The key of each lock will bear on the handle an inscription indicating its function.

The keys of the Points Locking locks will normally be secured in their locks. These keys cannot be turned and removed unless the points are firsj correctly set and the Released Lock then unlocked, The removal of either Points Locking Key will back- lock the Release key in its lock.

The Release Keys of the Outer most points will be known as the Up and Down keys. These keys must normally be in the personal charge of the Station Master on duty.

When there are more than one set of facing points on the same line, the key of the Points Locking Lock of the outer facing points when set for the direction of the inner points becomes the Release Key of the next set of inner facing points.

In setting the Points for a specified route, the locking must begin from the outermost facing Points.

When the points have to be set and locked for the reception of a train, the Station Master on duty will make over to the Points Locker (usually a Pointsman at such stations) the Up or Down Key, as the case may be, for the direction from which the train is expected and will give him clear instruction as to the running line on which the train will be received. The Points Locker will proceed to the outermost facing points and set and lock them for the specified route removing the Points Locking Key which, if there are no inner facing points to be set and locked, will be taken to the Station Master on duty. The inscription on the handle of this key will indicate the running line or route for which the points have been set and locked.

If there are inner facing points to be locked, the Points Locking key removed from the Outer facing Points will be the Release Key for the inner points.

After the innermost facing points on the specified route have been locked, the Points Locking Key removed from those Points will be taken to the Station Master on duty. The inscription on the handle of this key will indicate the running line or route for which all the facing points have been set and locked.

The Station Master, having satisfied himself by an inspection on the handle of the key made over to him by the points Locker that the points have been set and locked for the correct route required by him will order signals to be taken 'off' and will retain the key in his personal charge till the train arrived or passes through as the case may be. The facing points must also be manned.

Note :- In the case of crossing trains, the Station Master must also have in his possession the required route key in support of the points at the trailing end having been set and locked in accordance with SR 3.39.02(d) (iii) before ordering the signals to be taken off and will '.retain that key in his possession till the arrival of the train.

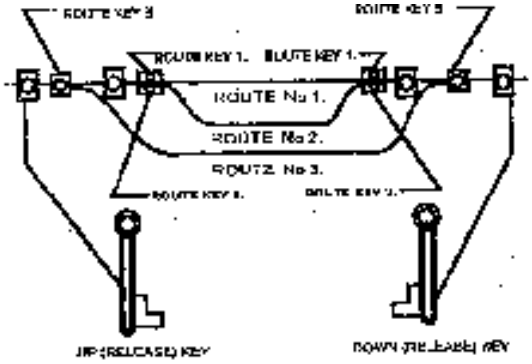
For the security of the Up and Down Release Keys when not in use, a key box is provided in which the Release Keys are interlocked with the Control Key of the dead-end and other sidings so that, before either Release Key can be removed from the key box, the siding Control Keymust be secured in its key hole in the box and before the Siding Control Key can be removed both Release key must be secured in their respective key holes in the key box. When neither of the Release Keys nor the Siding Key is in use, the Siding Control Key must be removed from the key box and locked up in the glass fronted lock up key box, the key of which must be in personal possession of the Station Master on duty.

Before a key is removed from the box, the Station Master on duty must turn the indicator below the key to show the route which has to be set if the key is to be given out for points to be locked for the reception of a train, and to show "shunting", if the key is to be given out for yard shunting.

A key must not be removed from the box unless the indicator below is first turned as laid down above. After the indicator has been set, the key can be turned in its lock and withdrawn the turning of the key will back-lock its indicator.

The indicator in the key box serves as a visual reminder of the order given by the Station Master with the key.

The following diagram illustrates route locking.-




(m) Clamp.— Clamp is an appliance (made of iron) used to secure the switch rail hard against the stock rail in either normal position or reverse position as required.

(n) Sighting Point.- The plate where a Driver first sights a signal.-

(o) Sighting Distance.- The distance between the sighting point and the signal.

(p) Braking distance:— The distance required for a train to come to a stop when running at the maximum permissible speed of the section. This distance varies as per the gradient, speed, break power and weight of the train.

(q) Points.- Movable tapered pieces of rail by which either of two routes may be set. Each piece is usually known as tongue or blade and the tongue has a toe (the thin end) which fits against the stock rail, the other end being known as heel.

(r) Coupled points.- When two or more points are worked by the same lever, they are called coupled points.

(s) Trap Points.- Points provided in a line to prevent unauthorised movements from that line to another line.

(t) Signal/Wire adjuster.- A device to enable the cabin staff to adjust the signal operating wires to compensate for changes in temperature.

(u) Treadle.- Treadle is a device by which the deflection of the rail due to the passage of an engine or vehicle or the impact of the wheels operates a contact to open or close an electric circuit.

(v) Cross Over.- A parmanent Way Connection between two lines.

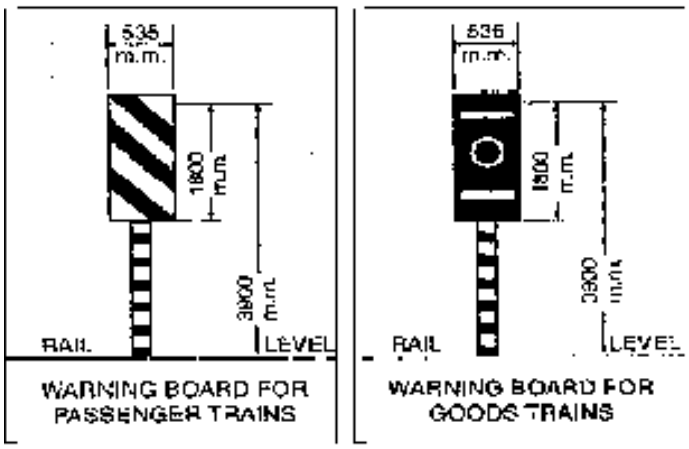
(w) Point indicators.- Point indicators show “White” on both sides towards the route when the line is set for the straight (i.e. the normal position) and “green” when the line is set for the take off. Refer GR 1.02(46).

(x) Trap indicators, Trap indicators show “red” on both sides towards the route when the switch is in open condition or the derail on the rail, and “green” when the switch is closed or the derail off the rail. Refer GR 1.02(46).

**1.13. Warning Boards .-**

(a) Warning Boards are provided with a view to warn the Driver of an approaching train that he is approaching the first stop signal of a station or an intermediate block stop signal or a gate stop signal, so as to enable him to bring his train under control and be prepared to stop at the signal, unless the ‘off’ aspect of the signal has been sighted by him authorising him to proceed past the signal.

(b) There are two types of warning Boards as follows:-




(C) Goods Warning Boards are provided at a distance of 1.4 KMs in rear of the first stop signal of a station or an intermediate block stop signal or a gate stop signal which is not prewarned by the provision of a Warner/Distant signal located at a distance of not less than 1.4 Kms, and these are applicable to all goods trains and also to all passenger carrying trains on high speed section Jharsuguda-Nagpur The Driver of a passenger carrying train With speed on Howrah- Jharsuguda section will bring his train under control from the goods warning Board unless the 'off' aspect of the first stop signal or the clear aspect of the Distant signal has been sighted by him.

(d) Passenger warning Boards are provided at a distance of 1 KM in rear of the first stop signal of a station, intermediate block stop signal or a gate stop signal, which is not prewarned by the provision of a Warner / Distant signal located at a distance not less than 1 KM from it. These are provided on the routes where the maximum permissible speed of Passenger carrying trains does not exceed 100 KMPH.

(e) The distance mentioned in paras (c) and (d) above should be suitably increased if the approch to a station is on a falling gradient.

(f) Where the sectional speed ranges from 50 to 72 KMPH on the board gauge, passenger warning boards should be provided only at stations where the first Stop signal is not visible from an adequate distance i,e.800 metres.

(g) Where, however, the sectional speed of a passenger carrying train is more than 100 KMPH, the goods warnings Board will be applicable to such trains. The Driver of such high speed train will bring the train under control from the goods warning boards unless the off aspect of the first stop signal or clear aspect of the distant signal has been sighted by him.

### 1.14. Custody of the Key of Cabin Basement! Relay Rooms locks.-

At every station, the cabin basement/Relay room should be kept locked with two separate locks, the arrangement should be such that one key is kept with the on duty Station Master and the other key with the signal maintainer. When ever required the Station Master shall hand over the key to the maintainer with proper acknowledgement in the basement / relay room key register. The maintainer on receipt of the key from the Station Master may use the same and the key in his custody to open the basement/relay room by inserting the keys one after another separately into the earmarked locks.

After completion of the work, the Cabin basement/relay room is to be locked using both the keys separately and designated key should be handed over to the Station Master.

The details of transaction is to be properly recorded in the basement/relay room key register maintained at the Station and duly signed by the Station Master and Maintainer respectively.

**1.15. Situation in which disconnection notice need not be issued provided suitable precautions are taken;**

A. CLEANING AND/OR; LUBRICATING/ GRAPHITING WITHOUT AFFECTING ANY PHYSICAL / ELECTRICAL DISCONNECTION.

i) Lever frame basement.

ii) Relay room and battery room.

iii) Apparatus case / battery box / goomty.

iv) Lifting barrier mechanism including winch.

v) Lever lock and circuit controller without opening cover.

vi) Inspection and cleaning of inside equipment; by opening the covers at point machines, signal ; motors, reversers, apparatus cases and detectors.

vii) Point, facing point lock and lock bar.

viii) Cranks, compensators, pullies, wheels, roller stands, counter weights & levers.

ix) Power supply equipment.

x) Insulation joints.

xi) Lens / roundels of signal, point indicator, trap indicator & shunt permitting indicator provided covering lenses prevent phantom indication to driver of an incoming train.

B. TESTING OF :

i) Track locking, approach locking, back locking, indication locking, route release.

ii) Checking various parameters of axle counter without disconnecting the equipment.

iii) Power supply equipment.

iv) Lever frame, SM's control frame, signal operation, point operation, level crossing, gate & slot circuits. :

v) Point by obstruction test for lock only.

vi) Checking and testing of track circuit parameters when the track is unoccupied.

vii) Focussing of colour light signal provided phantom indication to driver of an incoming train is prevented by covering lenses.

C. ADJUSTMENT OF :

i) Wire transmission except double wire operated point transmission.

ii) Tightening of terminals using insulated tools without causing any shorts on adjacent terminals.

D. REPLACEMENT OF :

i) Electric signal lamp provided covering lenses prevent phantom indication to driver of an incoming train.

ii) Bond Wire, one at a time.

iii) Plug in relay in case traffic condition permits.

iv) Indicator lamps.

v) Push button / switch / key of panel.

vi) Lock bar clips / bay stop, one at a time.

vii) G. D. tubes.

viii) Fuse, one at a time.

ix) Pulley, bottom roller / top roller in wire and rod transmission one at a time and split pins.

x) Batteries / cells without affecting disconnection of supply to main equipment.

## CHAPTER-II

# OPERATING CONTROL

**2.01. Definition.-**

Operating control means control over the .Movement of trains and traffic in a given area of a railway from a Centralised Control Office.

**2.02. System of Tele-communication.-**

(a) The Control office is provided with suitable tele-communication system connected with all stations, yards, Loco sheds, traction sheds, Goods sheds, Crew booking points and officials of various departments. Deputy Control circuit is provided in each control office with telephone communication connected to important stations, yards and Loco sheds for collecting important particulars such as Yard reports, mid-night figures and train ordering etc.

(b) Non-electrified sections.- The tele- communication circuits are connected by overhead wires or cables and the Section Controller is provided with a selector board with keys for calling up wayside stations and other points(as mentioned in sub-rule (a) above) connected to his board. The Controller can contact a Station by turning the selector board key of that station / point.

(c) Electrified sections.- All tele-communication circuit in the electrified section have been installed with under-ground cables to avoid inductive interference.

(d) Emergency control circuit.- This enables the Section Controller being contacted from emergency socket on the sections by means of a portable telephone.

(e) There are two kinds of portable telephones, one for the non-electriefied sections and the other for electrified sections.

(i) On non-electrified sections, the portable telephone is connected to the overhead control circuit wires by means of two hooks provided on a pole with telephone wires running to the portable set. When the proper connection is made, contact with the Section Controller can immediately be established.

(ii) On electrified sections, the Controller can be contacted by inserting the plug of the portable telephone into a socket provided on short upright posts alongside the railway track at an interval of approximately 1 KM.

These posts are painted with alternative white and black horizontal stripes. The pressing of the key in the portable equipment lights on lamp and sounds a buzzer at the control point with indication on the electric mast direction-wise to the nearest circuit.

**2.03. The Control Board.-**

The Section Controller of each section is provided with control Board with tele-communication facilities for contacting stations, certain important cabins, Loco sheds, etc. over a given length. For the guidance of the Section Controller, a diagram showing the layout of stations and yards, loop capacities, the gradients ; and the layout of sidings is exhibited in front of him. In electrified areas, the diagram showing the various sections, sub-sections and elementary sections is also exhibited.

**2.04 Control Offices. -**

(a) Divisional Control Ofices. - These may be described as the nerve centres of the Divisional Operating Organisation. On this Railway, a Control Officve exists at each of the Divisional Headquaters stations viz. Bilaspur, Raipur and Nagpur.

(b) Area Control. - Area of exceptionally industrial or commercial importance are provided with subsidiary Control offices called area Controls.

(c) Central Control office. -

(i) This is situated in the Headqueartered office at GM complex. It is connected with Divisional headquarters and with important stations / yards with a view to regulating traffic over entire system and co-ordinating with adjoining railways.

(ii) It functions under the overall charge of a Chief Controller who is assisted by Deputy Chief Controller and a few section Controllers in each of the 3 shifts and maintains detailed operating position and oversees the daily performance.

(iii) It maintains various operating records for reference and keeps the Head Quarters officers informed of the latest position.

(iv) The stock section of the central control collects various information and prepares detailed position of day to day operating performance; and .

(v) Its Mechanical and Electrical wings assist in assessing the performance of their respective departments in every day's operation and in calculation of kilometerage and punctuality.

**2.05. Control Office Organisation.-**

(a) The Overall charge of a Control office is under the Chief Controller who is a senior operating supervisor. He is responsible to the Sr. Divisional/ Divisional Operations manager for the efficient working of the Control office under his charge, as well as for traffic operating under his jurisdiction.

(b) Each Divisional Control office is divided into one or more sections and each section is provided with a separate self- contained control circuit with a separate control Board. Each section or 'Board' as it is commonly called, is manned round the clock by the Section Controllers on shift duty. The work of Section Controllers is supervised by Deputy chief Controllers also rostered on shift duty.

(c) A power Controller is provided in each shift to keep a watch on the position, of engine and crew and also try to solve any problem raised by the staff concerning mechanical deptt. On a division having electric traction, a Traction Loco Controller is also provided in each shift.

(d) In all Divisional Control offices, a Deputy Chief Controller (stock) on general shift is provided for efficient control and distribution of stock.

(e) In addition to the above, a separate controller is posted in each shift for distribution and control of Traction Power in those Divisions where the sections are electrified.

**2.06. Functions of Control.- These may be best described under 3 heads.-**

**(a) Train Control.-**

(i) Ensuring the punctual running of Mail, Express & Passengers trains.

(ii) Running Goods trains to best possible paths and with the least possible detention enroute.

(iii) Arranging the running of engineering material trains to the best possible advantage of Engineering department.

(iv) Arranging Engineering and / or Power blocks in such a way as to involve the minimum disturbances to train running and best advantage of the Engg. department.

(v) Arranging relief for engine crews and Guards in good time.

(vi) Arranging relief and regulating trains in the event of accident.

**(b) Traffic Control:-**

(i) Allotment and distribution of coaching and Goods stock in stations.

(ii) Securing maximum utilisation of stock.

(iii) Maintaining fludity of Marshalling yards.

(iv) Regulating traffic for fulfilling interchange commitments.

(v) Securing maximum workable load for each train compatible with the type of engine utilised and the special characteristics of the section over which the train is to be worked.

**(c) Power Control:-**

(i) Requisitioning locomotive power i.e. engines, direct from locomotive Running Sheds for all operating requirements, viz. train working, shunting and banking.

(ii) To ensure the most economical use of engine power available.

(iii) To ensure the return of engine to Home Running Sheds at regular intervals for wash-outs and other maintenance requirements.

**2.07. Train Control Charts.-**

(a) Each Section Controller shall record on control chart the movement of all trains over his section on receipt of information from each station during his hour of duty. Each control chart is printed for an eight-hour working shift with horizontal and vertical lines representing distance and time respectively. Alongside the vertical lines the Station names of the section are printed. Generally each hour is divided into 6 equal parts representing units of 10 minutes each, and each such unit is further sub-divided into 5 smaller units of 2 minutes each.

(b) Each train control chart usually has the following items printed on it:-

(i) Date,

(ii) Distance between consecutive stations in kilometres,

(iii) Code initial of each station on the section on the right hand side.

(iv) Space for engineering restrictions on the section.

(v) General remarks.

(vi) Space for signatures of the section Controller and Deputy Chief Controller or Chief Controller.

(c) In plotting the paths of various classes of trains, pencils of the following colours shall be used:-

(i) Red - for Mails, Expresses and other trains requiring top priority.

(ii) Blue - for other trains carrying passen- gers.

(iii) Green - for Military special and Crack- Specials, Fast Goods, S.Q.T. and working trains and other important goods trains.

(iv) Black - for other Goods trains.

(d) All Up trains are plotted from the bottom of the chart upwards and from the left diagonally, towards the right; likewise all Down trains are plotted from the top of the chart downwards and also diagonally from the left towards the right.

(e) Before the Section Controller takes over a Control Board, he should prepare his Train Control Chart by plotting in a skeleton form in black pencil the seheduled paths of all Mails, Expresses and Passenger trains that are to run during his hour of duty. This will serve as a valuable guide for keeping a close and upto the minute watch on the running of the trains.

(f) Section Controllers shall plan crossings and precedences in advance on the basis of the anticipated paths of the various trains on the section which they shall plot lightly in black pencil.

(g) Engineering Restrictions.- All informations in respect of restrictions imposed on the section by the Engineering and / or the Signal & Telecommunication or Electrical department affecting the movement of trians shall be recorded in this chart with full particulars of imposition and cancellation.

**2.08. Master Charts.-**

24 hours charts basically similar to Train Control charts for every section are prepared which show the running of each Mail, Express and passenger trains over the section according to its scheduled running prescribed in the working Time Table in force. In between the running of trains carrying passengers, paths for goods trains are worked out and ploted. Such charts are called Master charts. They are helpful in revision of time tables and planning the running of any extra trains, arranging engineering blocks etc. For the guidance of section Controllers these charts are displayed on the boards, to which they refer.

**2.09. Forecast.-**

It is an information conveyed in advance by adjoining control offices, adjoining railways and MIL rail about the availability of stock indicating train, direction, commodity, type of stock (if there is need for stock of some particular description), and break of gauge transhipment.

**2.10. Declaration.-**

(a) Before staff are allowed to work independently as Controllers, they shall be required to pick up duties on the boards they would be required to work. This learning must be under the guidance of the section controller on duty. The period of learning would depend on the aptitude for control work which the staff possesses but in any case, it must not exceed 5 days in each shift for each board.

(b) In case the Chief Controller observes that an employee would require more than 5 days for each shift on the board, he must bring the fact to the notice of the Assistant/Divisional Operations Manager and take his special sanction for extension of the learning period.

(c) After the employee has taken learning, he shall write and sign the following declaration in a register specially maintained for the purposes;

"I hereby declare that I have taken learning on Board/boards to my entire satisfaction and can, now work independently as a Section Controller on this/ these board/boards",

The Chlef Controller shall write the following remarks below the above declaration and sign it :

"Shri .....was given learning on .....board/boards from..... to ..... I have watched progress and consider him fit to work i!)dependently on the board(s)".

The Chief Controller may also test the employees before allowing them to work independently.

(d) Deputy Chief Controllers shall also be required to give similar declarations, but in their case the period of learning in each shift should not exceed 3 days. If this period is likely to exceed, the Chief Controller shall take action as mentioned in sub- para(b) above.

(e) The Chief Controller shall also append a certificate similar to the one mentioned in sub-para(c), below the Deputy Chief Controller's declaration.

(f) In case of sub-control offices where the Chief Controller is not posted, the duties herein assigned to the Chief Controller shall devolve on the seniormost Deputy Chief Controller.

**2.11. Duties and responsibilities of Controllers.-**

The main duties of control staff are outlines I. below. These are only guides to their day to day working and are not exhaustive.

**(a) Cheif Controller:**

The Chief Controller shall be responsible for-

(i) Checking the control charts and the performance of all coaching trains over the division and bring it to the notice of Divisional Operations manager for taking up all cases of bad performance;

(ii) Checking the previous day's performance and analysing the causes of any shortfall or set back in the planned programme for the, supply of empties to the loading points and clearance of loaded stock;

(iii) Checking control charts and taking up promptly cases of faulty controlling and performance due to failure of signals, track, locos and other equipments;

(iv) Planing out the day's programme of movements including the forecast of traffic;

(v) Watching detention to stock at stations, goods yards and transhipment points

(vi) Watching the performance of marshalling yards;

(vii) Watching the turn-round of engines and wagons;

(viii) Keeping a watch on damaged wagons detached and way-side stations in order to ensure promt repair and clearance;

(ix) Paying personal attention to Divisional and Inter-Railway interchange obligations;

(x) Ensuring that the adjacent Divisions and/or Railway get the required locomotives and train staff in time;

(xi) Checking out-station rest of running staff;

(xii) Arranging engineering and / or power blocks when required and regulating trains and traffic to suit the blocks; for the best possible advantage of engineering aepartment.

(xiii) Maintaining proper disciplin and a high standard of efficiency in the control office;

(xiv) Checking of Guard's roster and taking up cases of irregular booking; and

(xv) Deal the accident cases in terms of instructions contained in the Accident Manual.

(xvi) Carrying out any other duties that may be alloted to him.

**(b) Deputy Chief Controller:**

The Deputy Chief Controller shall be responsible for-

(i) General supervision of the Control office during the absence of the Chief Controller and supervision of the work of Section Controllers and' the Power Controller;

(ii) Ordering of trains;

(iii) Ensuring availability of powers, crews and Guards for all trains'

(iv) Maintaining co-ordination with adjacent Divisions and Railway by keeping in constant touch with the Deputy Chief Controllers of the Divisional Control Offices concerned;

(v) Attending immediately to any incident that causes or any causes detention to trains; /

(vi) Keeping in constant touch with marshalling yards, stations serving colliery sidings, mineral sidings, and other industrial concerns to ensure that such yards/ stations are always kept clear to deal with the incoming and outgoing traffic and taking timely arid effective measures to deal with any signs of congestion;

(vii) Keeping a special watch on the running of Mail. Express and Passenger trains, crack specials, Military specials, trains carrying guaranteed traffic, coaching specials;

(viii)Ensuring availability of empties in time at collieries and other important loading points;

(ix) Watching the fulfilment of interchange committments;

(x) Supervising the runing of over size consignments;

(xi) Giving advice of accidents to all concerned and taking charge of the affected section;

(xii) Deal the accident cases in terms of Accident Manual.

(xiii) Carrying out any other duties assigned to him.

**(c) Deputy Chief Controller (wagon check):**

The Deputy Chief Controller (wagon check) shall be responsible for-

(i) Scrutinising the pervious day's stock report received at 12 hours, 18 hours and 0.0. hrs from yards and road-side stations and regulating supply of empties according to daily allotment keeping in view the oldest date of Registration, nature of goods and the type of stock required for lifting goods as per oldest date of registeration;

(ii) Watching the placements and releases of wagons in Goods sheds, Transhipment sheds, Loco sheds, Engineering sidings and other industrial and colliary sidings etc. and taking up any shortfalls or detention;

(iii) Keeping a watch on the performance of work trains and seeing that sectional loads and packages are regularly cleared from road- side stations and sidings;

(vi) Maintaining damaged wagons or hot-axle register (as it is commonly called) and unconnected wagons register and taking action for prompt repairing, clearing of damaged vehicles, connecting of the unconnected wagons;

(v) Controlling the traffic hand and steam cranes and arranging the loading and unloading of crane consignments expeditiously;

(vi) Keeping a special watch on the movement of special type wagons such as BFRs, BFUs, End-falling trucks, oil tanks, Petrol tanks, Cattle trucks, Timber trucks etc. so that they are not detained at any points;

(vii) Keeping a special watch on out of gauge loads and GTS loads to ensure that these are moved according to the instructions issued;

(viii) Keeping a watch on the daily performance of Divisional Material trains and arranging engineering blocks for the best advantages of engineering department and with least possible detention to train service;

(ix) Keeping a close watch over movement of seasonal perishable traffic and supplying suitable stock for their quick clearance;

(x) Cross checking daily restriction bulletins with restriction messages received from Headquarters office and issuing such restriction bulletins;

(xi) Ensuring that correct and accurate account of wagons on the Division is maintained; and

(xii) Carrying out any other duties assigned to him.

**(d) Section Controller.-**

The Section Controller shall be responsible for.-

(i) Reporting for duty 30 minutes before start of his duty studying the control chart and related documents carefully so that he is thoroughly conversant with the trains already moving and expected to run over the section under his control as also with instructions to be observed and other special instructions to be followed;

(ii) ensuring efficient running of trains over the section he controls by arranging judicious crossing and precedence and giving clear and concise orders to stations well in advance;

(iii) Plotting neatly and clearly the movement of all trains on the control chart promptly as the trains move and recording in the remarks column all special events affecting the running of each train;

(iv) Informing terminal stations,' Loco sheds of late running of trains to avoid the calling of crews and Guards earlier than necessary or to put back trains where adviseable;

(v) complying with stock orders;

(vi) watching the working of Marshalling yards; (vii) informing big stations, yards, and concerned section controllers of the trains on the section and their anticipated arrivals in orders to give them time for arranging reception lines and connecting trains onwards and also for making announcements for the information of the public in case of late running of Mail, Express and Passenger trains;

(viii) intimating to stations in advance the work to be done by shunting trains and van goods.

(ix) taking unloading particulars by passenger trains and leave room messages from stations and informing Guards enroute to avoid detention to coaching trains;

(x) keeping in close touch with engineering Power Block and working of material train in such a way as to involve the minimum disturbance to train running and to the best advantage of the engineering department.

(xi) keeping a watch over damaged wagons / vehicles detached at road-side stations and for arranging clearance for their expe-ditious repairs and clearance;

(xii) in case of accidents appreciating and regulating the situation promptly and adjust the movement of traffic in view of the circumstances prevailing under the guidance of Deputy and Chief Controllers;

(xiii) making timely arrangements for the relief of Guards and Brakeman whose duty hours are likely to be completed on road;

(xiv) passing on the messages regarding, reservation, meals etc. given by guards to the concerned stations;

(xv) maintaining the various registers and books as prescribed from time to time.

(xvi) relay information regarding accidents to Deputy Chief Controller and act according to his instruction for removing obstruction and other relief measures.

(xvii) relay information to all concerned officials promptly in case of any unusual occurrance such as sleeper on fire, rail fracture, wheel slipping and **OHE** break down etc.

(xviii) carrying out any other duties allotted to him by Deputy Chief, Controller and Chief Controller.

**(e) Power Controller.-**

Power Controllers are dividied in two categories viz. Power Controller for Diesel engines and Power Controller for Electric engines and **EMU** stock.

(i) The Power Controller for Diesel Engines shall be responsible for-

(a) reporting for duty 30 minutes before his duty to commence and studying the disposition of engines and crews over the various sections of the Divisions and in the case of Diesel engine, the availability of such engines in the home and out-station sheds.

(b) obtaining timely assistance for shed running short of engines or crews;

(c) maintaining a record of engine movements and engine kilometreage for ensuring that engines are not detained and the turn round, is satisfactory.

(d) planning and directing engine movements in co-ordination with the section controllers so as to ensure efficient engine utilisation;

(e) marking timely arrangements for the relief of crews whose duty hours are likely to be exceeded on the road;

(f) giving advice on technical matters to Drivers when their engines develop defects andkeeping action to prevent engine failures.

(g) arranging relief to crew in case of an accident;

(h) keeping a record of engine failures, loss of time on road on Loco account and other unsatisfactory features with reasons;

(i) arranging loco or carriage steam/diesel cranes when required;

(j) watching movement and diversion of Diesel fuel tank wagons and maintaining day to day stock position of Diesel fuel:

(k) maintaining record of maintenance schedules and wash out of locomotives and seeing that engines become available in the Home shed for due wash out and prescribed schedules;

(I) keeping close touch for fueling of locomotives as and when necessary;

(m) carrying out any other duties assigned to him.

(ii) Power controller (TLC) for Electric engine shall be responsible for-

(a) planning and directing Loco movements so as to ensure efficient Loco utilisation;

(b) maintaining continuous watch over the movement of all electric locos and electric loco crews on. the Division and arrange timely relief for crew in order to avoid excessive duty hours;

(c) maintaining in Loco link charts in the prescribed form indicating at a glance the movement of electric locos and exact position of each loco.

(d) keeping a close watch on the movement of link locos and ensure that the link working is adhered to the maximum extent possible, and high loco utilisation is achieved;

(e) regulating despatch of locos and running staff in the event of dislocation of scheduled working;

(f) co-ordinating with Traffic Department and the loco sheds to ensure that locos of the correct type are used on passenger and goods services;

(g) conveying timely advice to sheds regarding alterations in scheduled working, if any, so as to avoid idling of running staff;

(h) keeping a watch on detention to locos in yards and in co-ordination with the Dy. Chief Controller ensuring that such detention are reduced to the minimum;

(i) keeping a log of late starts and detention attributed to electric locos and electrical running staff and reporting to TFR for investigation;

(j) guiding running staff in regard to trouble shooting as required in the event of any unusual occurrence on line;

(k) arranging relief locos and running staff in the event of breakdown; also conveying informations in regard to accidents promptly to officers and Senior Supervisors of Rolling stock section;

(I) maintaining record of work done on locos by outstation sheds.

(m) carrying out other. instructions given by officers.

Note:- For detailed instructions refer to Manual ACTM para 1204.

(iii) Traction Power Controller:-

Traction Power Controller shall be responsible for.-

(a) while taking over shift duty, ,acquaniting himself with the prevailing position of the entire section including the working of the Remote Control equipment, position of all transformers,circuit breakers, interruptors and isolators, sections under power block, any special instructions to be carried out, movement of important officials connected with the distribution system, position of the tower wagons and breakdown vehicles etc.

(b) maintaining continuous contact with the Traffic section Controllers in regard to power supply affecting train movements, imposing power blocks etc.

(c) taking prompt action in accordance with prescribed rules and local instructions for restoration of supply in the event of power supply interruptions or other failures;

(d) imposing of and removing power blocks as requied strictly following the procedure and safety rules in. all details with co-operation of Traffic Sectional Controllers;

(e) advising promptly the concerned officials in the event of failure of power supply, OHE breakdowns, accidents and keeping them posted with all important developments.

Note:- For detailed instructions refer to para 0716 of manual of ACTM.

**2.12. Records and Registers.-**

In addition to the records and registers which a contorl office may maintain suiting local conditions and in accordance with local orders, the following shall also be maintained in each Control office:-

**(a) By a Section Controller:-**

(i) Section Controller's Diary-

A record shall be kept by the Section Controller of all important items affecting the running of trains and the movement of traffic, which be requires to bring to the notice of his reliever for guidance. He shall also note down the action he has taken in regard to these items and indicate items left unattended. In this register the section Controller shall enter the orders he issues to the Station Masters. The orders shall be numbered consecutively and shall commence with No.1 after midnight each day;

(ii) Inward Message Book:- All important communications from Station Masters and messages given by Guards or Drivers on the section shall be recorded in this book and necessary action taken;

(iii) Damage Wagon Register:- In this register, necessary particulars of damaged wagons detached from trains at road-side stations shall be recorded; the action taken to have them repaired, the time repairs are completed and the time the wagons are cleared shall also be noted;

(iv) Work Order Book:- This books which is also called the 'Supply and Clearance Register' is maintained to evaluate the performance of Sectional Work Trains'. It shall show the empty wagons to be supplied to road-side stations against indents/ allotments, loaded and empty wagons and packages to be cleared, wagons on trains to be detached on section and packages to be unloaded and the actual supply and clearance effected by these trains;

(v) Incoming and Outgoing T.N. Register:- These registers are maintained separately for incoming and outgoing Coaching and Goods trains. They shall show the detailed composition of each train together with load, engine number, Driver's name and Guard's name;

(vi) Out-station Train Ordering (T.O.) Book:-This shall show what trains are ordered by the contigeuous Divisional Control office to run over the section and' with what power and staff;

(vii) Yard State Register:- In this register, the state of important station yards on the Section shall be recorded at the appointed time; -

(viii) Caution Order Register:- The Section Controller shall take the messages from the stations about imposition and cancellation of Engineering Restrictions on his section and record them in the Caution Order Register;

(ix) Private Number Book:- This book contains printed numbers of two digits in a series, whenever any Private Number is issued, the Section Controller shall record the reasons and the station / shed etc. to which issued.

**(b) By the Deputy Chief Controller:-**

The deputy Chief Controller shall maintain the following records either personally or with assistance of a Control Clerk:-

(i) Yard Running Balance Register:-AII the important yards shall repeat to the Control every four hours i.e. at 00 hrs, 4 hours, 8 hours, 12 hours, 16 hours and 20 hours daily'the stock position of the yard indicating also the stock arriving by incoming trains and despatched by outgoing trains;

(ii) Deputy Chief Controller's Diary:- The Deputy Chief Controller shall maintain a running diary of all events affecting the working of trains and traffic.

(iii) Order Number Book:- The book shall be used for orders emanating from the Chief Controller and shall be maintained in the same manner as described in para 2.12(a)(i).

(iv) Forecast and Acceptance Book:- Once every eight hours or as frequently as necessary, the Deputy Chief Controller shall give under a serial number, a forecast of Goods trains he

proposes to run contiguous divisions. The forecast messages and the acceptance to the messages received in reply shall be recorded in this book.

(v) Train Ordering Book:- The Deputy Chief Controller shall enter in this book, train ordering messages for all outgoing trains or light engines he prepares to order from his Division. These messages shall be serially numbered and shall be repeated to the originating Loco Sheds, marshalling yards and stations well in advance so that the necessary power and crew can be arranged by Loco Sheds and the trains can be formed in time with nominated load. Private Numbers shall be exchanged for each massage;

(vi) Goods trains Performance Register:- This register will show the actual departure of trains from the originating stations and the actual arrival at the destinations, with late starts, if any, and detention enroute;

(vii) Passenger Trains Performance Register :- A daily record will be maintained of all coaching trains i.e. Mail, Express, Passenger and Mixed train with full particulars of detentions, if any, in the Division.

(viii) Unsatisfactory Features Register:- A running record of all unsatisfactory features will be recorded in this register for transmission to the Central Control office every morning. The report of unsatisfactory feature should be impartial & fair and without any touch of "Departmental" bias;

(ix) Night Order Book:- In this book, the Chief Controller will enter the instructions that the Deputy Chief Controller and the Control staff are to carry out during his absence;

(x) Accident Register:- As soon as an accident message is received the Dy. Chief Controller shall make an entry in this register and shall start a chronologicql log, as per instructions laid down in the Accident Manual;

(xi) State of Marshalling yards:- A record of the state of marshalling yards will be maintained at intervals of every four hours, showing the nature of occupation or otherwise of each line in the reception, sorting and despatch yards;

(xii) O.D. Register:- When there is any Over Dimensional Consignment or out-of-gauge load over the Division, the load with full Particulars will be entered in the register giving the particulars of the sanction granted for its movement by the Divisional Railway or the Chief Operations manager, as the case may be, and the precautions or restrictions to be observed on its run enroute.

**(c) By the Power Controller.-**

(i) Power Position Book,- This books shall be maintained by the power Controller every 8 hours showing the disposition of every locomotive in the Division;

(ii) Out-station Driver Roster- A roster of all the Home shed Drivers who are at out-stations shall be maintained separately for each out-station shed;

(iii) Power Controller's Diary- The Power Controller shall maintain a running diary of all important events in regard to his sphere of duties. In this diary he shall also make a note of matters requiring his reliever's attention;

(iv) Engine Link Cards.- A link card will be maintained for each engine separately so as to show the day-to day position and the turn-round time of every engine;

(v) Engine Failure Register.- This register will be maintained to show all the unsatisfactory features in train operation due to engine failures or failures of rolling stock equipment

(vi) Washout and Schedule Register.- This register will indicate the engines undergoing washout or schedule examination and the engines due or becoming due washout and schedule examination. The disposition of the engine will also be indicated;

Note:- Similar register will also be maintained by the Traction Power Controller showing the engines due for undergoing repair in the shed and their disposition.

(vii) Q. T. Register.- This will indicate particulars of movement of wheels and other materials from workshop to Shed or Shed to shed;

(viii) Crew Position Register;

(ix) Register of movement and diversion of Diesel fuel tank wagons; and

(x) Register showing undue and abnormal detention for engine changing at engine changing stations and for carriage and wagon examination at examination stations:

**2.13. Books and Documents to be kept in Control office.-**

A copy of each of the following books of reference, corrected uptodate, must always be available in the Operating room and the Control staff must be fully conversant with the rules and orders contained therein, so far as they concern the area they control :-

(i) General & Subsidiary Rules book,

(ii) Block Working Manual,

(iii) Accident Manual,

(iv) Operating Manual

(v) Manual of A.C. Traction Operation and Maintenance( for electrified section)

(vi) Station Working Rules for all stations on the DIvIsion,

(vii) Master chart for each section,

(viii) Charts showing jurisdiction of various officials.-

(a) of the different departments of the Railway on the Division,

(b) Civil, Police and judicial authorities exercising jurisdiction over the area.

(c) of the maintenance branch of the post & Telegraph Department responsible for maintaining control circuit connections in good order,

(ix) A list of stations where hospitals are situated which can be used in case of accident or emergency;

(x) Current Working Time Table of the Division and Appendix to the Working Time Table.

(xi) Current Gazette file,

(xii) A road map of aJI jeepable roads in the Division,

(xiii) Any other documents that may be ordered to be kept from time to time.

**2.14. Staff to obey orders of Control.-**

Station/Yard staff, shed staff, Guards and Drivers shall obey orders issued by the Control so long as these orders are in conformity with the General and subsidiary Rules, Block Working Manual, Operating and Accident Manual and other standing orders and instructions etc.

A section Controller has no authority to deviate from any Rules, Standing Orders and instructions.

If any orders are issued which contravence or appear to conflict with extant rules, Standing orders, instructions etc. Such orders shall not be carried out by staff or running staff. who shall promptly report the matter to the Deputy Chief Controller, Chief Controller and Divisional Operations manager.

**2.15. Control Order Register.-**

(a) All orders given to the Station Master or crew Controller by C.ontrol shall be entered in the prescribed control order register maintained at all stations, yards, Loco Sheds and crew booking points. Each entry shall be initialled and the time at which it is taken down recorded. At the end of each shift the relieved as well as the relieving Station Master or Crew Controller shall sign their names below the last entry in the Register.

(b) When a Station Master or Crew Controller has received an order from the control and recorded it in the register, he shall repeat it to the control in order to satisfy both himself and the control that he understands it.

**2.16. Originating stations *I* Yards to report particulars of outgoing trains.-**

As soon as a train leaves its originating station, the Station Master/Yard Master shall furnish the following particulars to the Control Office:-

(a) Number and description of the train;

(b) Engine Number & Class;

(c) Driver's name; ,

(d) Guard's name;

(e) Load of the train (in tonnes & vehicles); (f) Particulars of shunting to be done on the journey of the train; and

(h) Time of departure.

**2.17. Road-side stations to report arrival and departure time of trains.-**

Station Masters of road-side stations shall communicate to Control, promptly the following information in regard to every train dealt with;

(a) In case the train has run through, the time it passed the stations,

(b) If it is a stopping train, the time of arrival and departure alongwith the explanation for any detention beyond the scheduled stoppage;

(c) If any shunting has been performed, the number of vehicles attached and detached; and

(d) Whether any extra time has been taken in loading or unloading of packages and if so, the number of such packages.

**2.18. Terminal stations to report particulars of incoming trains.-**

Station Masters of terminal and engine changing stations shall, as soon as possible after the arrival of a train. communicate to control the time of arrival and load of the train.

**2.19. Out of course stoppages.-**

The Station Master shall obtain Section Controller's permission before stopping a train that normally run through.

**2.20. Crossing and Precedences.-**

The Section Controller shall give definite and timely instructions for crossing or precedence of trains and shall not alter them except in an emergency as " change of orders is likely to cause confusion and may even result in an accident. The Station Master " is entirely responsible for ensuring that reception, despatch, crossing or precedence of a train is effected safely and strictly in accordance with the rules.

**2.21. Use of Control Telephone. :-**

(a) Station Masters and others shall not ordinarily attempt to speak to control unless they have ascertained, by lifting the receiver and listening in, that the line is free. They shall then announce the name of the Station or Loco Shed, etc. from which they are speaking and wait for its being repeated by the Controller before beginning the conversation. All conversations with Control must be to the point and brief. Conversation on private matters are forbidden. Only authorised Railway staff shall use the control phone and no member of the public should be permitted to use the control phone.

(b) When, however, an urgent message has to be conveyed and the line happens to be engaged, the Station name must be called out and a demand made for the line to be cleared. The Controller will thereupon discontinue the conversation in which he has engaged and attend to the station making the interruption. Such a 'Clear the line' call must be made only when there is genuine reason to do so.

(c) Guards and Drivers on duty can, with the permission of the Station Master, use the Section Control telephone when they have any report to make to the Section Controller.

(d) When the section Controller wishes to speak to a station, he shall give a ring to that station, whereupon the Station Master on duty must attend the phone promptly and callout the name of his station.

**2.22. Accident or Abnormal Occurance to be reported.-**

In the event of accidents or any untoward incidents involving obstruction of running line or lines, or in any way affecting the safety of train working, full details shall be furnished by the Station Master to Control indicating the nature of assistance required.

**2.23. Reporting of defects in Signals, Points, Interlocking etc.-**

Station Masters shall promptly advise the Section Controller of any defects in signals, points, interlocking installations and Block Instruments at the station, and also of any defects in weighbridges. The Section Controller on receipt of such information shall advise the staff of the department concerned over the telephone. These orders will in no way, relieve the Station Master of the responsibility for issuing the necessary all concerned message. The Station Master shall advice the section Controller when the defect is rectified. The Section Controller shall record the duration of such defects in the Control Chart and in his diary.

**2.24. Failure of Operating Control system.-**

(a) When the Control working is interrupted and no communication with the Section Controller is possible, the Station Masters will be responsible for the working of trains. Due regard must be given to all orders which may be received from the Controller. The daily stock position shall be sent by Station Masters to the Chief Controller by any other available means of communication when Control working is suspended.

(b) When Train Control breaks down, the Signal & Telecom. staff in the Test Room of the Control office will immediately take action to carry out the necessary test. The Section Controller must give all assistance to the S& T staff to help them to test the section and to locate the fault. When the exact location of the fault is detected, the Section Controller will give a Control Order to the Station Master at either end of the faulty section where P& T Linesmen are posted or are working, to advise the Linesmen concerned at once of the fault on the system. This will be followed up by all concerned message.

(c) It is imperative that no sooner a control order pertaining to a control failure is received, whether by day or night, the Station Masters shall pay special attention to the prompt delivery of the order to the respective P& T Linesmen to avoid delay in the restoration of Control Working.

The Section Controller on duty must not waste any time to have the Control order issued for advising the *I* P& T Linesmen / S& T Linesman. ;

(d) In case of interruption of all communications, the messages for Linesmen must be transmitted through the Guards of the first train passing over the section.

(e) Where overhead lines / cable are maintained by S& T department, S& T lineman should be advised in case of failure of operating control system.

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## CHAPTER -III

# SECTION CAPACITY

**3.01. Definition.-**

Section capacity means the number of trains that can be run each way over a given section of the Railway in 24 hours.

**3.02. Calculation of theoretical capacity.-**

**(a) Scott's Formula :-**

$$N = \frac{24 \times 60}{R+5} \times \frac{7}{10} \text{ for Double line sections.}$$

and $$N = \frac{24 \times 60}{R+5} \times \frac{7}{10} \times \frac{1}{2} \text{ for Single line sections.}$$

Where-N represents the number of trains each way in 24 hours, 24x60 represents the number of minutes in a day.

R- represents the running time of a goods train in minutes over the ruling section (i.e. the section over which the running time is the longest).

5 - represents the time in minutes ,allowed for 'block working',

$\frac{7}{10}$ -

- represents the efficiency factor( to cater for delays due to human element and for the effects of irregular distribution of trains over the day).

**(b) Indian Railways Formula for Goods trains:-**

S (Number of Goods trains both way)

$$= \frac{2x24x60-(P)}{Lu+Ld+2t.} \times \frac{6}{10}$$

Where- 'Ld' and 'Lu' represent the running time in minutes of the slowest Up and Down goods trains respectively over the ruling section.

't' represents the station time which is assumed to be 3 minutes.

'p' represents the total running time in minutes of the existing Up and Down coaching trains over the ruling section.

$\frac{6}{10}$ represents the efficiency factor.

**(c) South East Central Railway Formula:-**

(i) Single Line:-

$$\frac{24 \times 60}{A + 2 (B + C)} \times \frac{7}{10}$$

N (Number of trains each way) :

Where - 'A'-represents the combined running time in minutes of Up and Down goods trains over the ruling section (which may be different for Up and Down trains).

'B'- represents the time in minutes allowed for "block working". This is assumed to be:

5 minutes at stations provided with tokenless block instruments.

7 12 minutes on the Single line at interlocked stations.

10 minutes on the single line of non-interlocked stations.

'C'- represents the' Stop and Start' allowance. This is taken as 5 minutes of which 2 minutes are for deceleration and 3 minutes for acceleration

$7\frac{1}{2}$ - represent the efficiency factor.

(ii) Double Line:-

N (Number of trains each way) = $\frac{24x60}{A+B+C} \times \frac{7}{10}$

Where- 'A'- represents the running time in minutes of a goods train over the ruling section in the Up or Down direction as the case may be.

'B'- represents the time in minutes allowed for 'block working' which is taken as 5 minutes in all cases.

'C'- represents the 'Stop and Start' allowance which is the same as on single line.

Note:- No 'stop and start' allowance need be taken into account when one of the stations of the ruling section is a watering or notice or terminal or starting station.

**3.03. Limitations of the formula method of calculation of section capacity.-**

(a) It does not take into account the total length of the section for which the section capacity has to be worked out. It is generally seen that the longer the section, the lesser usually is its section capacity, other conditions remaining equal.

(b) It does not take into account the spacing of the block stations. The larger the number of long block section, the less will be the section capacity.

(c) It is assumed that all trains will run at a uniform speed.

(d) It assumes as a rule that on the single line, when a train arrives at a block station, another train will be ready to leave in the opposite direction. In actual practice, this is not always so.

(e) It does not take into consideration the following factors which effect the section capacity:-

(i) Number and length of crossing loops,

(ii) The number of watering and notice station,

(iii) Whether stations are interlocked or non-interlocked and if interlocked, the standard of interlocking,

(iv) The number of reception lines at the terminal or junction station;

(v) Whether simultaneous reception and despatch facilities are provided at stations.

**3.04. Determining the section capacity by I means of a "Master Chart".**

The calculation of the section capacity by means of any formula gives only a rough estimate of the number of trains that can be accommodated in a given section in 24 hours. It is, therefore, best to determine the section capacity by actually plotting the paths of trains on a Master Chart (see para 2.08).ln this process the advertised paths of all coaching trains should be plotted first and the goods train paths then interpolated so asto make the maximum use of the section capacity. While doing so the facilities provided at the different block stations as also the terminal facilities should be taken into account.

**3.05. Various methods of improving the section capacity.-**

The following are some of the methods for improving the capacity of a Section:-

(a) Having staff properly trained in their duties.

(b) Intelligent scheduling of goods trains.

(c) Close and constant supervision.\

(d) Keeping a watch on engineering restrictions which should be imposed for the minimum possible period.

(e) Reduction of stopping time at stations by speeding up loading and unloading, shunting and marshalling of trains etc.

(f) Efficient train control.

(g) Running of more through trains with loads ..' for the farthest point, so that such trains may be passed through intermediate yards without any further handling.

(h) Reducing the lengths or long block sections by providing additional crossing stations on single line and 'C' class stations or Intermediate Block Posts on double line.

(i) Improving facilities at terminal yards.

(j) Improvement at road-side stations, such as-

(i) facilities for simultaneous reception of trains from opposite directions on single line sections,

(ii) facilities for simultaneous reception and despatch of trains in the same direction, for single and double line section.

(iii) Provision of independent shunting facilities so that the use of the main or running lines for shunting purposes may be avoided and shunting movements isolated from trains movements,

(iv) Provision of longer turn-outs. High speed turnouts of 1 in 16 or longer will increase the speed of trains through stations and thereby reduce the running time, and.

(v) Providing additional crossing .loops at strategic stations.

(k) Improvements in signalling & interlocking, such as-

(i) Provision of standard III interlocking,

(ii) Provision of Block Instruments at all block stations. On the single line, the use of tokenless Block Instruments considerably reduces the 'block working' time.

(iii) Provision of warners where necessary,

(iv) Provision of Manually operated Multiple Aspect signals or Modified Lower quarant signals to enable Drivers to maintain higher average speeds,

(v) Introduction of Automatic Block system of working on double line sections, and

(vi) Provision of Power installations with Electric Control Panels and Route Relay interlocking to help in reducing the time taken in setting and locking points and in taking off' signals.

(a) Centralised Traffic Control (CTC) can considerably increase the section capacity on a single line section. CTC combines Automatic Block signalling and interlocking at station, Protection and direction of trains and a train despatching system into an integrated operating tool which can be used by one central authority from a Cntralised Control office. The actual operation of points and signals on the section covered by CTC is remotely controlled from a Centralised control office, by means of switches arranged on an illuminated control panel, which gives the whole lay-out of the section controlled as well as the stations on the section. This panel gives the Controller a constant view of the trains on his section and their movements as these are indicated on the Panel by . means of strip lights.

**3.06. Through-put.-**

While section capacity represents the number of trains that can be passed over a particulars length of line in 24 hours, throughput represents the actual volumes of traffic moved over that length of line in 24 hours.

Any increase in section capacity naturally enables a higher throughput to be achieved. It can, however, be increased quite independently of section capacity by running longer trains or by using wagons of higher capacity.

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## CHAPTER -IV

# WORKING OF TRAINS GENERALLY

**4.01. Order of Precedence of trains.-**

Unless specific orders to the contrary are given, the following is the order of precedence to be observed :-

i) Ambulance Relief Train proceeding to the site of accident

ii) Accident Relief Train (as also O. H.E. Tower wagons proceeding to the site of accident on electrified section),

iii) Specials for the President of India.

iv) Other V. I. P. Specials.

v) Office trains

vi) Mail trains.

vii) Express (Passenger) trains.

viii) Military Personnel trains unless higher priority ordered by special instructions.

ix) Passenger trains.

x) Parcel Express trains.

xi) Special trains other than those listed above. xii) Mixed trains.

xiii) Military vehicle & Stores trains.

xiv) Express Goods trains.

xv) Through Goods trains.

xvi) Horse, Remount or cattle trains.

xvii) Working Material trains.

xviii) Smalls quick transit trains.

xix) Works trains, Van goods trains.

**4.02. Crossing and Precedence of trains.-**

The following principles should be observed when arranging crossing:-

(a) The train lower in the order of precedence should ordinarily be detained for a crossing. If however, the more important train is running to time, it may be detained for a few minutes provided this will save a heavy detention to the less important train.

(b) When crossing a train of the same class, generally preference should be given to the train that has less scope for making up lost time and the train that has a shorter distance to get to its destination.

**4.03. Measures to improve punctuality.-**

**(a) Station Masters must ensure that-**

i) Trains are not held up for such avoidable reasons as delay in obtaining “Line clear” or giving permission to start, detention at signals due to light extinguished, signal drooping or taken off late, shunting in the yard, absence or late arrival of a railway I servant at the foot of a defective stop signal ! to pilot the train, etc;

ii) there should be no delay in handing over the correct authority to proceed to the Driver;

iii) Mails and packages for loading should be kept in proper position and promptly loaded and those for unloading promptly unloaded;

iv) Warners should be taken off as per rules for run through trains; and

v) shunting should be completed as early as possible.

**(b) Guards should.-**

i) attend their trains in time and start them right time;

ii) exchange all-right signals with the Driver after the train starts from a station in absence of which the Driver is likely to come to a stop;

iii) make over and take over packages and cash promptly at stations;

iv) where necessary seek the co-operation of the Control to ensure that trains are not detained unnecessarily.

**(c) Drivers must.-**

i) attend their duties in time according to rules;

ii) see that the Tokens are not missed;

iii) ensure that there is no time loss or engine failure;

iv) see that extra time is not taken for loco requirements at stations, and

v) try to make up lost time on the run without disregarding any of the speed restrictions or exceeding the maximum permissible speed.

**4.04. Time train to be ready before departure.-**

The time at which train is required to be ready before departure from the starting station will be laid down by the Divisional Railway Manager. In the case of Passenger trains, the rake should be placed on the platform in time to allow for loading of Mails, Luggage and Parcels, entraining of passengers etc. In the case of Goods trains, it should allow adequate time for carriage examination, detaching of wagons marked sick, if any, after such examination or for detaching excess or wrong wagons, or for correcting wrong marshalling, testing of vacuum, etc. Ordinarily, a Passenger train need not be placed on the platform earlier than 45" and at night, the lights should be switched on.

**4.05. Custody and responsibility of trains.-**

(a) The Guard is fully responsible for the train he works. Guards of Passenger, Mixed and Goods trains which do not have separate staff to deal with such work of Luggage, Parcels. and Goods will be in full charge of such work also.

(b) On a Passenger train having a Train Conductor, the Guard will be relived of such duties and responsibilities as are assigned to the Conductor. All staff on the train such as Train Conductor, Ticket Examiners, Brakesmen, Drivers, Fireman/Assistant Drivers, R. P. F. staff etc. shall obey the lawful orders of the Head Quarters and shall assist him when called upon to do so in the safe and punctual running of trains and when there is want on alarm chain pulling.

**4.06. Recording of loads.-**

(a) The load of each train, before its departure from the starting station shall be recorded in the Trains Clerk's Hand Book, wherein full particulars of each vehicle must be entered neatly and legibly. On arrival of a train at its engine-changing or terminal station, the load of the train shall be recorded in the Inward Trains Clerk's Hand Book. Separate Trains Clerk's Hand Books shall be maintained for Passenger and Goods Trains and for incoming and outgoing trains. In the hand Books the composition of the trains must be recorded from engine down wards to the last vehicle.

(b) In the case of Passenger trains the block rake number of the train service coaches must also be clearly indicated and in the case of Goods trains, the type of special stock, if any, as well as any other stock as ordered by the Divisional Railway Manager whether loaded or empty shall be clearly shown.

(c) In the case of outgoing trains, as soon as the numbers have been taken, the Vehicle Guidance must be prepared, and after the Guard has checked over his train with

it, he must sign for it in the Trains Clerk's Hand Book. Any alterations or corrections in this book to be valid, must be initialled by the outgoing Guard.

**4.07. Transmission of load reports to Control.-**

(a) On the departure of a train from the starting station, its load should be repeated to the Control on controlled sections and sent message to the Divisional Railway Manager and to the next engine changing and terminal stations on. non-controlled sections. The load report should be in the marshal order from engine to brakevan.

(b) In the case of Goods trains and other trains the load of which is required to be adjusted in the engine-changing or the terminal station the Controller shall transmit the load report to such stations also.

(c) Where inter-yard teleprinter services exist the composition of the Goods trains in the proper marshalled order from the engine indicating inter- alia wagon number, owning Railway, type, from and to (destination) should be transmitted through the same. If any wagon contains o. T. S. load, this should also be indicated in the message where teleprinter facilities exist between the yards and control office the composition should be transmitted through the teleprinter.

**4.08. Carriage of Passengers and others in Brake Van.-**

1 .The following instructions should be observed for permitting travel of persons other than those authorised to do so, in brakevans of Goods trains-

(a) Requests for permission to travel in the brake van of a Goods train should be obtained in writing by the Station Master from the person concerned indicating the special emergent circumstances warranting this facility.

(b) (i) On controlled sections the Station Master shall obtain the prior sanction of the Deputy Chief Controller on duty before giving permission to any person to travel in the brakevan of Goods trains.

(ii) On non-controlled section, the Station Master on duty may himself grant such permission.

(c) (i) Permission to travel in the brakevan of a Goods train should be granted only in exceptional emergent circumstances and not as a matter of routine.

(ii) Such permission may, in the said circumstances, be given only if no suitable Passenger train is available.

(d) No lady will be permitted to travel in the brakevan of a Goods train.

(e)(i) As a rule, permission shall not be given for travelling in the brakevan of . Through Goods Trains, except for journeys between stations where these trains normally stop for operational reasons.

(ii) If it is necessary to. stop a Goods train out of course for this purpose, an "out of course" stoppage memo will be given to the Driver of the Goods train indicating where it is required to be stopped for the purpose of entrainment and *I* or detrainment.

(f) (i) The person should purchase a first class ticket or should be in possession of a first class season ticket to cover the journey involved.

(ii) He should also execute an Indemnity Bond.

(g) The Station Master on duty should give him a certificate of emergency in the form given below Para 4.08(k), at the station from which he wishes to entrain. Such certificate together with the first class ticket / season ticket will constitute the authority to travel in the brakevan of the specified Goods train between the stations specified.

(h) The certificate of emergency should be shown to the Guard of the Goods train by which the passenger desires to travel and should be surrendered to the Station Master of the destination station along with the ticket. The Guard shall also make a proper entry in the journal (T-34 HF) whenever such passenger travels in his brakevan.

(i) In the case of Members of Parliament, the same procedure will apply except that instead of the Ticket, the First Class Pass-cum-Identity Card issued to the Member will be sufficient. The Member of Parliament will give the usual journey voucher at the destination.

(j) The number of persons permitted to travel in , a Brakevan in addition to the Guard, should not exceed five. An exception to this rule may, however, be made, when in emergent circumstances, staff of the security services, Police, repair gang of S& T department, staff of medical department and other railway departments have to travel on duty. In such cases, it should be ensured that the Guard of the train is not handicapped in performing his duties.

(k) The Station Masters of the stations between which a person is allowed to travel in the brakevan of a Goods train will keep a record of the journeys in a suitable register.

**CERTIFICATE OF EMERGENCY**

.....is authorised to travel in the brake-van of Goods Train No. ..... from..... to..... on..... He holds First Class Ticket First Class Pass No. .....

Station .....

Date ..... Station Master.

(2) The following instructions shall be observed for permitting travel of persons other than the guard of the train, in brake van of passenger carrying trains -

(a) In exceptional circumstances crew/guard, maintenance or security staff may be permitted to travel in the guard's brake van.

(b) On controlled sections the Station Master shall obtain the permission of the Chief Controller / Dy. CHC on duty. On non-controlled section such permission shall be given by the Station Master himself.

(c) The entraining and detraining of staff should be completed within the scheduled stoppage of the train.

(d) In case the train is to be stopped out of course, the prior permission of Sr. DOM of the concerned Division shall be obtained.

(e) Station Master on duty from which the person(s) may be entrained, shall issue a certificate of emergency, authorising the staff to travel in the brake van.

(f) In addition to the working guard, maximum 3 persons may be permitted to travel in the brake van.

**4.09. Detention to Train Engines at engine- changing Iterminal stations after arrival.-**

(a) If train engines after arrival at destination are detained for any purpose, a detention memo for the whole period calculated from the time of arrival of the train to the time the engine is released, should be given to the Driver to serve the purpose of calculating his rest.

(b) In these cases, the reasons for the detention must be explained in the remarks column of the shunting and detention memo.

**4.10. Engines ordered but not used or Trains put back.-**

(a) If any engine is lit on "Train Order" but not used, a minimum allowance of three hours or 15, miles (25 Km) is to be made to the locomotive department as shunting Mileage / Kilometreage, for which a shunting and detention memo must be given.

(b) If the order for an engine is cancelled finally by giving notice to the SSE/SE/JE-(Loco) or Crew Controller not less than one and a half hours before the train is booked to start, there shall be no charge for such engine, but if at any time after an order for an engine has been given, advice is sent to the SSE/SE/JE-(Loco) or Crew Controller that a train will be required to run to a later timing than originally ordered, a shunting and detention memo should be , given for the period the engine is so detained i.e. from the time of departure of the train originally ordered to the time of departure of the train subsequently received.

**4.11. Positioning of Stores department line distributing van.-**

On arrival of the van at the Station, the Stores Line Distributer will at once issue a memo to the Trains Clerk attending the train or in absence of any Trains Clerk to the Station Master on duty taking signature on the carbon (duplicate) copy. The memo must show clearly by what time and where the van is to be positioned.

Should the line Distributor subsequently require the van to be removed from the first position to some other position in the yard, he will issue a fresh memo in the same manner and deliver it to the subordinate official in charge of the yard obtaining signature on the carbon copy.

**4.12. Repairs to vehicle standing on traffic lines.**

No repairs are to be done to vehiclecs standing on traffic lines unless the sanction of the Station Master / Yard Master has been obtained in writing. When such sanction has been obtained for blocking the line the Train Examiner must place a red banner flag or suitable indication board across the siding on which the vehicle for repair is standing, as near to the points as possible, and if the siding is a through one and not a dead end siding, a banner flag or suitable indication board must be put up at both ends so that traffic shunting staff will be able to see it and not shunt wagons into that siding. The employee of the Carriage Department in charge of the work will be held responsible for any accident that may happen due to the absence of red banner flags or other indications boards although the Station Master/Yard Master may have given orders for the siding to be closed.

**4.13. Horse-boxes and Carriage Trucks.-**

(a) Horse-boxes or vehicle used for carriage of animals must, as a general rule, be marshalled in the rear of trains, and wagons containing live-stock when required to be attached at road-side stations where proper facilities do not exist, must be attached with atleast 7 wagons intervening between them and the engine.

(b) Horse-boxes and Carriage trucks may, when time will be sav,ed in shunting, be attached behind the rear brake-van of a Passenger train.

(c) A bogie Horse-Box fit to run by Mail/Express may be attached beyond the rear brakevan of a Mail/Express. In such circumstances, the instructions laid down in GR 4.24 and 4.24.01 must be strictly complied with.

**4.14. Horse-boxes and Carriage Trucks booked to Road side stations.-**

Horse-boxes, carriage trucks etc. when being sent empty should not be attached to Passenger trains unless absolutely necessary but foreign railways coaching vehicles loaded or empty should as a rule be moved on Passenger trains.

**4.15. Register of Horse boxes and Carriage trucks.-**

(a) In order to maintain a proper register of the movement of horse-boxes and carriage trucks in the office of the Chief Operations Manager, Station Masters must mention in their indenting for any such vehicle the station to which it is to be booked.

(b) should there be two or more horse-boxes or Carriage trucks at a station, it is not possible for the office of the Chief Operations Manager to mention the number of the vehicle which could be most conveniently attached to a train. Hence when such a state exists, Station Master, when acknowledging an order from the office of the Chief Operations Manager to utilise or work away a horse-box or a carriage truck, must mention the number of the vehicle which they intend using.

**4.16. Distribution of Horse-boxes.-**

All horse-boxes after arrival should when empty be disposed of in accordance with existing instructions, or if they are required again for loading, the train Examiner of the section must be advised that they require cleaning and disinfecting.

**4.17. Examination of Horse-boxes and Wagons for the Carriage of Horses.-**

(a) When a wagon is required for the conveyance of horses, it must be obtained from the nearest train examining station and the Station Master or Yard Master of the train examining station will, before supplying such wagon, obtain a certificate from the SSE / SE (C&W) to the effect that the flooring of the wagon is in good order and the wagon is in all respects suitable for the carriage of horses.

(b) Only wagons with wooden floors and with ventilation windows should be used for this purpose.

(c) SSE / SE (C&W) must carefully examine the floors of wagons and horse-boxes used for the carriage of horses and they are warned that they will be held responsible, should an accident occur through the legs of a horse breaking through the floors.

**4.18. Conveyance of Military Horses.-**

When vehicles containing military horses are to run through over this Railway, advice must be wired I from the starting station to Train ordering officials who must see that trains are ordered, so that no undue delay to the vehicle take place at terminal stations.

**4.19. Watering and care of Horses, Cows, Sheep and Goats or other cattle.-**

(a) At engine changing or other stations where trains carrying horse, cows, sheep and goats or other. cattle halt for 15 minutes or more, Station Masters are to see personally that every horse and cow, and all sheep, goats or other cattle, are freely supplied with water, that the head fastenings in the case of horses and cows and other large cattle are right, and that the keeper in charge of the horses and keepers of the other cattle are doing their duty, and when the latter is not taking care the case, the men in-charge should be spoken to on the subject.

(b) Guards of train will wire forward the number of trucks, wagons and horse-boxes with live-stock and that are on the train, and the Station Master will arrange to have a

sufficient supply of clean drinking water ready for them, and will render the keepers every assistance in watering the animals.

(c) Loaded horse-boxes are liable to catch fire owing to the quantity of grass carried in them for the animals inside. The small doors of the horse-boxes must, therefore, never be allowed to remain open when running between stations for fear of sparks from the engine. Guards will be held responsible for ensuring this.

(d) When horse-boxes standing on a train at a station during warm and rainy weather, the doors of the syces compartment should be kept open on both sides of the boxes for ventilation; but care should be taken to close them again before the train is started.

(e) Families of syces in charge of horses shall not be allowed to travel in horse boxes nor shall syces be allowed to light fires to smoke in a horse- box.

(f) The greatest care should be taken to see that the ventilating arrangements of horse boxes and cattle trucks are in good order before supplying them for loading. If such is found not to be the case they must not be supplied.

(g) When wagons are supplied for carrieage of horses, cattle and other live-stock the bottom flap doors must be secured in the closed position and the top leaf doors securely fastened back and the ventilators should also be kept open.

(h) Particular care must be taken, that vehicles containing horses or cattle receive no rough shunting.

**4.20. Cleaning of Horse-boxes and cattle truck.-**

(a) Horse-boxes and other vehicles used to carry live-stock must be thoroughly cleaned and disinfected on arrival at destination, and care must be taken to clean the manger as well as the floor and sides.

(b) No horse box or cattle trucks must be used for any animal before it has been cleaned.

(c) The following procedure should be observed in cleaning horse-boxes and cattle trucks.-

(i) Every horse-box, cattle truck or vehicle used for the conveyance of animal shall, on every .occasion after animal is taken out of it, and before any other animal is placed therein be cleaned and disinfected in the following manner :-

(A) The floor of the vehicle and all other parts thereof with which the droppings of animal have come in contact, shall be scrapped & swept, and all dung, fooded litter, scrappings, sweepings, and other matter shall be effectually removed therefrom.

(B) The floor and sides of the vehicles, and other parts thereof with which the head of any discharge from the mouth or nostrils of the animal has come in contact, shall be thoroughly washed with water by means of a sponge, brush or other instrument.

(i) The whole of the box area and fittings are to be thoroughly scrubbed with water by means of a sponge, or brush and then rinsed with a solution of phenyle or other disinfectant and a coating of lime wash applied; care being taken not to disfigure the outside of the vehicle.

The manger is to be cleaned by :-

Firstly, scraping so that all clogging of dirt, dust or nasal discharge may be removed.

Secondly, scrubbing with a brush and boiling water and rinsing with phenyle solution in the preparation of one quart (1.4 litres) to ten gallons (45.46 litres) of water, and

Thirdly, by lime washing in the proportion of 1 maund (37 Kgs.) of good fresh lime to 20 gallons (90.92 litres) of water.

**N.B:-** It is useless to apply the disinfectant solution or lime wash until after a thorough cleaning.

(ii) After horse-boxes have been thoroughly cleaned and lime washed, the lime wash should be allowed to dry and should then be carefully brushed off. If this precaution be not observed, the eyes and nostrils of animals subsequently occupying the vehicle are liable to suffer.

(iii) The scrapping and sweepings from the vehicle and all dung, fooder, lifter and other matter removed there from, shall be forthwith burnt or well mixed with quicklime and be effectually removed from contact with animals.

(iv) As to the quantity of quicklime necessary to disinfect any given quantity of refuse, no definite scale can be laid down, but a solution consisting of 1 Ib.(453 grams) of quick lime to each gallon (4.54 litres) of water would prove effectual in disinfecting refuse of horse-boxes.

(C) One gallon of this solution would be sufficient to cleanse 200 square feet (18.58sq.metres) of wall or boarding, and five gallons (22.70 litres) should sufficient to disinfect 100 cubic feet (2.83 cubic metres) of refuse. If, however, any disease is known to exist in the neighbourhood from which horses are being conveyed, the safer course would be to burn all litter and refuse, etc.

(D) The Carriage and Wagon department undertake the cleaning and disinfecting of horse- boxes and cattle trucks, but every Station Master will be held responsible for seeing that no vehicle is used unless it is quite clean.

(E) Should the horse-box or cattle truck be unloaded at other than a train examining station, the Train Examiner of the section will be notified by the Station Master, and he must, as soon as possible, take steps to have the vehicle cleaned if it is to be reloaded from the station at which it has arrived. Otherwise, It should be forwarded by first train to the next train examining station for proper cleaning.

(F) If a Station Master has reason to suspect that any animal that has been conveyed, or is about to be conveyed by railway, is suffering from an infectious disease, he must if at the despatching station, where the animals are loaded, warn the destination station, by the quickest available communication and the destination Station Master must specially advise the SSE/SE/JE(C&W). If there is no SSE/SE/JE(C&W) at the destination station, the vehicle will be worked empty to the nearest train examining station, and the SSE/SEt JE(C&W) notified suitably by the Station Master.

(G) At principal stations where a train halts any time, Station Masters should see that the horse- boxes on the train containing horses are cleaned out through the trap doors in front and rear, before an engine is attached to the train. At train examining stations this duty devolves on the SSE/ SE/JE(C&W).

(H) At train examining stations, SSE/SE/JE/ (C&W)s will examine all horse-boxes on arrival to ascertain if they require cleaning.

(I) When covered wagons are used for cattle, horses or other animals, immediately on unloading, whether at a train examining station or not, the *SSEI* SE/JE/(C&W) of the section must be advised, so that the vehicles may be cleaned.

(J) On application to the Station Master of any station Civil Veterinary Officers should forthwith be allowed to inspect any or all vehicles used for the conveyance of live-stock which may at the time be standing at the station.

**4.21. Labelling of Horse-boxes and Cattle wagons.**

Horse-boxes and cattle wagons shall be correctly labelled and the route of journey entered on the label.

**4.22. Postal Vans withdrawn for Repairs.-**

(a) When a Postal-van or other carriage containing fitted accomodation for sorting, is to be withdrawn for repairs, painting, etc. timely notice must be given to the Superintendent, Railway Mail Service.

(b) In cases of accidents when previous notice cannot be given, information should at once be sent to the Superintendent Railway Mail Service, that the van is damaged and cannot be used.

(c) In all cases the approximate period during which the vans are likely to be in shop or under repairs should be intimated to the Superintendent Railway Mail Service and in view of the disorganisation of the work of the Railway Mail Service sorters concerned, caused by the temporary withdrawal of the regular fitted accommodation, postal vans should be withdrawn only when they can be most conveniently spared, and care should be taken that they are not unnecessarily detained.

(d) If vans are available at other stations, they should be utilised to replace those withdrawn.

(e) When a postal van has to be detached from its train urgently on account of a hot axle box or some similar casualty, the Divisional Operations Manager will advise the local Railway Mail Service Superintendent.

(f) When a third class compartment has to be reserved for the Rail'.(Vay Mail Service, the compartment must be conspicuously indicated on both sides by means of special boards or prominent labels. As far as possible, this compartment should be alloted on the fifth vehicle *from* the engine.

**4.23 Conveyance of Treasure Vans.-**

(a) When a Police escort travels in charge of treasure van-

(i) The carriage or compartment in which the escort is accommodated should be one as near to the treasure vans as possible, so that the watch over the vans en-route can be kept without unnecessary inconvenience. The doors of the compartments occupied by the escort must never be locked.

(ii) Shunting of treasure vans should be avoided unless absolutely necessary, but when shunting is unavoidable, the official in charge of the Police escort must be advised before the vans are moved, so that he may arrange to have the vans watched during the shunting operations.

(iii) Station Masters and Guards of trains to which treasure vans are attached will be held responsible *for* the strict observance of this order.

**(b) Conveyance of Treasure and Specie Vans without 'Police Escort-**

(i) When treasure and specie vans are conveyed without a Police escort such must be sent through by Mail or Passenger trains.

(ii) The van doors must be sealed and padlocked and the padlocks must, be bound with cloth and sealed. If the doors are not padlocked by the sender, the Station Master of the despatching station must padlock them.

(iii) The marks on the seals and locks must be clearly entered in the Vehicle Guidance or Way Bill of the train to which the vans are attached.

(iv) If the padlocks are put on by the Station Master of the despatching station, the keys of padlocks must be sent to the receiving station, or if the receiving station is on a foreign line, to the junction station in a sealed cover, booked under free service way bill, by the train by which the vans are despatched. When there are more than one van on the train the keys of each van must be placed in a separate sealed cover. The sealed covers or cover, as the case may be, must be in charge of the train Guard.

(v) A special Guard must be deputed to travel with the train to which the vans are attached. This Guard must travel in a compartment or brake-van,as near the treasure or special vans as possible, and it will be his duty and personal responsibility to keep a careful watch on the vans in order to prevent the vans from being tempered with in any way or approached by unauthorised persons.

(vi) The special Guard must satisfy himself that the seals and locks are in order and secure and all axle boxes complete with covers properly fastened.

(vii) Before leaving a train examining station this Guard must have the axle boxes of the treasure or specie vans opened and examine in is presence by the SSE/SE/JE (C&W) and must obtain a special certificate from the SSE/SE/JE (C&W) that the vans are in good running order and all axle boxes properly packed and lubricated.

(viii) When the special Guard makes the vans over to his reliever he must in his rough journal book take a receipt in which the condition of locks, seals and axle box covers and mark on seals and locks must be clearly stated. At Guard changing stations the Station Master on duty must personally supervise the transfer of the van from one Guard to another and must countersign the receipt obtained by the relieved Guard,

(ix) At all stopping stations the special Guard should feel the axle boxes and if there is any indication of warmth, he must atonce ask the Driver of the train to attend to the box, the Driver's decision should be final as to whether the box or boxes are unsafe to run or can be worked on to the nearest train examining station,

(x) Should a treasure or specie van run hot or meet with any other minor mishap on route, every effort must be made to take it into the next terminal station and not to detach it at a road side station.

(xi) When a treasure or specie van is detached short of destination, the special Guard in charge must take receipt for it from the Station Master. This receipt must show the condition of seals, locks and axle boxes and the marks on seals and locks, and the Station Master must place the van in a safe position in the yard under the Railway Protection Force. The sealed cover containing the keys of the detached van must be made over to the Station Master of the Station where the van is detached and must be locked up in the station cash safe.

(xii) Station Master must in all cases advise the Dy. Chief Operations manager (Coaching) and Dy. Chief Commercial manager (General), the Superintendent and the Circle Inspector, Security Deptt, the Inspector and Sub-Inspector, Govt.Railway police and the Divisional Operations Manager and the Divisional Commercial Manager by sending message when a treasure or specie van is detached short of destination. Station Masters of

the starting and terminal stations will convey messages through their stations to the above officials.

**4.24. Procedure to be adopted in cases of murder or serious assaults in Railway carriages.-**

If a crime of a serious nature such as a murder or serious assault be committed in a Railway carriage on a running trains, the following action shall be taken by the staff with a view to helping the police Officials in their investigation.

(a) The Guard of the train shall have the compartment emptied and locked up after all shutters have been closed 'from outside immediately the commission of such an offence is known so that blood strains, marks of struggle, foot prints, finger impressions etc. may remain undisturbed.

(b) If the crime took place in a second class compartment the carriage shall be detached at the station where the crime was detected and kept under watch till the police arrive to take over the case.

(c) If the crime took place in an upper class compartment, the compartment shall be Immediately locked up and the carriage allowed to proceed to the nearest station where it can be replaced. If no Government Railway Police staff are available at this station, a number of the Railway staff must watch it, until a Police Officer comes upon the scene.

(d) No one, either Railway Employee or out sider, shall be allowed to enter the compartment until the police arrive except in as far as is necessary to attend to injured persons unable to leave the compartment without assistance.

(e) The Railway Police Station concerned shall be advised at what station the carriage has been or will be detached. After the carriage is taken over by the Police, it shall not be removed or otherwise utilised without the written authority from the Police releasing the carriage.

**4.25. Hot Axles.-**

A. i) Attention of all Railway servants is drawn to the danger which result from allowing a vehicle to run with a hot axle.

(ii) An employee who notices a hot axle must immediately attempt to stop the train and bring the fact to the notice of the Guard and the Driver. If this is not possible he must report it to a responsible person such as Station Master, who must take steps to have it examined.

(iii) If necessary the vehicle must be cut off. On running trains and at stations other than train examining stations, a hot axle must be dealt with in accordance with GR 4.29 and SRs thereto.

B. It is a serious offence knowingly to allow a hot box to remain in use unless under the supervision of the Train Examining staff. It is dangerous to commit any act, such as stealing waste or removing a cover, which will cause an axle box to become unsafe and any person detected in such act is liable to be prosecuted.

C. (i) Hot boxes on trains, if not detected in time, constitute a grave danger to trains in motion and the attention of Station Master and their staff is drawn to GR 4.42 and SRs thereto which requires them to observe the condition of vehicles on trains passing their stations.

(ii) The attention of the train staff (Drivers, Guards and firemen) is drawn to G.R.,4.41 and 4.43 which require that the Guard shall keep a sharp look-out and the Driver and the Asstt. Driver shall frequently look back to see that the train is proceeding in a safe and proper manner.

D. The greatest danger exists when on axle runs hot en-route on a non-stopping train. Station staff and Cabinmen must keep a sharp look out and arrange to send ahead the 'stop and examine' signals if a hot axle is detected or suspected. On a controlled section, the Station Master must advise the Controller on duty of the fact so that he can take immediate action.

E. The various signs of an axle running hot are given below :-

(i) The box commences to warm up and can only be detected in this stage by feeling with the hand, which should be placed on the side of the box face cover.

(ii) There is a strong smell of heated oil and waste, which can be detected at some distance from the vehicle.

(iii) A whistling noise may commence at any time during the process of heating. A box which is whistling must be examined.

(iv) When the box becomes sufficiently hot to ignite the waste and oil, flames and smoke can be seen emanating from the box and the metal of the axle becomes red hot. In this condition, the axle may break within a few kilometres.

F. At road-side stations where there are no Train Examining staff, before a wagon is despatched, the axle boxes must be examined. If the covers are deficient, it is simple matter to see if the box contains waste or not. If any box is empty, the wagon must be detained and message to be sent to the nearest SSE/SE/JE(C&W) who will arrange to pack it. Station Master must see that these orders are made known to all the class IV staff at their stations.

G. Water must not be thrown on an axle box or axle when hot. After a vehicle is cut off, the Station Master must send a message to the nearest SSE/SE/JE(C&W), stating its number and the owning Railway.

**4.26. Running of vehicles with damaged journals or with defective bearing brasses.-**

A. To avoid the possibility of a vehicle running with a journal in a damaged condition or with the bearing brass defective due to heating, the following procedure is to be adopted:-

Any axle box when receiving attention due to heating is to be repainted as the heating invariabl caused a box to become discloured.

B. By this procepure, it will be noticed that any axle box on a vehicle which is discoloured through heating, should be stopped and attended to atonce' , before being utilised for traffic.

**4.27. Marking of sick vehicles.-**

A. To enable the Traffic staff to distinguish readily vehicle that are unfit to run, such vehicles will be marked with a small white Maltese cross, on the buckle of the spring immediately below the pocket label holders in the case of board gauge stock, and on the panel near the pocket label holder in the case of narrow gauge stock.

B. The stencilled cross will be made by the Train Examiner when vehicles are unfit to run, and will be removed by him when vehicles are handed back to traffic as fit to run.

C. The special marking will be in addition to the use of the red labels and prescribed forms.

D. Sick vehicles that are to be sent to shops or to any other destinations for repairs will be stencilled with a white Maltese cross and the words “Shops” or the code initials of the stations to which the wagons are to be sent.

E. Station Master and Yard Master should be careful to explain to the yard staff the significance of these special marks.

F. When coaches are sent into shops the Train Examiners should paste the damaged labels on the inside of one of the windows in such a manner as to be readable from outside.

G. This window is to be raised and wedged in position by a piece of wood or any other means, which would prevent the window from being lowered.

**4.28. Application for repairs to vehicles at road- side stations.-**

A. When vehicles are not fit to run from any i; cause and have to be cut off, advice for repairs is to be given to the nearest SSE/SE/JE(C&W).

B. When a vehicle or wagon has been marked sick for placement in a sick siding, the Train Examiner will send a written memo giving the number of vehicles, owing railway, time and date marked sick and reason, and send it to the Station Master, Yard Master or Trains Clerk concerned. A register will be maintained in the Station Master’s or Yard Master’s office in which particulars of sick vehicles will be maintained and also the date and time at which a vehicle marked fit for traffic.

The Trains Clerk, Yard Master and Assistant Yard Master as they come on duty will examine this register and initial it.

C. All wagons marked sick shall be detached in to siding set apart for sick wagons and placed into the sick siding or Tranship shed as required, without delay. If an inward load is marked sick at the destination station, the wagon must be placed in the sick line after unloading the wagon.

D. There is no excuse for loading vehicles that are marked “damaged”. Staff are warned that every case that occurs of the Train Examining staff’s intimation being disregarded, shall be made the subject of serious notice.

E. The SSE/SE/JE(C&W), the Guard, the Yard Master, the AssistantYard Master, and the Trains Clerk are jointly responsible to see that no sick vehicle is worked away until certified fit to run. After the repairs are carried out, the stencil marks & labels must be removed.

**4.29. Examination of couplings of Mail, Express and Passenger trains at engine changing station.-**

(a) Guards shall examine the couplings of Mail, Express and passenger trains while such trains are standing at engine changing station, and be responsible for seeing that any coupling found slack, is tightened to the extent required.

(b ) (i) Bogie vehicles should be carefully coupled up so as to avoid undue compression of the buffers. Coupling should be tightened only to the extent that buffer faces come in contact and are only slightly compressed.

(ii) The consequence of tightly coupling up bogie vehicles with buffer compressed is that any slight difference in the buffers levels causes undue weight on the bogies.

**4.30. Screw Couplings.-**

(a) Under no circumstances must bent screw couplings or couplings too long to admit of vehicles being closely coupled together be used; all such couplings must be

replaced. Loose screw couplings i.e. screw couplings not secured to the drawbar by means of a shackle and pin should not be used.

(b) Broken Screw Couplings.- Whenever a screw coupling is broken in a station yard in course of shunting or starting, the Station Master must send a message to the Sr. Divisional Mechanical Engineer, reporting the matter, in the case of a way-side station giving the engine number, train number and date, and in the case of coupling broken during shunting operation at large yards, giving the engine number and date.

Station Masters and Yard Masters must install into their staff the necessity of invariably reporting to them all cases that occur.

(c) When it is discovered by the station staff that a coupling is deficient or defective on a vehicle that has to be attached to a train at a station where no SSE/SE/JE(C&W) is posted, the Station Master must bring the matter to the notice of the Driver of the train to which it is required to attach the vehicle, and the Driver will arrange to fix a coupling or to remedy the defect.

(d) (i) In the event of a spare coupling being required on the road or at road-side stations the front engine coupling should be used. The Station Master will give the Driver a memo to this effect quoting the wagon No. for which the coupling was required.

(ii) On arrival at a Train Examining station the SSE/SE/JE (C&W) Driver will hand over this memo to the who will issue a fresh coupling . The SSE/SE/JE(C&W) will also be responsible that the coupling fitted to the wagon is properly rivetted on.

(e) Station Masters, Guards and Yard staff should be very careful when attaching vehicles to a train to see that the screw coupling are in all cases screwed up to the extent required.

Neglect in this matter may lead to a serious accident by a train parting on the road.

Under no circumstances any couplings that do not admit of vehicles being closely coupled up, be used.

The Guard's responsibility in this matter is clearly defined in GA 4.34.

(f) When trains are stopped on a ,rising gradient owing to the engine being unable to haul the load, it frequently happens that the Driver reverses his engine and before the rear portion of the train has completed the backward move and become inert, the Driver again reverses his engi!le and goes forward, the result being violent jerking of the draw gear throughout the whole train and this causes breakages of draw bar. In this connection, the attenti9n of Guards and Drivers is drawn to SA 6.04.02.

**4.31. Proper locking of centre buffer couplers- BOX/ BOBS/BOBX & BOI wagons, etc.-**

(a) Ordinarily if Centre Buffer Couplers are properly coupled, train parting cases should not take place, and in the cases where train parting has taken place, the knuckles might not have been properly locked and trains started from the originating stations in that condition. The possibility of knuckles, once properly locked, to get uncoupled due to jerks and jolts of the vehicle is extremely remote.

(b) In order to ensure that such cases do not occur, the following instructions are to be observed.

(i) Yard staff while performing shunting on stock fitted with C.B. couplers shall ensure that the knuckles are properly locked; this can be ensured by seeing that the lock has dropped in which case the toggle is visible below the coupler head. Also a distinct sound is heared when the lock drops. In case of

Transition couplers, a locking pin is also provided, which should be inserted in the slot coupler head. This further ensures that the lock has dropped.

(ii) SSE/SE/JE(C&W)s who pass the trains should observe the position of the knuckle and toggle of lock left mechanism to ensure that the knuckle on each C.B.C. is properly locked. They should endorse on the 'Fit Certificate' for an outgoing train to the effect that the train with a special type stock with C.B.Cs has been examined and their couplings found secure.

(iii) In case of shunting at wayside stations and sidings, proper locking of the knuckle will be ensured by the Guard in charge of shunting operations. The Guard of a train or a pilot must make sure that C.B. couplings on all the wagons are adequately secured.

(c) If, however, the breakage takes place between two stations the train engine crew shall load up the broken material on the engine and hand over the same to the SSE/SE/JE(Loco) at the destination. The Guard will furnish the full particulars of vehicle to the Driver and record the same in his T34 H.F:

**4.32. Breakage of Couplings.-**

(a) In all cases of train parting due to breakage of couplings the broken materials required for joint examination by the SSE/SE/JE(C&W) and the SSE/SE/JE(Loco) in order to fix responsibility for breakage.

(b) In the event of a train parting due to breakage , of Rolling Stock Draw Gear, the broken material shall be taken charge of by the Station Master in cases where the parting takes place at a station. It shall not remain in charge of any of the train staff.

(c) If, however, the breakage takes place between two stations the train engine crew shall load up the broken material which the Guard shall make over to the Station Master of the station at which the train stops. In doing so, the Guard shall supply the Station Master with full particulars of the vehicle from which the broken material was removed obtaining signature for it.

**4.33. Match Trucks.-**

(a) On Railways there are some special type Brake-vans which are known as Match Trucks (BVM/ VY types). Some of these are designed with centre buffer coupler on one side and conventional screw coupler on the other end and some are fitted with centre buffer coupler and transition gear on both sides.

(b) These special type Brake-vans are intended to be worked with BOBS, BOX, BOI & newly built BOBX type wagons fitted with centre buffer couplers. The caboose portion of these Match Trucks are painted with aluminium paint with black lettering to distinguish them from other ordinary Brake-vans.

(c) These Match Trucks must not be permited to be attached to trains other than of BOBS, BOI & new BOBX type wagons as they are just sufficient for rakes of centre buffer coupler wagon only. Yard staff will be primarily held responsible to ensure this.

(d) Carriage & Wagon staff of all stations should be very careful to see that any Match Truck wrongly attached to any ordinary wagon train is immediately detached and worked to its base station.

(e) It must be impressed on each staff that misuse of these trucks means idling of costly stock of BOBX, BOI, BOBS and BOX type wagons. Clear instructions should, therefore, be given to all the staff concerned to ensure proper utilisation of these Match Truck brake-vans.

**4.34 Haulage of dead locomotives:-**

(A) Definition-

(i) A locomotive which is not worked on its own power is defined as a dead locomotive.

(B) Need for haulage of a dead locomotive. A locomotive may be required to be worked dead

(i) to balance engine from one another.

(ii) to clear a block section and take the locomotive to its destination in case of failure or break-dbwn on the road, and.

(iii) sending the locomotive to workshop / shed for repairs and / or maintenance schedules.

(C) A dead engine is to be reckoned as being equivalent to the number of units in terms of 4

wheelers as detailed below :- P'"

| | **Class of engines (BG)** | **Equivalent in 4 wheelers.** |
|---|---|---|
| (Diesel) | WDM 2 | 5 |
| " | WDS 5 | 6 |
| " | WDS 6 | 4 |
| " | WDM 3A | 4 |
| " | WDG 3A | 4 |
| Electric | WAM 1 | 4 |
| " | WAM 4 | 4 |
| " | WAG 1 | 4 |
| " | WAG 2 | 4 |
| " | WAG 4 | 4 |
| " | WAG 5 | 4 |
| " | WAG 7 | 4 |
| " | WAG 9 | 4 |
| " | WAP 4 | 4 |

(D) The following conditions shall be satisfied before attachment of dead locomotive to any train/light engine:

(i) Section Engineer/Loco Inspector / Power Controller issues Certificate for 'Fit to run' for Passenger/Goods train.

(ii) A competent person not lower than Asstt. Driver shall escort the dead locomotive, when attached in the rear *of* brake van or has defect in under gear equipment. However, escorting *of* dead locomotives (diesel as well as electric) attached to freight and passenger- carrying trains is not necessary if the brakes including proportionate brakes are fully operational and the dead locomotive is attached next to the train engine.

(iii) Maximum permissible speed *of* the dead locomotive shall not be less than booked speed *of* the train on which it is being attached.

(iv) Running *of* double *I* triple headed trains is permissible on the section over which the dead locomotive is to be hauled.

(v) When a dead electric locomotive has to be moved on a non-electrified section, special check shall be made regarding its infringement to the scheduled *of* maximum moving dimensions. In the case *of* any infringement, the dead locomotive shall be treated as an ODC.

(vi) As a final check, the coupled locos should be run for about 500 meters and the driver shall check for any abnormal rise in the temperature *of* the wheels of the dead locomotive and shall also check. it at subsequent stops during the journey.

(viii) Locomotive with defects in under gear equipment can be attached only in freight trains.

(viii) On a dead locomotive all the circuit breakers and battery knife switch shall be off, the reversing handle removed and such other steps taken to ensure that the dead locomotive can not be started inadvertently.

(ix) The locomotive traction motor reservoirs Ishall be kept in neutral position.

(x) When a dead locomotive is attached with the working power, the locomotive brakes shall be fully released. The MUZB valve (if fitted) shall be placed In trail position.

**(E) Clearing of a Block Section in the event of failure of locomotive.**

(i) When a locomotive working a train fails in section, the dead locomotive shall be attached coupled to the relieving locomotive and the train worked to the next block station, where the dead locomotive shall normally be detached.

(ii) In case the dead locomotive is not detached but the train is worked double headed with the dead locomotive upto the destination not more than 1 dead locomotives with break operative shall be attached to a goods train. In such case the total length of the train with locomotives shall not exceed 725 M.

(iii) In all the above cases the total number of locomotives including the dead one, shall-not exceed three, provided double heading of the locomotive is permitted on the section.

(iv) If double heading is not permitted in section where no banker is used in general, the train shall be pushed by the relieving locomotive observing the precautions laid down in GR 4.13 and SR there to, to clear the block section and at the next block station marshalling of the locomotive may be done, and it is ensured that they are not coupled together and there is a minimum distance of 11 ordinary wagons or 91 M between them.

(v) In sections where double heading is not permitted and banking engine is in use, concerned Divisional Engineer shall be referred to in regard to the location of the relieving locomotive who will after examining the presence of bridges in the section and the span, give instructions regarding the marshalling order.

**(F) Haulage of a dead locomotive by goods train.**

In addition to the fulfilment of general conditions mentioned in clause (D) of Para 4.34 the following shall be ensured:

(i) Movement of maximum three locomotives (2 working + 1 dead) with load, is permissible subject to observations of all restrictions on operation of double / triple headed working locomotives in the section provided that brakes in dead locomotives are operational. .

(ii) If the dead locomotive is required to be attached on a double/Multiple head train or on a section where double / Multiple heading is not permitted, it must be ensured that there is a minimum distance of 11 ordinary wagons or 91 M or a minimum distance equal to the largest span of the bridge in the section, whichever is more, between the train locomotive and dead locomotive.

(iii) In case, the dead diesel or electric locomotive is fitted with the side coupling rods, it shall be ensured that all coupling rods are in proper position.

(iv) In case of a dead diesel or electric locomotives fitted with the side coupling rods, it shall be ensured that all coupling rods are in position.

(v) In the case of a dead diesel/electric locomotive the vacuum pipe shall be connected and the dead locomotive treated as a piped vehicle, and, therefore, at least ten fully vacuum bracked 4 -wheeler units shall be attached behind the dead locomotive.

(vi) Attaching of dead locomotive as the last vehicle on a train is fraught with the danger of the dead engine running away on a gradient if there is a breakage of coupling etc. Any type of locomotive without hand brakes in working order must not be attached to the rear of train.

(vii) In the case of a dead locomotive attached behind the brakevan, it will be the duty and responsibility of the said competent person travelling on the dead locomotive to apply the hand brakes judiciously in case of run away occurring enroute due to brakage of coupling etc. The hand breakes of the engine must be tested at the originating station to ensure that it is in perfect working order.

**(G) Attaching/hauling of dead locomotives by Passenger / Mail/ Express / Superfast trains:**

In addition to the fulfilment of general conditions mentioned in clause (0) of Para 4.34 the following shall be ensured:

(i) Room in the train should permit the attachment.

(ii) Only one dead locomotive (diesel/electric) can be attached.

(iii) Brake power of the train should be 100% excluding dead locomotive.

(iv) The dead locomotive shall be attached next to train engine only.

(v) As far as possible, brake should work on dead locomotive. However, if it is not possible, then in the case of air-braked train,brake pipe and feed pipe of working .locomotive shall be connected to brake pipe and feed pipe of trailing stock and dead .locomotive will work as piped vehicle.

In the case of vacuum braked train, vacuum pipe of locomotive shall be connected with vacuum train pipe of trailing stock and the dead locomotive shall be treated as a piped vehicle. If the locomotive is fitted with pure air brake system and vacuum pipe is not provided on locomotive then it should be attached with air braked trains only.

(vi) In addition to freight/passenger trains, a dead locomotive can be attached to Mail/ Express trains including Superfast trains but excluding Rajdhani and Shatabdi provided that the locomotive brakes including proportionate brakes are operational. Locos with inoperative brakes can be attached subject to the brake power of the train being. within the permissible limits and conditions mentioned in item (iv) above are fulfilled.

(vii) In case the dead locomotive is attached to a Mail/Express / Super Fast train the following conditions shall be fulfilled:

a) Permission of Sr. DOM/DOM is obtained.

b) Attachment / detachment, creation of vacuum / air pressure etc. are completed within the scheduled stoppage of the train.

**(H) Haulage of dead electric locomotive on non-electrified section.**

(i) When a dead electric locomotive is required to be moved on a non-electrified section, special check shall be made regarding its infringement to the schedule of maximum moving dimensions. If thereby any infringement to be schedule, the dead electric locomotive shall be considered as an ODC and its movement shall be permitted in accordance with the extant rules governing such movement.

Note:- For movement of electric locomotive, conditions laid down in para 1717 and 1718 of the Manual for A.C. Traction maintenance and operation must also be complied with.

**4.35. Movement of unbalanced dead locomotive.**

(A) In the case of disablement while on run in section.

(i) One connection rod may be removed from the disabled engine to enable a train to be worked to the destination or to clear a block section. In such case, the speed shall be restricted to 16 KMPH subject to observance of any other restriction inforce in section.

(ii) Coupling rods may be removed to enable a train to be taken to destination or for clearing the block section. In such case similar part shall be removed from both the sides of the engine and the speed must be restricted to 15 KMPH subject to any other speed restriction inforce. In the case of engines with out side Sylinder, where a suitable floating bush is not available to serve as a dummy, it should be ensured to use the dummy crank pin bushes.

(iii) In all cases when unbalanced engine is likely to be moved on any section the power controller on duty will, immediately on receipt of such information, inform over phone the following officials.-

(a) Sr. Divisional Mechanical Engineer or in his absence the DME,

(b) Sr. DOM or in his absence the DOM,

(c) Sr. DEN or in his absence the DEN

(d) AEN and 'JE(P. Way)' of the section concerned,

(e) Station Masters of the Section concerned, giving full particulars, so that the track concerned may be examined and certified immediately after the passage of the engine.

(iv) The Engineering official concerned not below the rank of JE(P. Way) shall immediately arrange to inspect personally by trolly the track over which the

movement has been allowed. The JE(P. Way), on being satisfied, will issue the certificate to the SM on duty at the end of each block section. The specimen of certificate is given below in Para 4.36.

(v) The SM on duty shall immediately on receipt of the certificate, convey the information recorded in it to the section controller and to the Station Master on duty in rear and take further necessary action accordingly.

(vi) The section of the track over which the unbalanced dead engine has passed will normally be blocked till such time it has been inspected and certified py the JE(P. Way). In exceptional cases, however, as in the case of breakdown of the trolly etc. which prevent immediate track inspection, traffic may be allowed to move over the section so affected before certification by JE(P. Way). at a speed not exceeding 30 KMPH, subject to any other restrictions inforce on the section. The examination of track must necessarily be, conducted during day light hours.

(B) In case of despatch to and from shop:-

(i) A Locomotive should normally be worked to and from shop on its own Power. If, however, a locomotive has to be sent dead to and from shops, it may be attatched to a goods train provided the conditions enumerated in para 4.34 (0) and 4.34 (F) are complied with.

(ii) A locomotive sent dead to shops must not ordinarily run with the coupling or connecting rod removed. If a locomotive has to be sent to and from shops dead and in unbalanced condition, it shall not be attatched to a goods train, but must be hauled by a special light locomotive. The speed in this case is not to exceed 15 KMPH, subject to any other restriction inforce. For running of such unbalanced dead locomotive, a prior sanction of Chief Operations Manager must be obtained and procedure mentioned in para 4.35 (A)(ii), (A)(iii), (A)(iv), (A) (v) and (A) (vi) shall be observed. An all concerned circular should also be issued in advance detailing the programme of running the engine.

(iii) The movement of unbalanced dead engine from and to shop shall be restricted to day light hours.

(iv) The driver of the locomotive hauling the unbalanced dead loco shall be specially warned about the speed restrictions and an acknowledgement taken at the time of his signing on that he has understood the instructions.

**4.36 The form of the certificate to be given by the engineering official as mentioned in para (A) (ii) and (B) (ii) of para 4.35 above shall be as follows.-**

"I certify that the track between station's..... and ..... has been examined by me and found to have..... Normal speed between these stations may be

resumed. The following ..... after passage of the unbalanced engine No. ..... has been noticed. A speed restriction of..... KMPH is imposed between..... and..... with immediate effect and will continue till further advice.

*****Defects .....

Date..... Signature .....

Designation .....

(Score out entry which is not applicable)

**4.37. Dead Engine belonging to another Railway travelling over this Railway.-**

The engine, before being put on a train, must be passed by the nearest SSE(Loco) / SSE(Electric) as fit to run and a certificate granted accordingly. This certificate should be sent, attached to the Guard's wagon way bill or through the Asstt. Driver on the engine to the destination of the engine and the certificate given at the station of despatch for the journey over this railway. A competent Asstt. Driver must also accompany the engine to look after the lubrication en-route.

The procedure laid down in Rule 4.34 to 4.36 should also be followed for running of such engine.

**4.38. Wagon way Bills (Forms OP */* T.437).**

(a) The Guard in charge of every train must be furnished with a wagon way bill, properly filled in at the station from which the train starts. The wagon way bill at each terminal or starting station must be prepared direct from the Trains Clerk's hand book in which the Trains Clerk must record the number of each individual vehicle composing the train from the vehicles themselves. The numbers are not to be copied out from one wagon way bill into another.

(b) The Wagon Way bill must be carefully and legibly prepared in ink or carbon process at the starting station and all the columns of the Wagon Way bill should be filled up by the Trains Clerk at the starting stations. The Wagon Way bill must be signed by the Trains Clerk preparing it.

(c) Wagon Way bill for through Goods Trains must be prepared in duplicate, one copy must be made over to the Station Master of the terminal station of the Division and the original copy should go through as far as the destination of the train. These through wagon way bills are to be transferred from Guard to Guard where trains are not terminated and are pooled through. Guards handing over the through wagon way bills will obtain acknowledgement in their Rough journal Book of having done so; otherwise they will be held responsible if the wagon way bill is lost. In case of the through train passing over more than one Division before reaching the Division in which destination station is situated, a copy of the Wagon way bill must be kept at the terminal station of each Division, the additional copy required for the purpose being made by the Guard working the train upto such terminal station from the original wagon way bill.

(d) Before starting, the Guard shall be responsible for checking the load on the train with the entries on the wagon way bill of wagon numbers, booking and destination stations, type of vehicle open or covered, four wheeler, bogies or special types, tare weights, weights of contents and gross weights etc. When vehicles are attached or detached at intermediate stations, the Guard is responsible for seeing them entered on his way bill or signed for, as the case may be and for checking the correctness of all particulars entered, including those of the weight of the wagons.

(e) Only one vehicle is to be entered on each line of the way bill. Vehicles are to be entered in the order in which they are placed from the engine at starting station. Subsequent entries en-route are to be made below those comprising starting load.

(f) Wagon way bills for Passenger trains must be sent through to the destination station on this Railway. It is not necessary to prepare sectional way bills for Passenger trains.

(g) Guards must be particular to see that the description of the vehicles entered on the Way bill is shown; also that the gross weight entered is the sum of the tare weight stencilled on the wagon and the weight of contents shown on the side label in tonnes.

(h) The attention of Guads is drawn to the loads permissibte on the different sections of the line, particulars of which are given in the Working Time Table.

(i) On arrival at destination, the Guard of an incoming train will make over the wagon way bill to the Station Master or the Yard Master or other Yard the same in the rough journal book. In case the train is stabled at a station, the Guard should hand over the wagon way bill to the Station Master on duty and obtain his signature on the Rough Journal Book.

(j) If the weight of contents is not shown on the side or sealcard labels or if labels are missing, the following average weights should be taken :-

| | |
|---|---|
| Coal Wagon, Manganese Ore, Iron Ore. | 2 Tonnes overcarrying capacity. |
| Cement | -do- |
| Coke Wagon | 4 Tonnes less than the carrying capacity . |
| Timber, Firewood, Bricks, Rails and other heavy merchandise. | Two-third of carrying capacity |
| General merchanides in covered wagons which will include foodgrains, ferti-lisers, salt and sugar etc. | Carrying capacity. |
| T.R. Vans and S.R: Vans | 4 Tonnes. |

**N.B.- Weight shall be calculated to the nearest quintal.**

The actual tare weights of empty wagons, empty coaching vehicles and brake-vans should be taken.

(k) (i) When a B.G. bogie carriage (i.e Coaching stock) is attached to a Goods train, it should be counted as equivalent to two and a half four-wheeler units and a N.G. bogie carriage as equivalent to two units for the purpose of calculating the vehicle load of the train.

(ii) Against South East Central Railway Passenger carriages the initials shown in the stock book and painted on the vehicles will be entered.

(iii) The description of other Railway coaching vehicles will be given in full.

**4.39 Restrictions to be observed in dealing with other Railways' vehicles for transportation over South East Central Railway.**

(a) Coaching vehicles with rigid wheel bases of over 20 feet (6.09 metres) and goods vehicles with rigid wheel bases of over 20 feet (6.09 metres) are not accepted.

(b) For restrictions on the acceptance of wagons in inter-change see conference Rules part II and III & Chapter XIII of this Manual.

(c) Other Railway wagons fitted with shoe or spoon-ended bearing springs without security bolts or rivets of a minimum diametre of 1/2"(12.7mm) should not be loaded with

traffic requiring despatch by Passenger, Mixed or Parcel trains or attached to such South East Central Railway trains either on the main or branch lines.

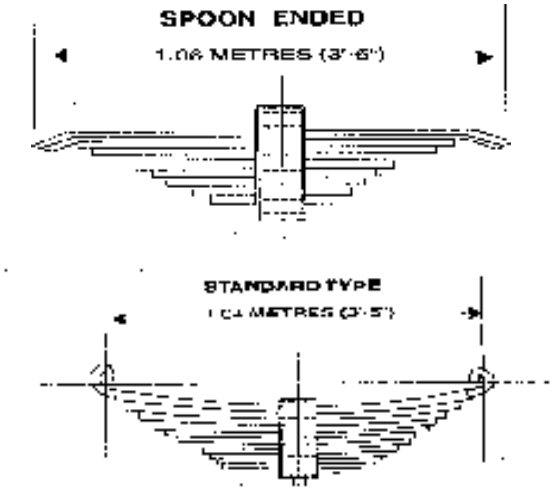
**4.40. Shoe-ended bearing spring:-**

The sketch showing the shoe-ended bearing spring when fitted with securing bolt or rivet is appended.

(CME's Drawing No. 2647 dated 10th April, 1933)

(i) Should a Station Master be unable to decide whether the springs of a vehicle are of the above description he should ask for the Train Examiner's or the Driver's guidance.

(ii) Diagram showing spoon-ended bearing spring and standard type bearing spring.




**4.41. Water Pumps, Pipes, Tanks and Columns :-**

(a) Diesel and electric pumps are under the eIectrical department and the pipe connections are In charge of the engineering department. Defects are to be reported to the SSE(Loco), the SSE/SE/ JE(P. Way), and the SSE/SE/JE(Works) by sending message. The Sr. Divisional Mechanical Engineer or the Sr. Divisional Electrical Engineer or the Assistant Engineer and the Divisional Engineer concerned, as the case may be, should also be informed.

(b) Drivers detained at a station for water will report the matter to the Station Master by a written memo on the spot.

(c) Whenever a deficiency of water arises at any station through any cause, it is the duty of the Station Master to advise the Chief controller, the nearest SSE/SE/JE(Electrical) or SSE/SE/JE(P. Way) or SSE/SE/JE(Works) as the case may be, so that measures may be at once taken to rectify the same.

**4.42. Use of Portable Control Telephones.-**

(a) (i) Portable Control Telephone forms a part of brakevan equipment and must be supplied to every Mail, Express and Passenger train, except for EMU locals running.

(ii) The portable control Telephone is be used by the Guard of Passenger train to relay information to control in case of any accident to train, obstruction or other case

occurring in the mid-section, so as to arrange prompt relief measure, by the Control and other concerned.

(iii) Portable Control Telephones should supplied by the staff of S& T department the originating station of passenger train and collected at the destination station the trains. In case of inter-railway M, Express and Passenger trains, supply a collection of Portable Control Telephones to be made by the respective railways run within their jurisdiction.

(iv) Guard of every Passenger train must make it a point to see before the starting of I train from originating station that Portal Control Telephone is supplied to the brakevan along with other brakevan equipment. In case of non-supply of the same, he should immediately bring it to the notice of Station Master on duty and obtain a memo from him for non-supply with the reasons thereof.

(b) Description of Portable Control Telephone.

A sealed metallic or wooden box containing portable control type telephone is kept in a leather case. It is of two kinds. Over-head type and socket type.

**(i) Overhead type.-**

Overhead type portable telephone is used: non-electrified area. In the overhead type, diagram showing the position of control wire and Dy. Control wire L-14 diagram of the section concerned, is kept inside the metal or wooden box for the guidance of the staff In addition a set of three poles with connectors and flexible wires are supplied to connect with the control or Dy. Control circuit. Each Portable Control Telephone in the Division supplied to Mail, Express and Passenger trains shall be serially numbered by the S& T staff. Serial number, Division, Designation of the Inspector maintaining phone, base station details and the rake link on which a telephone is required to work shall be neatly pointed on the cover of such portable telephone.

**(ii) Socket type.-**

Socket type portable control telephone is used for electrified section. A sealed metallic or wooden box containing a portable control telephone is connected with wire and six pin plug to connect with the socket provided on a post with a small iron box fitted with plug points, at every three fourth Kilometre. In addition every alternative overhead must is stencilled with legend of telephone in the direction where the circuit posts are located.

**(c) How to use.-**

Overhead type.- The line chart must be studied to observe the position of insulators carrying the control wires on the telegraph alignment-

(i) Connect the three poles telescopically to suit the height of the control wires;

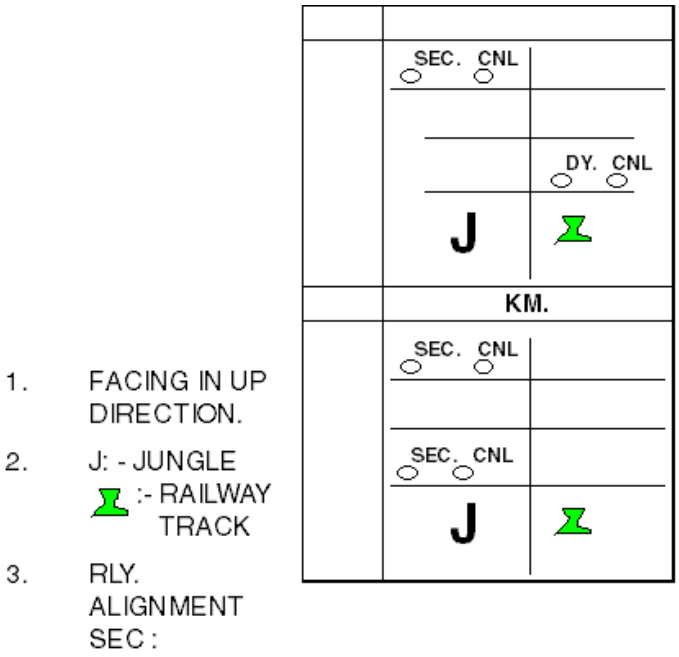
(ii) Connect the loose ends of the flexible wires attached to the topmost pole of terminal marked LI & L2 of the portable control telephone;

(iii) Life the rod assembly in between the control wires and hook the two prongs to the two control wires;

(iv) Portion of the bracket carrying section control wires is painted ‘RED’ and the Portion of the bracket carrying Deputy Control wires is painted ‘GREEN’

(v) Where brackets have not been painted, ascertain the position of control wires from the line charts kept inside the telephone ;

(vi) Position of control wires may be shown in the chart as follows.-




(iv) The office copy of the message on which an acknowledgement has been taken should also be pasted in the register.' The register maintained in the railway stations should be inspected daily by the Station Superintendent/Station Master, and in their absence by the General ASM.

**(E) Precautions to be taken by the Station Master, Driver and Guard-regarding controlling of trains .**

(i) When a weather warning message has been received forecasting heavy air cyclonic strom and high winds, or floods or heavy rains, and there is reasonable doubt that a severe strom and high winds are going to break out, or floods and/ or very heavy rains are even imminent, that may endanger the safety of passengers/trains, the Station Master, in consultation with the Guard and the Driver, shall detain the train until the Strom and high winds, flood, rainfall abate and till it is considered safe for the train to proceed ahead.

(ii) Inspite of the action outlined in (i) above, should the Driver be still caught on run in a storm and high winds, floods, or very heavy rains of an intensity which, in his opinion, are likely to endanger the safety of the passenger! trains, he should bring his train with the least delay to a halt, avoiding such stoppage at places like sharp curves, high embankments, cuttings and bridges. The train may be started again thereafter by the Driver in consultation with the Guard only after the storm and high winds, flood, rainfall abate and it is considered safe for the train to proceed ahead.

**(F) Action to be taken by the SSE(P.Way) SE(P.Way) and JE(P.Way) on receipt of weather! cyclone warning telegram! message.**

**(i) During the Non-Monsoon (fair) season:**

(a) They shall advice the gangmates to extra vigilant and to undertake gang patrol as per para 514 of the Indian Railways Way and Works Manual.

(b) They should be out on their section by trolley during the period of war.ning and for 48 hours thereafter, and ensure that the gangmates are carrying out their prescribed duties.

(ii) During the Monsoon season:

(a) On sections where monsoon patrolling is not in force:

Action should be taken on the same lines as specified for Non-monsoon (fair) season, vide (i) above.

(b) On sections where monsoon patrolling is in force: They should advise monsoon patrollers, Watchmen at vulnerable locations and bridges, and gangmates to be extra vigilant and the gangmates to also undertake gang patrol as per para 514 of IRPWM.

They should be out on their section by trolley during the period of warning and for 48 hrs. thereafter, and ensure that the monsoon patrollers, watchmen at vulnerable locations and bridges, and gangmates, are carrying out their prescribed duties.

**(G) Action by the Gangmate:**

(i) During both the monsoon and non- monsoon (fair) seasons.

(a) On receipt of weather/cyclone warning advice from the official-in-charge of the Station, SSE/SE/ JE(P.Way) (as the case may be) should be extra vigilant and carry out gangpatrol as per para 514 of the Indian Railways Permanent Way Manual.

Explanatory Note: Gang patrolling (as per para 514 of IRPWM shall commence immediately on receipt of the Weather / cyclone warning message. This patrolling shall extend for 48 hours beyond the duration specified in such Weather / Cyclone warning message.

These instructions are applicable all through the year.

Exception: In the monsoon season in sections where regular monsoon patrolling is in force, this patrolling will commence with the occurrence of rainfall/cyclone and extend for 48 hours beyond "the duration of such rainfall/cyclone / storm.

(b) Should there be a sudden severe storm or hurricane or cyclone or abnormal rainfall or floods, in the day or night, whether or not he has received any advice of weather / cyclone warning from the Official-in-charge of the Station, the SSE/SE/ JE(P.Way) and whether or not monsoon patrolmen/ Stationary watchman at vulnerable locations and bridges are on duty, he should, on his own initiative, organise, patrolling of his ganglength, as per para .I j 514 of the Indian Railways Permanent Way Manual. ", Such patrolling should be extended for 48 hours , beyond the duration of such severe storm/hurricane/ cyclone / abnormal rainfall / flood.

(H) Action taken on every weather warning message must be reviewed periodically by the DRM/ Sr. DSO/DSO/Sr. DEN/DEN of the divisions. Inspecting Officers must call for the registers being maintained at the stations (vide(d)(iii) above) and ensure that the prescribed procedures are being followed.

## CHAPTER -V

# PASSENGER TRAIN OPERATING AND TIME TABLING

### 5.01. Introductory.-

Railway Operating work is divided into two main branches, viz. Passenger Train operation and Goods Train Operation. The public judge the efficiency of a Railway by the punctual and safe running of passenger services. Late running of trains is not only a cause of irritation and inconvenience to passengers but also involves wasteful expenditure. As a Commercial enterprise and public utility service, the Railway should ensure that the passenger services are comfortable, convenient, safe and punctual.

### 5.02. Classification of Passenger Services.-

As a public utility service the Railways have to the various needs of the public. The following types of Coaching trains are run:-

(a) ***Mail & Express trains:-*** These are high speed services which carry passengers and postal mail over long distances stopping only at important stations.

(b) ***Local Passenger trains:-*** These trains cover relatively short distances generally stop at every station.

(c) ***Mixed trains:-*** On unimportant Branch Line sections where enough passenger or goods traffic does not offer for the running of separate Passenger and Goods trains, Mixed trains are provided to reduce the cost of operation. Such trains stop at all stations and are essentially slow.

(d) ***Suburban trains:-*** These are light trains of greater frequency serving the suburban area of metropolitan cities.

### 5.03. Time Tables.-

The Time Tables are changed once on 1st July every year. Consequently the following types of Time Tables are published on this Railway and issued once in every year to come into force on the above mentioned dates:

(a) ***Public Time Tables :-*** These are handy volumes for use by the public and are printed in English and in regional languages. In additions to the time schedules they contain a variety of useful information for passengers including fare tables.

(B) ***Sheet Time Tables :-*** These are exhibited on the notice boards of stations, platforms and passenger waiting halls. They are printed in English and also in regional languages and contain the schedules of various coaching services, tabulated and brought together on a large sheet for ready public reference.

(c) ***Staff copy of the Time Table :-*** This is a copy of time table meant for use by Railway staff.

(d) ***Working Time Tables :-*** These are issued \separately for each Division for the information and guidance of all Railway staff, especially the running staff, station and control staff. These Time Tables contain the schedules of all coaching trains as well as of Goods trains, and other valuable information such as load tables of Goods trains, Headquarters of Divisional

staff, permanent and Semi-permanent, Engineering restrictions and special working instructions. Along with the Working Time Tables, an Appendix to the working Time Tables is issued for the use of Railway staff. This contains a variety of information and instructions for the staff e.g. composition of trains, rake links, speeds over turn outs, particulars of Relief trains, conversion tables etc.

**5.04. Committees associated with the make-up or revision of the Public Time Table.-**

Suggestions are invited from M.Ps, M.L.As, Chambers of Commerce and Members of Zonal/ Divisional/Suburban Railway users' Consultative Committee and Members of Time Table Committee, individual suggestion from public are entertained before framing the Time Table.

(a) *Zonal Railway Users' Consultative Committee (Z.R.U.C.C.):*- This Committee functions at the Railway Headquarters office at GM Complex, Bilaspur consisting of members appointed by the Railway Ministry to represent railway users in the territory served by the Railway and includes elected non-official members .of the Divisional Railway Users' Consultative Committees. The General Manager is the Chairman of the Committee and the Dy. General Manager (G) functions as the Secretary to the Committee.

(b) *Divisional Railway Users' Consultative Committee (D. R.* U. C. C. ):- This Committee functions on each Division and consists of members representing the railway users of the area. The Divisional Railway Manager is the Chairman of the Committee and the Sr. Divisional Commercial manager functions as the Secretary. The Committee holds a meeting in advance of the meeting of the lime Table Committee (T. T. C) (See sub-para(d) below).

(c) *Time Table Committee (T.T.C.):*- This committee advises the Railway Administration on matters connected with the lime Table and meets about 3 months before the Time Table become due for revision.

The constitution of the committee is as follows:-

(i) *Chairman:*- Chief Operations manager.

(ii) *Secretary:*- Chief Passenger Traffic manager/ Deputy Chief Operations manager (Coaching).

(iii) *Official Members:*- Chief Commercial Manager, Chief Mechanical Engineer, and Chief Electrical Engineer.

(iv) *Non-official Members:*- Chief Representatives of the Zonal Railway Users' Consultative Committee, the Divisional Railway Users' Consultative Committees Passenger Associations & members of the parliament.

(v) *Postal Deptt. Members:*- Representatives of the Postal Department also attend the meeting so that their requirements are presented.

Before the Time Table Committee meeting is held the Divisional Officers meet at Headquarters and discuss various suggestions and difficulties relating to their Divisions for the Time Table.

Before the Time Table is revised in Inter-Railway Time Table co-ordination meeting is held and the Chief Passenger Traffic manager/Deputy Chief Operations manager (Coaching) of all the Railway discuss the timings and arrive at agreement; handing over the inter-railway trains at

junction The feasibility of introducing any new trains extending a train is also gone into in consultation with the Railway Board's representatives.

**5.05. Speed and running time.-**

(a) *Maximum permissible speed:*- The maximum permissible speed over different section is approved by the Commissioner of Railway Safety taking into consideration the condition of the bridges, curvature and gradient. This speed may not be exceed under any circumstances.

Maximum permissible speed for each type of locomotive is also fixed for different sections and notified in the Working lime Table.

(b) *Booked speed:*- The booked speed means the speed at which a train is booked to run, the booked speed of Mail, Express, Passengers and other trains varies according to the class of the train. The booked speed is generally fixed at least 10% less than the maximum permissible speed. In case of late running a Loco Pilot may run upto the maximum permissible speed subject to other restrictions in force.

(c) *Minimum permissible Running time:*- The minimum permissible running time between stations is fixed on the basis of maximum permissible speed. A Loco Pilot should not cover the run between two stations in less than the minimum running time published in the Working lime Table.

(d) *Normal Running time:*- The normal running time for a particular train between stations is fixed on the basis of the booked speed of that particular train. While fixing the normal running time due consideration is given to the permissible track speed, load of the train, type of locomotive, acceleration, declaration, restriction over facing points and turn-outs and Engineering restrictions. When a train is running late the Loco Pilot can exceed the normal running time up to the limit of the maximum permissible speed subject to other restrictions.

(e) *Time allowance for stop and start:*- The time allowances are indicated in the working time table for different types of trains.

(f) *Time allowance to cover" Temporary Engineering speed restrictions* :- Time allowance to cover temporary Engineering speed restrictions is provided on each section, based on the work proposed to be carried out by the Engineering department.

(q) *Recovery time:*- This time allowance is provided to compensate for time lost by a train due to unforeseen reasons such as alarm chain pulling, points and signal failures, fog, storms etc. Generally recovery time is provided at the last lap of run of Passenger trains.

(h) Time allowance of Junction station:- Time allowance at junction stations for maintaining connection with other trains and for other public requirements should be judiciously fixed and tedious halts avoided. The authorised permissible detentions to trains at junction stations are shown in the Working Time Table.

**5.06. Platform facilities at Terminal and Junction stations.-**

When working out the timings for passenger services it is essential to keep in view the platform facilities available at terminal and junction stations.

**5.07. Sectional and Through Service Coaches. -**

These coaches are run on certain passenger' services for the convenience of passengers.

Sectional Coaches are coaches which are run on selected trains between two important stations on the direct route of the train. These coaches provide additional accommodation as well as reservation facilities for passengers travelling between the two stations on the outward as well as on the return trips of the coaches.

Through Service Coaches are coaches which are transferred from one train to another at a junction station to reach a destination not served by the original train.

**5.08. Rake Links.-**

Block Rakes are run according to links framed by the Chief Operations manager Office with the object of optimum utilisation of passenger coaches consistent with proper maintenance.

**5.09. Engine Links.-**

Selected locomotives of prescribed classes of different traction are used for the coaching services. These engines are linked in such a way as to ~ ensure that optimum utilisation.

**5.10. Overload and Double heading.-**

(a) The normal composition and the maximum load of each train is shown in the Appendix to Working Time Table. If it become necessary to attach an extra coach by a Passenger train prior permission of the Chief Operations manager should be obtained.

(b) (i) The double heading of Passenger train is not allowed without the permission of the Chief Operations manager.

(ii) The arrangement of -banking and double heading of coaching train is shown in the Appendix to Working time Table.

(iii) On sections where there is no restriction on double heading when the prior permission of the Chief Operations manager cannot be obtained, the Senior most Divisional Operations manager of the Division concerned may permit double heading.

**5.11. Duplication, Diversion and cancellation of train.-**

(a) A duplicate Passenger train may be run if the original train is running abnormal late to the extent of causing serious inconvenience to passengers and up-setting connection with other important trains.

(b) A passenger train may be diverted by another route due to serious accidents or floods or breaches causing dislocation of traffic and blocking of normal route.

(c) No Passenger train shall be cancelled unless there is a serious accident such as flood, breaches and interruption of through communication for a considerably long period or when running of original train is not considered necessary due to duplicate train being run. For cancellation of Passenger train prior permission of the Chief Operations Manager must be obtained.

However, in case of emergency when prior permission of the Chief Operations Manager cannot be obtained, the Senior Divisional Operations Manager of the Division concerned shall issue the orders for cancellation of passenger train and report the cancellation to Dy. Chief Operations Manager (Coaching) / Chief Passenger Transportation Manager for Chief Operations Manager’s confirmation.

5.**12. Punctuality of Passenger trains :-**

(a) The efficiency of passenger train operation is judged by the punctuality of passenger services. Endeavour should be made to achieve 100% punctuality for all trains not only at destination but at intermediate stations also.

(b) Passenger train punctuality is calculated on the basis of :-

(i) Trains arriving destination right time (RT)

(ii) Inter-Railway trains which are received late at the interchange point but do not lose further time. For example if 8238 Dn. Amritsar-Bilaspur Chhattisgarh Exp. is handed over to South East Central Railway at Nagpur by Central Railway 30 minutes late and it reaches Bilaspur 30 minutes or less late, the train will be treated as not losing time (NLT) on South East Central Railway

(iii) Total number of trains run.

The punctuality of Coaching trains is worked out by the following formula :-

$$\frac{(A \text{ plus } B) \text{ multiplied by } 100}{C}$$

Where 'A' stands for the number of trains arriving destination right time.

'B' stand for the number of inter-railway trains not losing time in the system.

'C' stands for the total number of trains run on the system.

(c) Efforts to be made to ensure punctual running of trains:-

(i) Station and Running staff and Control must understand clearly their duty to ensure punctuality in train running. Efforts must be made by all concerned to make up time at stations when a train is running late.

(ii) Loco Pilot must be on the alert and ready to start their trains immediately on receipt of the Guard's signal. They must satisfy themselves that the signal have been taken 'off' and that they are in possession of correct and relevant authority to proceed, if any, before starting.

(iii) In order to ensure punctual running, Station Masters must devote close attention to the prompt loading and unloading of parcels.

(iv) Packages intended for loading should be kept at the spot on the platform where the van usually comes to a stand.

(v) Guard must assist Station Masters to avoid detentions by advising Control in advance when they have a number of bulky parcels for a station. The fully complement of Ticket Collectors, Parcel and Luggage Clerks and Hamals booked for duty must be on the platform ready to commence their respective duties immediately the train arrives, and the Station Master concerned is responsible to ensure that this is done.

(d) *Making up of time at Refreshment Room Stations:- Every* endeavour should be made to make up time by a Passenger train running late, at the refreshment Room station where the halt of the train is 15 minutes or more. The Refreshment Room Managers are to be intimated beforehand so that they will be in a position to serve the passengers expeditiously to avoid delay. The Passengers are to be intimated about the approximate departure of the train. No time should be made up by a train with a Halt of less than 15 minutes.

(e) *Running* of *Passenger trains before times:-* (i) Passenger trains should not arrive *more* than 15 minutes before time.

(ii) No Passenger train should be started from , a station earlier than the departure time shown in the Pubic Time Table.

(i) *Trains carrying postal sorters to wait for postal Mails in very* exceptional cases trains may be detained on the written request from the sorter in-charge for a few minutes, not exceeding 3 minutes in any case.

(ii) All such detentions on this account should .-be carefully booked in the Guard's Train Report (T34 HF) and the Mail Sorter's initial obtained against such entries.

(iii) Form T 34 HF should be filled in by Guards *of* Mail, Express and Passenger trains and handed to the relieving Guards on arrival at Guard changing stations.

(g) *Advice when Mail trains and other trains [carrying passenger are running late* on *section where Train Control has not been installed and in the event of failure of Train Control :-*

i) When a train is running over an hour late, the Station Master of the first station at which it arrives late must advice all halting stations as well as the next important junction station by sending, message intimating how late the train is actually running.

(ii) If on arrival at the important junction station ahead, the train is still an hour or more late, Station Master of the station will advise Station Master of all halting stations as far as the next important junction station by sending message.

(iii) The same procedure will be followed by each junction station until the train arrives at destination.

(iv) When such message are sent to the Train Inspector (T. N. I.) must be included in the address.

Note :- On section having Train Control, the Section Controller on duty will inform all stations and the adjacent Control office about the late running.

(v) The Station Masters of Refreshment Room stations must advise the Refreshment Room Managers promptly when Mail/other trains carrying Passengers are running late.

(vi) The postal officials must also be informed.

(vii) The Late running of trains should also be announced on the public address system where provided.

(viii) Whenever a long distance Down Mail or Express train runs over two hours late, first Class and Air-conditioned coach attendants will enquire from the passenger whether they would like to convey any message by telephone to their residences or inform their Loco Pilots waiting with their cars at station. Such message may be taken down by the Coach Attendants along with the names, addresses, telephone Nos, Car Nos, and handed over to the Conductor who in turn would give the same to the on duty Station Master, The on duty Station Master will repeat the message to Trains Inspector, Trains Inspector, will then communicate the message to the residence of the passenger or to the car Loco Pilot waiting at station as the case may be.

**5.13. Stoppage of Mail, Express and other Passenger Trains out of course.-**

(a) No Mail, Express or other Passenger train shall be stopped out of course without prior permission from the Senior Divisional Operation manager.

(b) Any train may be stopped out of course by a Station Master on written request from: Magistrate or a police Officer not below the rank c Deputy Superintendent proceeding on duty to

attend very serious case of crime or for maintenance of law and order. The Station Master must obtain permission of the Senior Divisional Operation Manager for such stoppage.

(c) This requisition must be forwarded by the Station Master with full particulars of detention, to the Senior Divisional Operations Manager concerned without delay.

**5.14. Control of Coaching Stock.-**

(a) ***Coaching Movement Section:-*** The Coaching Movement section in the Operating branch of the Headquarters office at Bilaspur exercises control on holding and movement of coaching stock over the entire Railway. For effective control on utilisation and movement of stock, the following information should be supplied by the Divisions daily to the Coaching Control at Headquarters:-

(i) The coaches spare in fit condition type wise, coaches marked sick on Electrical and Mechanical account with the oldest date.

(ii) The position of coaching trains running in the Divisions with the actual composition of the train, the individual number and type of coaches and the marshalling order.

(iii) The coaching stock category wise waiting movement to shops for POH and/or special repairs, indicating the individual number and type of coaches. ,

(iv) The interchange with workshops indicating the types and individual number of coaches handed over to and taken over from the shops.

(v) The daily movement of the trial trains from point to point.

(vi) The movement of coaches to and from other Railways.

(b) ***Link Cards:-*** *(i)* On the basis of the information obtained by the Coaching Movement Section, Bilaspur from the Divisions, Link Cards should be maintained indicating the day-to- day position of individual coaches so that on ready reference to the Card, the position of each coach on a particular date can be located.

(ii) *Kardex Cabinet:-* In respect of certain coaches which need special attention from Headquarters Kardex Cabinet is maintained in the Headquarters office. Kardex system of card maintenance is confined only to coaches requiring special attention, such as:-

(A) Coaches sent to different Workshop for POH and heavy repairs.

(B) Sick coaches.

(C) Coaches on a Division which have gone to other Divisions or other Zonal Railways for party moves and other special moves.

(D) Coaches of one Division detached from set rakes and detained on another Division or detained on other Zonal Railways.

(c) ***Shopping Programme:-*** (i) Every month a Shopping programme is drawn up for coaches to be sent to shops for POH and special repairs. The programme is charted out one month in advance at a meeting held every month. At this meeting the progress of modification, vestibule, re-wiring of coaches, side-filling arrangements etc. is also discussed and laid down.

(ii) *Coaches booked to work shops for special repairs:- When* a coach needs special repairs at work shops a master work card should first be filled up and sent to the Works Manager (C) by the Division concerned. When a 'Call' is received from the Works Manager-in-charge for such coaches, they should be despatched to the earmarked For Workshops.

The coach should be stencilled as follows:-

"Sent to Workshops for special repairs.

Ref: WM (C)'s No. ..... Dated ..... Master Card sent on.....

Any coach sent to Shops for heavy repairs without master workcard and a certificate by WM (C) is a very serious irregularity.

**5.15. Design of Coaches.-**

Broad gauge coaches are divided into two groups as follows:-

(i) Conventional coaches,

(ii) Integral coaches.

Conventional coaches are built with wooden bodies on steel underarms.

Integral coaches have no separate underarms and the roof, wall and floor form an integrated tabular steel structure. These coaches are anti- telescopic and in an accident only the end lavatory portion gets crushed without seriously effecting the intermediate portion containing passenger compartments.

In general, a policy has been adopted to manufacture only integral Passenger carrying coaching stock in future.

**5.16. Load and marshalling of Coaching trains.-**

(a) Composition of Coaching trains:- All coaching trains should run with the composition prescribed in the booklet showing rake link. Trains should not run underload and when due to any unavoidable reason, load of a train has to be reduced below the prescribed composition, immediate action should be taken to restore the load.

(b) *Marshalling of Coaching trains:-* The Marshalling order prescribed in the booklet should be rigidly followed by the person in charge of such work at the base stations, keeping the following instructions in view:-

*(i) Ladies' Compartment:-* Ladies compartment should as far as possible be in the middle of the train. Ladies Compartment should be provided with a closet.

*(ii)SLR and Anti-telescopic or Steel bodied coaches:-* In case of Mail/ Express trains, anti-telescopic or steel bodied SLRs must be marshalled as the last coach at both ends of the train formation i.e. next to train engine in the front and as a rear- most vehicle, except when Anti-telescopic or steel- bodied slip or sectional coaches attached outside SLR due to unavoidable operational requirements.

In case of SLRs which have passenger portion on one side and luggage-cum-brake portion on the other, SLR should be marshalled in such a way that the luggage and brake portion is trailing outer most or next to engine. If for any unavoidable reason, an Anti-telescopic / Steel bodied SLR is marshalled with Passenger Portion of the front SlR next to the engine or of the rear SLR towards the rear, the Passenger Portion need not be locked. In the case of new design of SLRs with Passenger portion in the middle, these can be positioned in any convenient way.

In case of Mail/ Express trains, two anti- telescopic or steel bodied coaches should be marshalled inside the anti-telescopic or steel bodied SLRs at both ends.

As sufficient anti-telescopic or steel bodied SLRs are available for use of Mail/Express trains, there should be no occasion to utilise a wooden bodied SLR on these trains. However, in case it is inescapable to utilise a wooden bodied SLR on Mail/Express train, the wooden bodied SLR should be marshalled inside two anti-telescopic coaches.

After providing for Mail/Express train, all the available anti-telescopic or steel bodied SLRs should be used on main line passenger trains and after meeting this requirement, the rest should be used on branch line passenger trains. Anti-telescopic or Steel bodied SLR should be marshalled in the same way as in the case of Mail/Express trains.

In case of passenger trains, at least one Anti-telescopic or steel bodied coach should be marshalled inside the anti-telescopic or steel bodied SLR at both ends in the first instance, and when adequate number of anti-telescopic or steel bodied coaches are available, there should be at least two such coaches.In case of provision of wooden bodied SLR on the passenger trains, it should be marshalled inside the Anti-telescopic or steel bodied coach in the first phase and two such coaches in the second phase.

(iii) *Short trains:*- In case of short trains running with single SLR, the SLR whether Anti-telescopic, steel bodied or not, should be marshalled in the middle. One Anti-telescopic each in front and rear should be marshalled as the outermost vehicle in the first phase and two such coaches should be in the front and rear in the second phase.

(iv) Non-passenger Coaches:- VP LAs, WLRRMs and other coaching vehicles, which do not carry passengers may be marshalled as operationally convenient. However, as far as possible, these should be preferably marshalled as outermost vehicles at either end to absorb the impact of collision energy.

(v) *Inspection Carriages:*- Inspection Carriages whether anti-telescopic/steel bodied or not and occupied by Railway Officers may be marshalled as operationally convenient.

(vi) *Reserved bogies and saloons occupied by VIPs:*- Reserved bogies occupied by passengers and Inspection Carriages / Saloon occupied by VI Ps should be treated as any other, passenger coach and marshalled accordingly. If they are anti-telescopic or steel bodied they should be marshalled anywhere as operationally convenient. If they are wooden bodied, they should be marshalled inside the required number of anti-telescopic / steel bodied coaches. If shunting time required to comply with this marshalling is likely to be long, attaching / detaching of such coaches may be made at convenient points and the party advised to entrain / detrain at their destinations enroute.

(vii)*Section/Through service coaches:*- Sectional Through service coaches, if they are anti-telescopic or steel bodied, may be marshalled as operationally convenient, However, wherever feasible, they should be marshalled inside the SLR, LA, VP etc.

Sectional through service coaches, other than anti-telescopic/steel bodied should be treated like other passenger coaches in the train formation and should therefore; be marshalled inside the required number of anti-telescopic/steel bodied coaches.

While determining the position of marshalling of sectional/through service coaches, the fact that these coaches will be attached/detached enroute, leaving the train service coaches exposed as outermost should be borne in mind and therefore, the marshalling order of sectional/ through service coaches and train service coaches decided in accordance with the instructions contained in clause (ii) to (vii).

Under the personal order of the Chief, Operations Manager a sectional coach may, however, be attached next to engine provided the sectional coach is anti-telescopic' or steel bodied.

(viii) *POH/Sick coaches returning to shops:*- In the case of POH/Sick coaches which are returned to shops for major repairs and are attached to passenger trains, such coaches should be

properly locked and windows secured, so as to prevent entry of the passenger into these coaches. In that case, it is not necessary to attach these coaches according to safety marshalling instructions and can be attached' next to the train engine or rearmost as convenient. If for any reason it is not possible to lock up these coaches, such coaches should be treated like other passenger coaches in the train formation and should therefore, be marshalled inside the required number of anti-telescopic/steel bodied coaches.

**5.17. Attaching of four-wheelers on Passenger trains.-**

(a) Four-wheeler coaching vehicle not intended for carriage of passengers of live-stock or IRS four- wheeler covered wagon can be attached to passenger train in front, next to engine.

For the purpose of this rule Officer's four wheeled inspection carriage will not be treated as a vehicle for the carriage of passengers.

(b) No four-wheeler will be attached between the bogies in any circumstances on Passenger and Mail/Express trains. Only one exception to this rule will be allowed viz. that when four-wheelers not intended for carriage of passengers or live-stock are attached in rear of a passenger train, and if bogie inspection carriage is attached as the last vehicle on the train there should be at least two four-wheelers in front of the inspection carriage.

(c) No four wheeler of any kind should be attached next to the engine in case of special train intended for Governors or other exalted personage, if the train is composed of bogies and four-wheeled vehicles.

(d) No Goods vehicle shall be attached to Passenger, Mixed and Parcel Express train unless the wagon has been previously examined and certified fit for this purpose by the

(e) When one or more four wheelers are attached to a Passenger train, the maximum speed of the train shall not exceed 72 Km/h on the Broad Gauge and 40 Km/h on the Narrow Gauge.

(f) No goods vehicles fitted with spring shackle pins secured by split pins is permitted on Passenger, Mixed and Parcel Express trains. Only wagons with shackle pins secured by split cotters may be attached to such trains.

(g) Mail, Express and Passenger trains on the South Eastern Central Railway are equipped with automatic vacuum brake and no vehicle either coaching or goods not fitted with automatic brake gear-(vehicles with train pipe only are not so equipped) may be attached to Mail and Express trains. Only one coaching vehicle fitted with train pipe only may, however, be attached to passenger trains provided this vehicle is protected by one or more vehicles fitted with automatic vacuum brake gear being attached in rear of it.

No goods vehicle fitted with train pipe only is permitted to be attached to Passenger trains. Vehicle both coaching and goods fitted with train pipe only may be attached to troop trains and special trains conveying military stores, etc. but not more than one - third of the total load of such trains may consist of goods and coaching vehicles fitted with train pipe only.

(h) In the marshalling of mixed trains the first and second class carriages must be placed next in front of the rear of brakevan.

A carriage truck or horse box when attached to such trains may, however, be marshalled between the rear brakevan and upper class carriages.

**5.18. Special Troop trains.-**

(a) For movement of troop by Special Troop trains over this Railway, the Chief Operations Manager will send out a Time Table for the special troop train. All communications in regard to the troop movements must be kept secret by all concerned.

(b) The Divisional Operations Manager of the Division from which the train will start will provide carriages, brake-vans etc. and order engine power and running staff over his Division in accordance with the orders issued by the Chief Operations Manager.

(c) All vehicles used in the composition of a special troop train and vehicle set aside for the accommodation of troop on ordinary trains will be specially inspected by the Divisional Transportation Inspector and the Carriage & Wagon Inspector. The Divisional Transportation Inspector will superintend entraining and despatching of the troop.

(d) All damages to, and deficiencies in the vehicles or their fittings will be carefully noted in a memo, which will be shown to the Officer in command of the party, who should be invited to inspect the vehicles and see that the memo is correct. He will sign the memo in token of the check up of the condition of the vehicles.

(e) The memo will then be handed over to the Guard in charge, who will give a receipt for the memo. He will copy it in his rough journal book and take a receipt for it in his book when handing over his train at the Guard changing or terminal station.

(f) The original memo will accompany the special train or carriages through to destination, being handed over by one Guard to the other through the Station Masters of guards changing stations.

(g) On arrival at destination the vehicles will again be carefully inspected by a Train Examiner, and any new damages or deficiencies will be paid for by the officer-in-charge, on presentation of a bill which must be prepared at the rates given in the book of Rules for Train Examiners. No time should be lost in making the inspection, or In the preparation of the bill as the matter must be settled before the troop leave the Railway premises. Should any damages occur, the cost of which is not included in the book, the Train Examiner should assess the value in conjunction with the Station Master.

**5.19. Carrying Passengers by goods vehicles.-**

No goods stock should be used for carrying Passenger traffic without the previous sanction of the General Manager. Horse-boxes must never be used for the conveyance of passengers other than grooms or attendants travelling in charge of horses

**5.20 Running of V.I.P. Specials :-**

Detailed procedure to be observed for running VIP specials is laid down from time to time in Chief Operations Manager secret Circular. In case of running of V.I.P. Specials the specific secret circular to be issued by the Divisional Railway Manager to the staff concerned is to be referred to for guidance.

## CHAPTER –VI

# GOODS TRAIN OPERATION

### 6.01. Consideration affecting Goods train timings.-

The timings and paths available for Goods train on a given section depend primarily on the pattern of Coaching train services on that section. Provision is generally made for one Van Goods train and one shunting train or for a combined van and shunting train, and one departmental train daily, the remaining line capacity being utilised for through Goods train paths. The number of paths actually utilised from time to time varies according to the-demands of traffic.

### 6.02. Working Time Tables.-

Goods train paths are shown in the Working Time Tables which are issued once in a year in the month of July. These are meant for the use of railway staff only and embody not only the timings of all trains but a variety of important information regarding Goods train running and train operation in general.

### 6.03. Ordering and cancelling of trains.-

(a) The Goods train paths appearing the Working Time Tables are plotted in the Master Chart of each section. When ordering a Goods train, the Master Chart should be consulted and the best path selected after taking into consideration the actual running of trains on the section. Every effort should be made to ensure that the selected path is adhered to, since punctual running of Goods trains is essential for synchronising the linking of trains on successive sections and obtaining optimum of power and crew.

(b) Train ordering messages will be prefixed “T.O.” and in the address the Code initials of stations in the section on which the train will run will be given. Station Masters or Roster Clerks/Booking Clerks at each station, to which a train ordering message is addressed, will be responsible for delivering copies of the “T.O.” message to the staff concerned posted at their stations. Mail, Express, Passenger and Mixed trains will run as laid down in the Time Tables. All other trains will be ordered as required. The train ordering message shall be serially numbered and recorded in a separate register.

(c) All extra Goods trains for which no paths are given in the Working Time Table should be referred to by adding a letter of the alphabet to the number of the Time Tabled train depending upon the load and the destination. For example, if after ordering out all Time Tabled trains, one train load for Bombay is offering the numbering of the extra train should be 1219A as 1219 is nominated to run for Bombay. 1219A will run to the inter-sectional timings of 1219.

(d) In addressing the messages the station from which the train is to start should be written first, and in the case of trains for which no timing has been notified in the Time Table, the arrival time at destination should always be given.

(e) On non-controlled sections, ordering of trains to timings not given in the Working Time Table should be avoided, but when it is really necessary, the official ordering the “extra” train must state where it should cross the regular trains. The Station

Masters will judiciously adjust these crossings in the event of late running of one or the other of the train and arrange other crossings according to the time the extra train keeps.

(f) When the Train Controller is in operation the “T.O” will be repeated to the person deputed or SM at stations concerned by the Section Controller over the Control phone. The Station Master or person deputed will take them down in the Control Order Book. In the event of the Train Control being out of order the Chief Controller will send the message by any other available means of communication.

(g) Delivery of Train Ordering Messages:- Roster Clerks/Booking Clerk and Station Masters will be held responsible for the prompt delivery of copies of train ordering messages to the officials concerned.

Whenever it is necessary to advise any official of the running or cancellation of trains, his official \ designation will be shown in the address of the train notice by the train ordering official.

The running of all Goods and Special trains must be notified to the station staff by the Station Master or Yard Master.

Station Masters, Guards, Loco Pilots, SSE/SEt JE(Works), SSE/SE/JE(Signals) and SSE/SEt JE(P. Way) must peruse with great care and attention in M3 Working “Time Table, Special Train “Time Table and TO. Messages so that they may be thoroughly conversant with the running of trains.

If Engineering Officers should require copies of train ordering messages to be sent to them or to their subordinates, they should advise the Sr. Divisional Operations Manager of the Division concerned of their requirements.

On Divisions on which construction work is in progress, Train ordering Messages must be delivered to Engineering officials concerned with the construction work also.

Sufficient notice for provision of powers should be given to the Loco Shed. The notice period will be specified jointly by the Sr. Divisional Operations Manager and the Sr. Divisional Mechanical Engineer! Sr. Divisional Electrical Engineer (Rolling Stock) for each Shed and for each type of locomotive viz. Electric & Diesel.

**6.04. Loads of Goods trains.-**

Different types of heavy Diesel and Electric locomotives (where available) are utilised for hauling Goods trains. The maximum load for each class of engine is shown in the Working Time Table. In order to get the optimum use of motive power, it is essential that each engine is given a load approximating to the maximum permissible.

**6.05. Advice of Loads of trains.-**

As soon as a train, has left, the Deputy Chief’ Controller will arrange to have the T.N. message repeated over the Control phone to the adjacent control office to enable the official there to repeat it to the yard to arrange onward movement.

**Note :-** (i) In case of coaching vehicles, the authorised code letters as painted on the vehicles should be used.

(ii) Wagons containing explosives and dangerous goods, Q.T.S. traffic, perishable cattle wagons and empty or loaded petrol benzol and

kero- sene oil tank wagons and such other mineral oil tanks must be mentioned separately in the T.N. message.

**6.06. Power for Goods train.-**

Power for working a Goods train will be nominated by the Power Controller. In the case of Diesel and Electric powers, the necessity for sending the power to the Shed should not normally arise except for the purpose of fuelling, for schedules or for minor repairs, etc. The Power Controller and the Deputy Chief Controller on duty should keep in view the time when the Diesel and Electric locomotives will be available from shed off schedule and arrange to order out trains with such locomotives accordingly to avoid idling. At outstations, the nomination of locomotives will be done by the Control for working the return train. While nominating powers for Goods trains both at Home or at Outstation, the need for prompt train ordering and the need to avoid undue detention to locomotive must always be kept in view.

**6.07. Availability of Engine Crew and Guards.-**

The SSE/SE(Loco) of the Home Shed concerned is responsible for providing all Crew for engines ordered out, while the Deputy Chief Controller on behalf of the Chief Controller is responsible for seeing that Guards including Brakesmen, where necessary are available for all trains. The Deputy Chief Controller is also responsible for ensuring that Engine crew and Guards are available in time at the outstations to work trains back. Detention to engines or trains at outstations for non-availability of crew and Guard should be avoided, and Crew and Guard should be balanced in advance.

**6.08. Loading of wagons.-**

The following instructions should be strictly followed for loading wagons:-

(i) The permissible moving dimensions must not be exceeded.

(ii) Wagon should be evenly loaded so that the load bears equally on all springs, no overloading beyond permissible limits laid down being allowed under any circumstances.

(iii) Bulky articles like furniture, machinery parts, etc. that are likely to shift in transit should be properly secured to avoid such. shifting.

(iv) Goods in bulk such as coal, ores, etc. should be evenly loaded upto the prescribed load lines so that there is no hazard due to overloading.

**6.09. Loading of Heavy, Bulky and Long articles.-**

(a) Rails and other long articles must not be loaded on trucks without sides unless they are fitted with the bolsters and stanchions and the rails, etc. securely lashed with chains in the prescribed fashion.

(b) The loading of rails projecting over one end of a medium or low-sided truck is objectionable and Station Masters and Guards are authorised to refuse trucks so loaded. If a truck of this kind is loaded with 30 rails,15 should project over one end at the corners and 15 over the other end in the centre.

(C) Four-wheeled vehicles fitted with lashing chains but not with bolsters.-

(i) Guards must particularly note and draw the attention of Station Masters to any missing chains and note such case in their Train reports.

(ii) The mode of lashing timber on the four- wheeled vehicles that are not fitted with bolsters is as follows:-

At the end of each chain there is a larger link called an eye; the eye at the end of one chain is oblong, and the eye of the opposite chain is round. The oblong eye should be passed through the round one and the chain drawn tight and tied by looping or knotting. The chains must then be further tightened by a Spanish windlass, the lever of which must not exceed 0.76 metre (2 feet 6 inches) is length, otherwise the chains are liable to be damaged.

(d) Steel plates loaded in open trucks:-

(i) Steel plates longer than the distance between two stanchions should always be placed above small sheets so that the weight of the longer sheets will prevent smaller sheets moving and falling off the wagons.

(ii) Where sheets do not extend in length across two stanchions a lashing chain should be fixed at the end of the sheet furthest away from the stanchion, so as to prevent any possibility of small sheets falling off the wagon.

(iii) Guards must see to the loading of such wagon on their trains at intervals and if necessary have the lashing retightened, Station Masters should render the Guards every assistance in doing this. If a Guard finds that he can not properly secure the load of a wagon, such wagon should be detached from the train for adjustment and the matter reported to the Divisional Commercial Manager for necessary action.

(iv) “BFR” / “BRN” bogie wagon (including BRH type wagons) without stanchions should not be used for loading steel plates.

(v) Steel plates and sheets must be even stacked in four corners.

**6.10. Loading of Timber, Bullies, Rafters Bamboos, Firewood etc. in four wheeler B. G. and N. G. Open wagons.-**

In loading timber, bullies, rafters, bamboos firewood etc. whether in Broad Gauge or Narrow Gauge open wagons, Station Masters and other: concerned should advise the Guard when attaching any open wagon (s) loaded with timber to a train Guards must inspect such wagons (s) at the next stopping station, and thereafter at frequent interval and, if necessary, have the lashing retightened, a in all probability the load will have settled on account of oscillation and if the lashings are not tightened an undue weight will be put on the stanchions and lashings. Station Masters should render the Guards every assistance in doing this and if a Guard finds he cannot properly secure the load, the wagon (s) should be detached and the matter at once reported to the Divisional Commercial manager to take up the bad loading.

Certain other precautions also should be taken and these are detailed below separately in respect of Broad Gauge and Narrow Gauge open wagons:-

**A. Broad Gauge open wagons:-**

(1) (a) All timber loaded above the sides. of open B.G. wagons must be longer than the distance between two props and care must be taken to see that pieces do not work loose and fall on to the line, or overhang the sides of the wagons, enroute.

(b) The height of the props should not be less than the height of the load.

(c) Ropes where ever used should be of coir or hemp.

(d) When loading bent logs or bullies in such wagons, care should be taken to see that they do not touch the floor sheets of the wagons, and thus prevent free movement of the swivelling bolsters.

(2) Heavy, bulky straight or distorted logs over 12.70 cm.(5 inches) in diameter and not less than 106.68 cm. (3 feet 6 inches) in length may be loaded 30.48 cm. (1 feet) above the sides of open four-wheel wagons, provided the following conditions are observed:-

(a) That not less than 7 props are provided on each side of the wagon and that the height of the props and the load does not infringe standard moving dimensions i.e. 3.49 metres (11 feet 6 inches) at sides and 4.12 metres (13 feet 6 inches) at the centre.

(b) That the props are not less than 10.16 cm. (4 inches) in diameter and that they rest on the floor of the wagon.

(c) That the load is secured with ropes not less than 3 in number 2.54 cm. (1 inch) in diameter.

(d) That the load does not project more than 15.24 cm: (6 inches) beyond the ends of the wagon.

(3) Bullies, rafters upto 12.70 cm. (5 inches) in diameter and not less than 1.06 metre (3 feet 6 inches) in length and bamboos may be loaded in open four-wheeled wagons upto standard moving dimensions,provided the conditions laid down in para 6.10A (2) above are observed.

Note:- Bogie rail platform trucks “BKU” and “BFR” (old types L.B.LBC and CLB) may be loaded with:-

(i) Timber described in para 6.10A (2) upto the height of the stanchions.

(ii) Timber described in 6.1 OA (3) upto 30.48 cm. (one foot) above the top of the stanchions.

(iii) Timber as square logs to a height of 1.22 metres (4 feet) above the top of the stanchions.

(iv) “BKU” bogie platform truck (old) Classification CLB) without stanchions must not be used for loading logs and timber.

(v) All timber loaded in these trucks must not be less than the length of the distance between two stanchions and secured by lashing chains provided for the purpose or with ropes not less than 2.54 cm. (1 inch) in diameter that encircle the load and the pass through the rings on the top of the stanchions securely fastened.

(4) Firewood (pieces of timber less than 1.09 metres (3 feet 7 inches) in length may be treated as firewood) may be loaded in open four-wheeled wagons upto standard moving dimensions, provided the following conditions are observed:-

(a) That not less than 12 props are provided on each side of the wagons and that the height of the propos and the load does not infringe standard moving dimensions.

B) That the propos are not less than 10.16 cm. (4 inches) in diameter and that they rest on the floor of the wagons.

(c) That the load is secured with ropes not less than 3 in number and 2.54 cm. (1 inch) in diameter.

(d) That the load does not project beyond the ends of the wagon.

**(B) N. G. Open wagons:-**

(1) Heavy, bulky, straight or distorted logs over 12.70 cm (5 inches) in diameter should be loaded on timber trucks and the following conditions must be observed:-

(a) The load should not exceed the height of stanchions.

(b) The load is properly secured by lashing chains provided for the purpose.

(C) The timber should be longer than the distance between two stanchions i.e.timber shorter than 2.26 metres (7 feet 5 inches) long must not be loaded in these wagons.

Note :- Timber described in para 7010 8(3) below may also be loaded in timber trucks under the same condition.

(2) Heavy pieces of logs less than 2.28 metres (7 feet 6 inches) in length not trimmed, may be loaded upto 20.32 (8 inches) above the sides in High-side open wagons provided the following conditions are fulfilled:-

(a) 9 equally spaced props should be provided on each side of the wagon. The number should not under any circumstance be less.

(b) These props should have a minimum diameter of 10.16cm. (4 inches) and should be resting on the floor of the wagons.

Timber described in para 6.10 (B) (i) may also be loaded in open wagons under the same conditions.

(3) Bullies and bamboos may be loaded 1.06 metres (3 feet 6 inches) above the sides of the high-sided open wagons (BKC) provided the following conditions are observed:-

(a) That not less than 9 props are provided on each side of the wagons spaced at 1.01 metres (3 feet 4 inches) apart and the height of the propos and the load does not infringe standard moving dimenisons.

(b) That the props are not less than 10.16 cm. (4 inches) in diameter and that rest on the floor of the wagon.

(c) That the portable doors are placed in their proper places.

(d) That the load is secured with ropes not less than 3 in number and 2.54 cm. (1 inch) in diameter.

(e) That the load does not project beyond the ends of the wagons.

(4) Short lengths of timber from 1.06 metres (3 feet 6 inches) upto 2.13 metres (7 feet) long and less than 10.16 cm. (4 inches) in diameter and firewood (pieces of timber less than 1.06 metres (3 feet 6 inches) may be treated as firewood) may be loaded 1.06 metres (3 feet 6 inches) above the sides of High-sided open wagon (BKC) provided the following conditions are observed:-

(a) That not less than 13 props are provided on each side of the wagon spaced at 0.66 metre (2 feet 2 inches) apart and the height of the props and the load does not infrings the standard moving dimension.

(b) That the size of props should not be less than 10.16 cm. (4 inches) in diameter if of round cross section or 10.16 cm. (4 inches) along the side if of square cross section.

(c) That the portable doors are placed in their proper places.

(d) That the load is secured with ropes not less than 7 in number and 2.54 cm. (1 inch) in diameter.

(e) That the load does not project beyond the ends of the wagons.

(5) Sawn timber of the following description may be loaded in High-sided wagon upto 45.72cm. (18 inches) above the sides under the same conditions are specified in para (3) above but in the case of beams the loading limit should not exceed 20.32 cm. (8 inches) above the sides of these wagons:-

(a) Beams- 15.24 cm./6 inches x17. 78cm./7 inches and upwards except sleepers.

(b) Battens-2.54cm./1 inch x3.81 cm./ 1.5 inch. upto 3.81 cm./ 1.5 inch.x 5.08 Cm./2 inches.

(c) Planks-size below 5.08 cm./2 inches thick x more than 5.08 cm./2 inches.

(d) Scantlings- 5.08 cm/2 inches thick and over x 5.08 xm./2 inches upwards except beams.

(e) Rafters- upto dimensions of 12.70cm / 5 inches x 12.70 cm /5 inches.

**6.11. Restriction on loading Narrow Gauge covered wagons with Angle Iron, Rails etc.-**

On the Narrow Gauge Sections angle iron, rails, iron bars or heavy pieces of iron of any descriptions must not be loaded in covered wagons. High-sided wagons only are to be used and care must be taken that these articles are not placed on top of such articles as iron plates, etc. which afford a slippery surface resulting in load shifting due to oscillation while the wagon is on the move.

**6.12 Precautions to be taken to preven accidents.-**

To prevent accidents the Station Master or Goods Clerk deputed by him, must, specially Inspect all trucks loaded with long timber, girders, machinery, rails or bulky articles. Should any truck be found to be loosely loaded or beyond running dimensions

the contents must be re-secured before the train leaves, or the truck must be cut off. Each case of bad loading must be reported to the Sr. Divisional Commercial Manager.

The lashing chains must be of the standard length and on no account should two links of a lashing chain be secured by means of a wire.

**6.13. Securing motor cars, etc. in open trucks & motor vans.-**

(a) Conveyance trucks which have cross bars and screw clamps, shall be used, as far as possible, for loading carriages and motor cars.

(b) Conveyance and motor cars when loaded in open trucks, shall be covered by tarpaulins firmly lashed to the sides and ends of the trucks.

(c) When loading motor cars, the staff should request the owner of the car place the gear in the reverse after the car is loaded, as by doing so it helps very materially to keep the car stationary when the train is in motion.

(d) Every loaded truck shall before being attached to a train at the sending station, be examined by the Train Examiner who shall issue the usual certificate of correct loading. The vehicle shall not be attached to a train until it is examined and certified as fit to run.

(e) Should a truck be marked sick enroute by the Train Examining staff for any purpose whatever, the Station Master shall immediately arrange to detach it and without delay arrange to adjust the load or tranship the contents to the satisfaction of the JE(C&W).

**6.14. Marshalling of Goods Trains.-**

(a) In no case should a single 4-wheeler wagon be marshalled between two bogies. However, this rule does not apply to Match Trucks fitted with Centre Buffer Couplers.

(b) *Wagons containing Explosive and other Dangerous goods.*- Staff must be fully conversant with the rules laid down in the IRCA Red Tariff issued from time to time in regard to storage, loading/unloading sealing, labelling, Shunting, Marshalling and Conveyance of explosives and other dangerous goods. Some salient points, not exhaustive, are however, indicated below for the guidance of the staff.

**6.15. (A) Wagons containing Explosive (IRCA Red Tariff Rule No. 132.1)-**

(1) The maximum number of carriages/wagons containing explosives which may at any time be attached to or be hauled by a train shall be Ten by a goods train and three by a mixed or parcels train.

(2) Carriage or wagons containing explosives should be placed as far away as practicable from the train locomotive; grouping together those carriages/wagons which are permitted to be so grouped.

3) Carrages/Wagons containing explosives shall be separated by not less than three carriages/ wagons not containing explosives or other dangerous goods or articles of inflammable nature from:-

(i) the train locomotive, provided that when an electric (traction) or diesel (electric) locomotive is used,only one such carriage/ wagon need intervene between the carriages/wagons containing/explosives and the locomotives;

(ii) the passenger carriages or the brake-van;

(iii) any other carriages / wagons containing other dangerous goods or articles of inflammable nature.

(4) Carriages/wagons containing explosives shall be close-coupled to the adjoining carriages/wagons add to each other.

**(B) Wagons containing Petroleum and other Inflammable liquids: (IRCA Red Tariff Rule No.325.1)**

(1) There is no restriction on the number of wagons containing petroleum and other inflammable liquids which may at anyone time be attached to or be transported by anyone train.

(2) Wagons containing petroleum and other inflammable liquids, which may be grouped together, should be placed as far away as practicable from the train locomotive.

(3) Wagons containing petroleum and other inflammable liquids, Class A, shall be separated by not less than three carriages/wagons not containing explosives or other dangerous goods or articles of inflammable nature from:-

(i) The train locomotive, provided that when an electric (traction) or diesel (electric) locomotive is used, only one such carriage/ wagon need intervene between the wagons containing petroleum and other inflammable liquids, Class A, and the locomotives;

(ii) the passenger carriages or the brake-van; 1

(iii) any other carriages/wagons containing explosive or other dangerous goods or i articles of inflammable nature.

(4) Wagons containing petroleum and other inflammable liquids, Class B, need only be separated by one carriage/wagon not containing explosives or other dangerous goods or articles of inflammable nature from the train locomotive or the passenger carriages or the brakevan or any other carriages/ wagons containing dangerous goods or articles of inflammable nature, except that the number of such intervening carriages/wagons shall not be less than three when these other carriages/wagons shall not be less than three when these other carriages/wagons contain explosives and not less than two when they contain gases, compressed liquified or dissolved.

(5) Wagons containing petroleum and other inflammable liquides shall be close-coupled to the adjoining carriages/wagons and to each other.

(See also IRCA Red Tariff Rule Nos. 119; 213, . 314, 414, 514, 614 and 714).

**(C) Wagons containing other dangerous or Inflammable goods.**

For marshalling of wagons containing the following commodities, the relevant rules of IRCA Ft:d Tariff No 19 as indicated below must be observed:-

| Commodity | I.R.C.A.Red Tariff Rule No. |
|---|---|

| | | | |
|---|---|---|---|
| 1. | Gases | ... | 224.1 |
| 2. | Inflammable solids | ... | 425.1 |
| 3. | Oxidizing substances | .... | 524.1 |
| 4. | Acids and other Corrosives | ... | 626.1 |
| 5. | Poisonous (Toxic) substances | ... | 724.1 |

**6.16. Precautions to be observed in handling Explosives and other Dangerous goods.-**

(A) (1) Explosives:(see I.R.C.A. Red Tariff Rule No.117).

(i) No. unauthorised person shall be allowed access to any place where explosives are stored or handled or to carriages or wagons in which they are carried.

(ii) No person on, in or near any place where explosives are handled or stored shall have in his possession any match,fuses or other appliances for producing ignition or explosive or any knives or other articles made of iron or steel.

(iii) No person shall smoke or take or have any fire or naked light or any agency which produces heat or sparks, nor shall any other dangerous goods or other articles of inflammable nature or empties which have contained petroleum and other inflammable liquids be stored or handled.

(2) Gases, compressed, liquefied or dissolved under pressure, Petroleum and other inflammable liquids, inflammable solids and Oxidizing substances.

(See I.R.CA.Red Tariff Rule Nos. 212, 313, 413 & 513).

(i) No person shall smoke or have any fire, naked light, matches or other articles of inflammable nature or empties which have, contained petroleum or other inflammable liquids, or any agency which produces heat or sparks, near any vehicle containing gases, compressed, liquefied or dissolved, petroleum and other inflammable liquids, inflammable solids and oxidizing substances or near any place where such goods are stored or are loaded, unloaded or handled.

(B) Other precautions to be observed.

(i) The Trains Clerk shall make a special entry in red ink in the wagon way bill if any wagon containg dangerous goods is attached to a train.

(ii) The Guard shall intimate the Loco Pilot about. the number and position of wagons containing explosive or other dangerous goodS,if any, on the train.

(iii) The Guard shall draw attention of Trains Clerk/ Station Masters about the number and position of such wagons on termination of the train.

(iv) Wagons containing explosives and other dangerous goods shall not be loose,fly or hump shunted. The speed at which such wagons may be shunted shall not exceed 8 KM per hour.

**6.17. Stopping of goods trains outside Signals.-**

At certain station Goods trains are prohibited from stopping at the Outer/Home signal on account of steep rising gradient. A list of such station shall be notified by the

Divisional Railway Manager concerned to the staff of the Loco, Transportation, Engineering and Signal & Tele-com. Departments. In the Station Working Rules of such stations this will be mentioned.

If for any unavoidable reasons it becomes absolutely necessary to stop a train at the Outer/ Home signal of such station the following procedure shall be adopted:-

(i) On approaching such a station, Loco Pilots must bring their trains to a stand at the "STOP BOARD" fixed at the grade and the train will remain there till the signal is taken off or the train is piloted in.

(ii) Should the Loco Pilot be stopped on the up grade on account of signals not being given, the Guard will immediately apply his van brake.

(iii) Before' starting again, the Loco Pilot must decide whether he can safely move his train forward or not.

(iv) If he considers he cannot re-start his train without breaking a coupling or drawbar, he should back his train intact observing SR 6.04.02 and then if he is unable to proceed, . divide this train after having personally 4 seen to the pining down of sufficient . number of brake (SR 6.04.02).

(v) If he considers he can safely move foreward on the signal being lowered he must first allow his train to case back on to the brake-van, warn his Guard by sounding one long and one short engine whistle as per SR 4.50.01 (3)(b) and then start very cautiously. It is essential to avoid any jerk.

(vi) In all cases of such stoppage the Guard should make a special note in his Train Report (T.34 H F).

(vii) No backing is allowed on Automatic section, and as in SR 3.75.03.

**6.18. Stopping Goods trains out of course.-**

(a) To pick up Railway employee on duty.- No train may be stopped out of course without the permission of the Section Controller who will give a Control Order, correctly numbered. The Station Masters or the Assistant Station Master concerned will hand over to the Guard a memo giving the names and designations of the staff to be entrained and the Control Order No. The Guard will check the passes and make a suitable endorsement on the Guard's Train Report which will be checked in the Control Office with the Control Orders.

(b) To attach or detach wagons.- Normally no wagons will be attached or detached by a through train at rode-side stations. In cases of emergency such as breaches, floods, accident etc., however, wagons may be attached by a through train for a station at which there is no scheduled stoppage. In such cases the SM/ASM/ will give a memo to the Guard & Loco Pilot at the previous stopping station, requesting him to stop at the station named. Before advising the Loco Pilot and Guard, the SM/ASM must obtain order from Controller in this respect.

(c) Between stations for loading and unloading materials of any department during daylight hours only and in case of emergency.-

(i) The departmental Officer who requires the train to be stopped will inform the Divisional .Operations manager and the Chief Controller of the nature and extent of the work to be done, the place or places, and the probable time that will be occupied. The Divisional Operations Manager or the Chief Controller will then arrange and advise the officer of the date and train fixed, giving at least 24 hours' notice to enable him to provide the necessary labour. Only one such stop which should not normally exceed half an hour, will be provided for each train.

(ii) The Station Masters concerned on receiving the intimation of the arrangement, will issue a Caution Order to this effect.

(iii) Guards are required to enter all such stoppages in their train reports and record particulars as to kilometreage and time of detention.

(iv) Through Goods trains shall not be utilised for the purpose.

**6.19. Inability of Engine to keep time.-**

At any station, when a Loco Pilot finds that his engine through any defect is likely to lose time on the road, he must inform the Station Master and the Guard how much time in his opinion, will be lost in running to the next station. The Station Master will consult the Section Controller and will start the train or detain it as advised by the Section Controller.

**6.20. Inability of Engine to take full load.-**

(a) When a Loco Pilot is unable for any reason to take the full load he must give a written statement to that effect to the Station Master of the station where the wagons are refused. The Station Master must send the Loco Pilot's statement to the Divisional Operations Manager. The Guard must note the occurrence in his train report.

(b) In the case of an illiterate Loco Pilot who cannot write the Station Master should report, to the Chief Controller, the reasons verbally given by the illiterate Loco Pilot who at the next engine changing station, must report to the SSE/SE(Loco) his reasons for refusing the load.

(c) In case of failure of an engine from any cause at station the Loco Pilot shall, if the station is connected with Control phone, report the fact to the Power Controller personally, and inform him about the nature and cause of the failure. In case the station is not connected with Control phone, the Loco Pilot shall hand over the necessary message to the Station Master for despatch to the nearest Crew Controller and Power Controller.

**6.21. Assisting Engines.-**

Whenever an assisting engine for any reason has to be attached to a train, the following procedure shall be observed:-

(i) On section where double heading of engine is prohibited, an assisting engine shall be attached in the rear of the train.

(ii) On sections where double heading *of* engine is not prohibited:-

(a) An Assisting engine can be attached in the rear *of* a train for the purpose *of* banking. If however, the assisting engine has to run on long sections right upto the next

engine changing station or upto the destination of the train, it should be attached to the train engine and its hose pipe should also be connected to the hose pipe *of* the train.

(b) All bank pilot engines assisting trains moving over up gradients on specified sections (specified by DAM) covering one or more block sections should be attached in rear *of* the Last Vehicle of the train. In case *of* goods trains the vacuum/air pressure hose pipe *of* the engine will not be connected to the hose pipe *of* the last vehicle. But in case *of* passenger train continuity *of* vacuum / air pressure right upto the bank engine should be maintained for better banking.

In case *of* goods trains, when the vacuum/air pressure hose pipe *of* the banking engine is not to be connected to that *of* the last vehicle the co- ordination between train Loco Pilot and banking engine Loco Pilot while starting or stopping should be maintained by using the code *of* whistle specified in SR 4.50.01 and instructions given in SR to G.R.3.84.

Note:- See Appendix to Working Time - Table for the sections over which double heading is permitted. Assisting Engines to be attached along with Train Engines on Ghat sections when required.

**6.22. Work trains.-**

(a) Work trains are trains which run from one nominated station to another for supply and clearance of wagons to and from stations situated on the run of the trains, as well as for loading/ unloading of small consignments.

(b) These trains are formed at the starting stations with loaded and empty wagons booked to intermediate stations on the run. Normally the wagons shall be grouped in station order, these for the nearest station being next to the engine. .If there is room on the train after allowing for clearance enroute, wagons for the next terminal station and beyond may be attached mixed, but in one group, next to the brakevan. Long distance wagons shall not be attached to these trains unless otherwise ordered by Control.

(c) Wagons left behind by trains.- Station Master shall report to the Control, the number of all wagons not cleared by work trains with reasons and also all cases of wagons standing under load for 24 hours. If room is available, Guards shall not refuse to clear wagons even if no entry has been made in the Work Order. Loaded wagons must be cleared if it is necessary to detach surplus empties on the train for making room for loaded wagons and also if it is necessary in so doing to refuse the clearance of empties at some other station.

(d) The Station Masters of the road-side stations shall intimate the Section Controller about clearance of wagons and smalls from their stations. The Section Controller shall intimate the yard to leave room by shunting and van goods train to effect clearance from road-side stations. The Yard Master or the Station Master on duty shall hand over the Work Order to the Guard and the Guard shall intimate to the Loco Pilot the names of the stations from where clearance is to be done.

(e) At the commencement of the run, the Guard must study the composition of the train and the Sectional Work Order carefully and ensure that the work is properly planned so that there is no avoidable detention to the train and the work is completed within the prescribed time.

## CHAPTER -VII

# SHUNTING AND SECURING OF VEHICLES

### 7.01. Shunting- Miscellaneous rules on.-

(a) *Signals for shunting:-* General and subsidiary Rules 3.56, SR 3.56.01 and 3.56.2 should .be observed for exhibiting shunting signals.

(i) When two engines or vehicles are approaching the same pair of points from two different lines, or where there is like hood of this occurring, both should be brought to a stand by exhibiting danger signals and after ensuring both have come to a stop, the person in charge of the engine or vehicle, which it is intended to allow over the points first, must be told verbally first and then signalled to move forward; while a danger signal and a verbal order not to move must be given to the other.

(ii) Wagons with end flaps let down, if empty, must have their flaps put up before being shunted. -

(iii) *Vacuum Hose Pipe:-* (a) When un-coupling vehicles fitted with the vacuum brake-gear, the vacuum hose pipes must be placed on the dummy plugs before the screw coupling is unhooked.

(b) Care must be taken in shunting operations to guard against *screw* couplings hitting the vacuum " hose pipe couplings. The couplings of vacuum hose pipes when not in use must be placed on the dummy plugs provided for the purpose. If the couplings are allowed to hang down loose, the plugs are likely to be broken when struck by the screw coupling. The couplings, when not engaged are to be fixed on the hooks provided.

This matter must also receive the special attention of the staff engaged in shunting operations.

(c) On running trains the Guards will be responsible for ensuring that vacuum hose pipes do not hang loose, and when vehicles are being attached to a train the Guard must see that the hose pipes are properly secured in accordance with sub-para (b).

(iv) *Electrically fitted vehicles, shunting of.-* Vehicles electrically equipped should not be submitted to rough shunting of any description as such shunting may cause damages to galss cells.

(v) *Shunting of entire train or rear portion of . train.-* Whenever the entire train has to be shunted, and whenever it is necessary to shunt off the rear portion of the train, the brakes of all brake-vans attached to the trains, must be manned by train staff during these operations.

### 7.02. Shunting and Detention memo.-:-

(i) All shunting done by Loco Pilots will be recorded in the reverse of form T. 34 H.F.

(ii) For purpose of reference and check, Station Masters will make a note in their station diaries of . the shunting done at their stations. The number of the engine and also of the train and the time taken m for shunting should be recorded.

(iii) For statistical purposes the shunting hours of train engines shunting during the run, are requires to be devided between coaching and goods in the ratio of the number of coaching and

goods vehicles shunted. Guards must fill in the number of coaching and goods vehicles shunted by each train. The number of vehicles (both bogie and four wheelers) should be reckoned in units.

**7.03. Shunting done by train engines.-**

(i) *Shunting enroute with train engine.*- (a) For shunting performed by train engines before and after working trains at engine changing and terminal stations and at stations enroute, the actual time of shunting performed will be recorded on the reverse of form 1: 34. H.E ‘

(b) The time occupied in shunting is to count from the time shunting is commenced until shunting operations are completed.

When shunting operations cannot be started immediately on arrival of a train at a roadside station due to crossing of trains the time so spent should be included in “standing”.

***Examples :-*** (i) Train arrives at 4 hrs. and shunting begins at 4.10 hrs. and ends at 4.50 hrs. Shunting time of 40 minutes should be recorded.

(ii) If the shunting operations have to be suspended owing to the reception of another train in the yard, the broken period between the two periods of shunting is to be included but the cause and the time so lost should be noted in the remark column.

***Examples :-*** Trains arrives at 4 hrs, shunting commences at 4.1 hrs. stops at 4.30 hrs. and starts again at 4.50 hrs. and ends at 5.20 hrs. The shunting time to be recorded will be as follows:-

*Shunting:*- 1 hrs. 19 mts. Remarks-20 mts. Shunting suspended for crossing..... Up / Dn train.

(iii) *stopping of through trains out of course for shunting:-*

When a through train is stopped out of course at a roadside station unexpectedly and shunting has to be performed in an emergency, e.g.hot axle, shunting time is to be recorded as detailed in sub- . para(i) (a) above.

(iv) When a train has been ordered to run to an intermediate station (not an engine-changing , station or terminal station) for a return load, shunting time for the perio.d the engine is detained at the out station shall be recorded in the same way as in sub-para (i) (b) above.

(v) *Shunting by Diesel and Electrc Train locomotives.*-

Except in special circumstances like detaching hot-axle/sick wagons at a station, backing train at a station or purposes of stabling, placing the empty wagons at a station or siding where a shunting engine is not posted etc. shunting by Diesel and Electric Train Locomotives should be avoided.

**7.04. Shunting at engine-changing/terminal stations with train engines.-**

(i) Train engines may be called upon to do shunting on their own or other trains if required before departure from and after arrival at terminal/ engine-changing stations where shunting engines are provided in special cases. Shunting time must be recorded in accordance with para 7.03.

(ii) Three hours notice must be given to the JE (loco) when goods train engines are required to do shunting before the booked time of starting.

**7.05. Shunting at stations with engines specially provided for shunting.-**

(i) At stations where shunting engines have been provided specifically for performing shunting, the time must be given for shunting from the time the engine is in the traffic yard for shunting purposes, to the time the same is handed over to the Loco Shed, subject to a minimum of 3 hrs.for each separate time the engine is ordered out and taken charge of by the Traffic department deducting the time spent on other duties. The scheduled time allowed for loco requirements in traffic yard should not be deducted from shunting time. The time spent on other duties such as on repairs to loco, time spent for placement of loco wagons in Loco Shed and such other duties should be deducted from the shunting time.

***For examples:-*** (a) Shunting engine made over to traffic yard (bahar line) at 6 O' clock and returned to Loco Shed at 18 hrs. Which took 30 mts. time for loco requirement, will get shunting time for 12 hrs.

(b) If the same engine takes one hour for repairing, the shunting time will be given for 11 hrs. 30 mts. after deducting 30 mts. extra for loco requirements.

(c) If the shunting engine takes one hour time for loco requirements and if the same engine is utilised for placement some wagons inside the Loco Shed for 0.5 an hour the shunting time will be given for 11 hrs.

(ii) *Record of shunting engines entering and leaving Traffic yards.*- (a) In order to record the correct time shunting engines arrive at and Traffic Yards a Shunting Engine Journal will be made over by.the SSE/SE/JE(loco) to the Loco Pilot of the shunting engine when it leaves shed for the traffic yard.

(b) on this form the following detailed should be mentioned:-

(i) The time the engine left shed.

(ii) The time the engine arrived the Traffic Yard (Bahar line).

(iii) The time the engine left Traffic Yard (Bahar line).

(iv) The time the engine returned to Shed

(c) The time of arrival at or departure from the Traffic yard will be the time the engine passes the Loco limit Board on its way to or from the Traffic Yard and Assistant Yard Master/Yard Master on duty will be responsible to see that the timings are accurately recorded in the Shunting Engine Journal.

At large stations Bahar line Time Keepers may be provided, if necessary.

(iii) At stations where shunting engines are provided, the SSE/SE(Loco) or the Crew Controller will send a requisition to the Station Master/Yard Master every morning, showing the shunting memos yet to be received for the work done upto mid-night of the previous day. On receipt of this requisition, any shunting memos that may be due should be sent to the SSE/SE(Loco) at once.

**7.06. Shunting engines used by Engineering Departments.-**

At stations where special shunting engines are kept for traffic purposes, they can be utilised by the Engineering department under the following conditions:-

(a) Shunting engines may be used by Divisional Engineers when not required for traffic purposes by mutual arrangement between- the Sr. Divisional Operations Manager and the Sr. Divisional Engineer.

(b) The charges per hour will be notified from time to time. Fractions of an hour should be rounded off to the nearest quarter hour e.g. 1 hour 10 mts., 1 hour 35 mts. should be rounded off to 1 hour 15 mts.1 hour 45 mts. respectively.

(c) If a Divisional Engineer orders a shunting engine for his work for, traffic purposes he will have to pay the usual ballast train charges.

**7.07. Loose shunting.-**

(i) (a) Station Masters and Yard Masters and other staff connected with shunting must see that wagons containing explosives and other dangerous goods and wagons bearing damageable goods label/labels with symbol "Handle with care" are not loose or fly shunted under any circumstances.

(b) While performing shunting with wagons containing explosives or other dangerous goods at least one wagon must intervene between the shunting engine and the wagon / wagons containing such commodities.

(ii) When these loads are attached to a train they should be attached ahead of the Brake-van.

(iii) When a train, to which such wagons are attached has to be broken up in a flat yard, these wagons shall first be attached and after the rest of the wagons has been sorted, these loads shall be placed last by the shunting engine in rear of the rest of the loads.

(iv) In dealing with a train load with explosive or other dangerous goods wagons in formation, the wagons loaded with explosives or dangerous goods should not be hump shunted but when the rest of the load has been humped, these wagons shall be attached by the shunting engine in rear of the outgoing formation.

**7.08. Securing of vehicles at stations.-**

(a) (i) Station Masters must ensure that adequate stock of sprags, safety chains and pedlocks as prescribed by special instruction are available at their stations and must see that all vehicles are properly secured according to General and Subsidiary Rules 5.23 and the wagons do not foul adjacent lines.

(ii) No Safety chain, unless in perfectly good order and seven *I* fifteen feet or 2/4 metres in length, is to be used for securing vehicles. The Safety chains, should be inspected periodically and defective chains should be replaced.

(iii) *How to use* a *sprag:*- A sprag should passed through the axle guard and between two spokes of a wheel in which a manner that it may not slip out.

Vehicles fitted with disc pattern wheels which connot be sucessfully spragged should be secured by safety chains where rules require spragging of such vehicles.

(b) *How to use safety chains on certain types of vehicles:*- If the wheels have no holes in them the safety chains should be passed through the angle formed between the axle guard and axle guard stay rod:

**7.09. Securing of vehicles in siding and on lines handed over to the Engineering department for exclusive use.-**

(i) (a) The Engineering department will be held responsible for the securing of vehicles in sidings and on lines which have been handed over to them for their exclusive use.

(b) The Engineering department should also supply their own chains, padlocks, sprags, wedges etc. for the securing of such vehicles.

(ii) When handing over and taking over any siding, lines or portions thereof to and from the Engineering department, a joint message must be issued and to be acknowledged by both the departments.

(iii) (a) No wagon should be placed on the line handed over to the Engineering department except in the presence of a representative of the Engineering department of a rank not lower than Permanent Way Supervisor.

(b) The Engineering representative must test the hand brakes of the wagon / wagons at the time of taking over the wagon/wagons. Should any wagon/ wagons be found to have hand brakes not in good order he must not refuse to take over such wagons for this reason but he must take adequate extra precaution in regard to the securing of such wagons by spragging and chaining.

**7.10. Securing of vehicles in industrial sidings, colliery sidings etc.-**

(i) Users of assisted and private sidings and outlying railway sidings are responsible for the safety of the vehicles placed at such sidings intended for them (for loading or unloading) and the derailment or damage.

(ii) The responsibility of the user begins from the time the railway locomotive leaves the sidings after placing the vehicles. The user's representative will thereafter take necessary precautions.

(iii) During the season when storms are prevalent the users shall adopt the following special precautions:-

(a) The hand-brake of all wagons must be firmly applied and the levers pinned down.

(b) The end vehicles should be secured by safety chains.

( c) Hand shunting should not be performed during storm.

(d) Doors of covered wagons should not be kept open during a storm.

(e) Before commencing hand shunting the hand brakes of the wagons must be tested to see that they are in good working order. If not, men with sprags/ wedges should be deputed to prevent any vehicle getting out of control. Before hand shunting it must. also be seen that no one is taking shelter under the vehicles. A responsible person must always supervise hand shunting.

(f) Wagons should not be uncoupled unless required to be moved. Before uncoupling wagons the hose pipes must first be uncoupled placed on their dummy plugs.

(g) particular care must be taken to remove the chajns and sprags before the wagons are coupled up to the train. The user's representative will remove the chains and sprags if any used just before the railway engine enters the siding but the brakes of all the wagons must be kept on. He must also see that there is no one either under the wagons or in any position where he is likely to be injured by the movement of the wagons.

(iv) Procedure for securing of vehicles and precautions against accidental escape as indicated, above should be incorporated in the working procedure of siding as appendix to **SWR** and copy of the Appendix should be sent to siding authority for taking necessary precaution.

## CHAPTER -VIII

# MATERIAL TRAIN

**8.01. Application for Material train.-**

(a) Applications for Material trains working on open line are to be made by Divisional Engineers or Divisional Electrical Engineers (Tr.D) to the Senior Divisional Operations Manager / Divisional Operations Manager; such applications must contain the following information :-

(i) Date, hour and station at which work is to commence.

(ii) Number and class of wagons, exclusive of brake-van, required.

(iii) Limits between which the train is required to work until further notice.

(iv) Name, etc. of the Engineering/Traction official under whose orders the train will work. (v) The name the SE/JE (P. Way) or the SE/JE (OHE) who will examine the train with the SE / JE (C&W) before it commences work.

(b) As far as practicable, a Material train should commence its first trip from, and be finally cancelled at a terminal station or at a station having a loco shed.

(c) For each Material train, a suitable programme should be drawn up by the Divisional Engineer/ Divisional Electrical Engineer (Tr. D) in consultation with the Divisional Mechanical Engineer and this should be supplied to the Senior Divisional Operations Manager at least a week before commencement of work.

(d) The Divisional Engineer or the Divisional Electrical Engineer (Tr.D) will also furnish to the Senior Divisional Operations manager / Divisional Operations Manager a programme for the following quarter a month in advance of the quarter i.e. on the 1 st December for the period January-March, on the 1 st March for the period April-June and so on.

**8.02. Ordering and cancellation of Material trains.-**

(a) The Senior Divisional Operations Manager/ Divisional Operations Manager will issue orders for the working of the Material trains and will intimate the Divisional Engineer or the Divisional Electrical Engineer(Tr.D) and those named by him in his application for the train, with copies of these orders.

(b) The Senior Divisional Operations Manager/ Divisional Operations Manager will also issue orders for the final cancellation and disposal of Material trains on the requisition of the Divisional Engineer or the Divisional Electrical Engineer (Tr.D) only.

(c) The traffic department may utilise the engine, brake or vehicles of Material trains for emergent purpose, but if the Senior Divisional Operations Manager / Divisional Operations Manager requires the wagons for public traffic, he must give the Divisional Engineer or the Divisional Electrical Engineer (Tr.D) 7 days notice of his intention to cancel the train.

(d) When it is necessary to cancel a Material train temporarily on request of Engineering / Electrical department, the Guard at the request of the Material train official-

in-charge, will inform the Sr. Divisional Operations Manager, Train Ordering officials, JE(Loco), Divisional Engineer or Divisional Electrical Engineer (Tr. D) and other officials concerned as follows:-

"Material train No..... temporarily cancelled on..... (date) and will probably resume work on .....(date)."

(e) When Material train is cancelled for 48 hours and under, at a station nearer to an engine- changing station than its headquarters, the engine should be run light to the nearest engine-changing station, the Engineering department or Electrical department as the case may be, being debited, with the kilometreage.

(f) When a Material train is cancelled for more than 48 hours the engine should be run light to its own headquarters station and run back light when required again, both trips being debited to the Engineering or the Electrical department as the case may be.

(g) *Guard's report:-* Guards of all Material trains must submit a Train Report to the Senior Divisional Operations Manager/Divisional Operations Manager daily, giving the number of the wagons. Each trip must be shown separately.

(h) The Material train Guard must, at the close of the day's work, programme for the next day's work in consultation with control and the Material Train Controller where there is one. Such programme shall not be cancelled excepting in emergency, so that labour may not be wasted.

The working hours of the Material train shall be so arranged that the train can complete the work and return before night fall to the station at which it is to be stabled in accordance with Material train programme.

Statistics of the daily work done shall be maintained by the Material train Controller so that a watch can be kept on the utilisation of Material train.

(i) *Material train- Contents of vehicles.-* Guards working Material trains should note in the remarks column of their reports the description of the materials carried in the train. The note should be made thus:-

1. Trucks sand.
2. Wagons wooden sleepers.
3. Trucks moorum ballast.
4. Wagon bricks.
5. Trucks bridge girders and so on.

(j) The Senior Divisional Operations Manager / Divisional Operations Manager office while preparing the Material train bill should reproduce these particulars in the remarks column against each entry in the bills.

**8.03. Loco requirement and carriage examination.-**

Unless it becomes absolutely necessary a Material engine shall not be allowed to go to shed for *loco* requirement before completing a fortnight's work. This interval however is not rigid and has to be fixed with other considerations in view also like the examination of rolling stock and the periodic rest of labour. The date should be so fixed

that all these items do fall into each other thus preventing idling of the loco or wastage of labour.

**8.04. Working of Material train.-**

(a) A Material train shall have sufficient vehicles fitted with hand brakes to control the train, taking into consideration the ruling grade on the section it is working on. Each brake-van or hand braked vehicle shall be attended by a person competent to apply the hand brake in case of train parting. A brake-van shall always be attached to the rear of the train except in emergent circumstances and in such cases SR 4.62.06(d) shall be followed.

(b) The Material train Guard shall be responsible for seeing that the brakes of all vehicles on his train are applied as necessary. When working on sections of the line where the gradient is steeper than 1 in 150, the Loco Pilot before moving his train, shall see that sufficient number of hand brakes have been applied to enable him to control his\train.

(c) A Material train containing labourers shall not be allowed to run or work on line during fog or after sunset, except for the purpose of proceeding to the first station where stabling accommodation is available or when proceeding to attend an accident. Night working of a Material train with labourers may, however, be permitted with the personal approval of the Divisional Railway Manager (See G & SR 4.62.03).

**8.05. Oil for Material train lamps.-**

Oil for Material train lamps should be supplied by ordinarily at the starting station and in any emergency may be replenished at other stations on the passing of a receipt, for the quantity drawn by the Guard or the Loco Pilot, to the Station Master. The Station Master shall send a report to the Senior Divisional Operations Manager / Divisional Operations Manager who shall raise debit against Mechanical branch for the oil supplied by the Traffic branch.

**8.06. Joint Inspection of Vehicles.-**

(a) Before a train commences work, and after completing work when finally cancelled, a joint examination of all wagons will be made by the SE/ JE(C&W) and the SE/JE(P.Way) or the SE/JE(OHE) concerned; both of them will sign the report which is to be submitted to the Divisional Mechanical Engineer or to the Divisional Electrical Engineer as the case may be. .

(b) (i) Whenever a Material train happens to be or is stabled at a Train Examining station it will be examined daily in the same manner as any other train arriving there. The examination will be made by the SE/JE(C&W) in conjunction with the authorised representative of .the Engineering branch or the Electrical branch and the SE/JE(C&W) will enter any damages discovered in the joint Register memo, the duplicate copy of which will be forwarded to the Sr. Divisional Mechanical Engineer’s office or the Sr. Divisional Electrical Engineer’s office. The examination and adjustment of brakes must be made at least once in a week.

(ii) in addition to the above examination, all material trains will be worked to a train examining station once in every month, as far as possible, for through examination and repair.

While the responsibility for this purpose will devolve on Sr, DEN (Line)/DEN or Sr. DEE/DEE concerned, who will arrange to get it done regularly in conjunction with the Sr, DME/DME, it is the responsibility of the Sr. DOM/DOM to see that the train is moved within the quickest possible time and it is the responsibility of the Sr. DME/DME to see that the detention for train examination does not exceed 24 hours. The same procedure as laid down in paragraph (b) (i) above will be adopted for recording damages.

(c) Whenever there is an interchange of a vehicle or vehicles between the Engineering or Electrical and Traffic departments, the SE/JE(P.Way) or the SE/JE(OHE) shall advise the SE/JE(C&W) concerned to enable the latter to jointly survey the vehicles before the interchange takes place.

(d) After the usual joint examination by the Train Examiner and the SE/JE(P. Way) or the SE/ JE(OHE) of a Material Train, when the material train is no longer required, the SE/JE(C&W) will enter any damages discovered in the Joint Register memo and label and mark the wagons requiring repairs, giving intimation of the same to the Station Master concerned, who will then arrange to work the wagons into Carriage and Wagon Depots in groups as room on trains permit.

(e) The cost of repairs to Material wagons should be charged to Abstract 'C'- Carriage and Wagon expenses.

(f) The charges to be billed against the Engineering branch or the Electrical branch for a Material Train should include the cost of repairs based on estimates in Abstract

Note :- When the brake -van of a Material train is being examined as required by the above rule, the Material train Guard must be present at the examination and sign the report as to the condition of the brake-van.

**8.07. Charge for damages.-**

The Engineering or Electrical branch will accept all charges raised by the Mechanical branch (carriage & wagon) for damages done to wagons which have been in commission on Material trains and will recover the cost of damages accepted from the Material train contractor concerned.

**8.08. Charges for supply of rolling stock.-**

The rate to be charged for supply of rolling stock will be as laid down in I.R.C.A. Goods Tariff.

**8.09. Material train bills.-**

(a) The Guard's Train Report will be the sole authority for the preparation of Material train bills and the time for which it shows the train to have worked must be accepted as final, Guards of :: Material trains must submit the following documents:-

(i) *To the Engineering representative present:-* Two copies of report on Form ED 9-11.

(ii) *To the Senior Divisional Operations manager/ Divisional Qperations manager concerned:-* Two copies of report form T.34 HF (New).

(iii) *To the Loco Pilot of the Material train:-* Two copies of report on from T.34 HF(New) for transmission of one copy to the Statistical Officer through the SE/JE(Loco) concerned.

(b) An abstract on the Train Report in the form below must be signed by the Loco Pilot and Mater Material Train official-in-charge as well as by the Guard:-

Train Commenced work at.....

Engine ordered to drop at .....

or

Engine released to go to shed at.....

(c) The Material train bills will be prepared in the office of Senior Divisional Operations Manager/ Divisional Operations Manager on form OP/T470 monthly in triplicate by carbon process, one copy being sent to the Accounts Officer concerned and two copies direct to the Divisional Engineer or the Divisional Electrical Engineer (Tr. D) concerned.

**8.10. Material train running through.-**

A Material train running from one station to another without stopping in the Block Section or at intermediate stations enroute runs in respect as a Goods train.

**8.11. Material trains working on Ghat section and on other sections on which heavy gradient of 1 in 400 and steeper exist.-**

Material trains when working on such sections are to have their engines below them i.e. at the end of the train in the direction in which grade falls.

**8.12. Combining the different works by the same Material train.-**

To get maximum use out of a Material train ~
working on a section and to avoid movement of Multiple Material trains on the same section, the Senior Divisional Operations Manager/Divisional Operations Manager shall in consultation with the Divisional Engineer and the Divisional Electrical Engineer (Tr. D) plan out the different works to be
undertaken in the same section by one Material train, .
to the extent possible. The Guard of the Material train shall in such case record specifically in their Train Report the particulars of work done on account of different department and ,the time spent on each. The Divisional Railway Manager's office shall allocate to the different departments the Material train charges on the basis of the time spent on the different works,any residue being debited to the department at whose instance the Material train is commissioned.

**8.13. Provision of First Aid Box on Material train.-**

Material train which programmed to work with labour should be provided with First Aid Box with approved contents, Train Inspector will ensure that it carries the First Aid Box; and the Guard of the Train will also see that the First Aid Box is carried on Train.

**8.14. In addition to the rules of this Chapter, the General Rules 4.62, 4.63, 4.64 and SR thereto shall also be observed for working and running of Material train.**

## CHAPTER -IX

# TROLLIES AND HEAVY DUTY ON TRACK TIE TAMPERS

**9.01. Introductory.-**

Rules and instructions contained in this Chapter are ancilliary to General and Subsidiary Rules 15.18 to 15.23.

The following rules shall be followed for conveyance of push and motor trollies:-

(a) No motor or push trolly shall be carried by Mail and Express trains save with the permission of the Divisional Operations Manager.

(b) Loading / unloading of Motor or Push trolley may be allowed by Super express, Express or Crack Goods trains at stations where schedule halts are provided for such trains and the loading / unloading must be completed within the Schedule halts.

(c) In Narrow Gauge sections motor or push trollies may be loaded / unloaded on or from any train at any station if loading / unloading can be done within the schedule halt.

( d) Trollies must not be placed on the top of Parcels, luggage or goods and must be removed if the space occupied is required for booked traffic of any kind.

(e) Should Guards refuse to take trollies for any reason, the Station Master must, after satisfying himself that there is no room in the brake-van or other vehicle, take charge of the trolly and send it by the next train. If he finds that there is room in the train, the trolly must be loaded and the matter reported to the Divisional Operations Manager.

**9.02. Loading of Motor trolly with petrol.-**

When loading a motor trolly with petrol in the tank, rules 328.1 & 328.3 of the Red Tariff as applicable to motor vehicle should be adhered to by the trolly holder:-

Quantity of petrol not exceeding 9.00 litres may ,be left in the tank of Fairmont type motor trollies and 4.5 litres in the tank of Royal Enfield type motor trollies provided that:-

(i) the flow of petrol to the carburettor has been cut off;

(ii) any pressure has been released from the tank;

(iii) the tank is in sound condition and closed by a well fitting cap; and,

(iv) the engine has been run by the person incharge untill the carburettor has become exhausted and the engine stops automatically.

**9.03. Use of trollies by non-railway Government officials.-**

(a) A non-railway Government official permitted to travel on a trolly as a passenger will be required to execute a stamped Indemnity Bond in the prescribed form described below.

(b) Contractors and their agents may be conveyed on a trolly in connection with works, provided they have executed Stamped Indemnity Bond similar to the one mentioned below.

Indemnity Bond in connection with the permission granted to travel on a Railway.

.....Trolly.

In consideration of my being granted permission to travel between..... and .....on South East Central Railway trolly, I..... hereby, undertake and agree that the railway shall be free from all responsibility for any delay or detention or for any injury or loss to me or to any property or liability of whatsoever kind accompanying me occasioned during the journey for which the permission is granted or whilst I am or the said property is within Railway limits.

I further undertake that I shall not interfere with or obstruct..... in his duties and shall obey all reasonable direction he shall give me to be subject to the bye-laws and other general regulations of the Railway.

I further undertake to indemnify and keep indemnified and save harmless the Railway Administration for and against any loss of or damage to the property of the Railway through an act or omission or my part or on the part of my agents or servants while so travelling on the trolly.

Dated..... Name .....

Witness:- Designation.....

1 ..... Address .....

2 ..... .....

**9.04. Procedure to be followed before allowing a motor trolly to enter Block section.-**

(a) When a motor trolly holder required an "authority to proceed" into a Block section, he must apprise the Station Master whether the trolly will proceed direct or stop in mid-section for the purpose of inspection etc. before granting line clear the Station Master shoulp take care to see that the Section Controller is advised and his approval obtained.

(b) Should it be necessary to stop in the section, the Station Master must be informed how long it will take the trolly to clear section and the Station Master should in turn advise the Section Controller. The Officer-in-charge of the trolly will be responsible to see that the time allowance agreed to by the Section Controller is not exceeded.

**9.05. Rules for driving and operating Heavy Duty On-Track Tie Tampers.-**

(a) ***Description:-*** *(i)* The Heavy Duty on-Track Tie Tamper machine has been specially designed for packing of ballast, travelling and lining the Track during maintenance as well as track renewals. This is a 4-wheeled self-propelled which having the following units- Tamping, Track lifting, levelling and living unit. It is fitted with a powerful electric head light and two parking lights on either sides. Efficient push button horns are provided at several suitable points. These horns will give a warning if anything is wrong with the machines also a red light indication will appear on the driving dash board. One powerful swivelling light is provided on the tamping unit to facilitate tamping work during night. The vehicle can run both forward and backward. This is also provided with a turntable and set off equipment and with the help of the same, the machine can be turned 1800 in both directions. The unit can run both by day and night. at a maximum speed of 40 KMPH either engine or tamper foremost, subject to any other lower speed restriction in force. The speed over points and crossings must not exceed 15 KMPH.

(ii) The Heavy Duty on-Track Te Tamper machine shall be treated as Train for all proposes and shall run under the system of working applicable. The unit shall display marker lights in the direction of movement as prescribed in G & SR Nos. 4.14, 4.14,01 to 4.14.03.

(b) *Supervision:-* The Heavy Duty on-Track Tie Tamper machines will work under the direct supervision of an Engineering official not below the rank of JE(P.Way), who will be responsible for taking the traffic block and for protection of the line while the work is in progress. While the machine will be in overall charge of a Foreman-in-charge, each machine will be in direct charge of an operator. This complement of staff with each machine will normally be, one Operator, one Chargeman, one Machanic and one Khalasi. The unit must not be normally attached to any train or light engine and will run without any other unit or vehicle attached. Before starting, the Operator should ensure that the machine is in a sound condition to run i.e. with good breakpower, adequate fuel and running and working gears in good condition. The Operator of the unit must be a qualified person competent to hold charge of the machine on the main line and also certified to be qualified in the rules and actual driving and working of the unit efficiently. The operator must be conversant with the section over which the unit has to run or work.

**(C)** ***Competency certificate for persons authorised to drive Heavy Duty on-***Track Tie Tamper Machine.- No person shall be permitted to drive a "Heavy Duty on Track Tie Tamper" macine unless he has satisfied the following conditions:-

(i) He has passed a written and oral examination. The Divisional Railway Manager may himself examine the applicant for this purpose or authorise a competent officer under him to do so, both for the oral and written examinations.

(ii) He holds a competency certificate issued by the Divisional Railway Manager to the effect that he has passed written and oral examinations.

(iii) Such Competency certificates should be revalidated by the Divisional Railway Manager every three years after holding' written and oral examinations in the same manner as in the case of issuing a new certificate.

(iv) The above certificate should indicate that the Operator / Loco Pilot is throughly acquainted with the rules a safe working and has passed an examination on this Railway.

(v) He should possess a certificate of medical fitness under A3 category.

**(d)** ***Equipment :-*** The following equipment should be carried by the Operator-in-charge of the unit.-

(i) One copy of combined General & Subsidiary Rules book.

(ii) One copy each of Accident Manual and Operating Manual.

(iii) One copy of Working Time Table.

(iv) One Portable field telephone (for electrified and non-electrified sections separately).

(v) One watch.

(vi) Three green hand signal flags. and

Three red hand signal flags in a case

(vii) One pair of red and green slides.

(viii) Two (tri,.colour) hand signal lamps.

(ix) One tail lamp.

(x) 12 detonators.

(xi) Two banner flags.

(xii) One powerful electric torch.

(xiii) One padlock with key and chain.

(xiv) One pair of spare spectacles-if permitted to use glasses.

(xv) Such other equipment and stores as may be prescribed by the Engineering Depatment.

**9.06. Working of Heavy Duty on-Track Tie Tamper machine:-**

The Heavy Duty on-Track Tie Tamper machine shall be considered as a train as per G & SR 1.02 (58)

**(a) When the Heavy Duty on-Track Tie Tamper machine is required to work between two Block stations, the following procedure must be followed :-**

(i) The person-in-charge of the unit, must inform the Station Master in writing, where he intends to stop in the mid-section for packing and levelling work and whether he will proceed to the next station or return to the starting station. He must also mention the time required in section i.e. total time including transit to and from and the working time. A caution order will be issued to the incharge of each machine wherein the Station Master will notify the time at which the Block Section must be cleared and whether the unit will proceed to the next Station or return to the starting station. Separate “authority to proceed” must be given for each trip. Time will be checked by the person-in-charge with the Station Master before leaving for the Block Section. The Station Master will varify that the block is given according to the Green Notice issued by the Divisional Operations Manager. On double/multiple line sections, the trains running on the adjacent lines should be cautioned by the Station Master by a Caution Order to the effect that Heavy Duty on- Track Tie Tamper machine is working on the Up/ Down line as the case may be. The exact site of work, if known should be mentioned in the Caution Order. The person-in-charge of the unit must ensure this and he will be responsible to see that ‘the adjoining line is not fouled at any time during the course of tamping and levelling operation. In case of fouling, he must immediately arrange to protect the adjoining track as per GR 6.03.

When Heavy Duty on-Track Tie Tamper is *I* are required to remain stationary between two stations for any time exceeding 15" or while working, it/they must be protected by red banner flags stretched across the line between poles not less than1.52 metres in height. Such banner flags must be placed at an adequate distance on either side of Heavy Duty on-track tie tampers as specified in GR 15.09(1 )(a).

(ii) On arrival at the station, the person-in-charge of the unit must sign the Complete Arrival register, if necessary, in token of complete arrival of the unit or units of Heavy Duty on-Track Tie Tamper.

(iii) On arrival of the Heavy Duty On-Track Tie Tamper machine at the block station after completion of work the person-in-charge shall certify that the Heavy Duty on-Track Tie Tamper machine has arrived complete and the section is clear of all obstructions.

(iv) Before sending the "train out of section! block removal" report the Station Master shall satisfy himself by seeing the last vehicle indicator and by obtaining from the person-in-charge a written certificate of the complete arrival of the Heavy Duty on- Track Tie Tamper machine as described in para 9.05(a) (i) that it has arrived complete and the Block section has been cleared. In case of working of two or more machines, this should be ensured for each machine.

(v) Not more than 5 such machines shall be allowed to work between two block stations at a time.

(vi) Before allowing such machines to work between block stations, the Station Masters of both end block stations shall exchange messages with complete particulars regarding working of all the machines supported by private numbers. Station Master shall also exchange message supported by private number with the Cabin Master or CLM, to this effect at the station where end cabins are provided. All necessary safety precautions shall be taken at both end stations to prevent entry of trains in to the concerned section during the working of these machines, such as, using lever/button collars, setting of points against the blocked line and making suitable entries in red ink in TSR and station diary.

(vii) The following authority to proceed shall be handed over to the Loco Pilot of the machine; when only one such machine is allowed to work between two block stations:

When working on double line section, the section shall be blocked forward or blocked back as the case may be as per GR 1.02(8) & (9). The authority to proceed for the leading machine shall be the caution order itself as mentioned in item (i) of this clause with the following endorsement:

"The section between ……(station) and…….. (station) has been blocked back/ forward. Private Number obtained from the other end block station is……"

When working on a single line section, the leading machine shall be given the Authority to proceed as per the system of working in force.

**(b) Working of two or more units of Heavy Duty on Track Tie Tamper in one block section at a time:-**

It is permissible to allow two or more such machines to work in one block section at a time under the following procedure subject to the observance of all other relevant instructions as mentioned in item (a) above.

(i) The leading machine shall be given an authority to proceed as per instructions contained in item (vii) in clause (a) of para 9.06.

(ii) The second or subsequent machines may be allowed on the authority of block ticket, i.e. T/C 602(B) or T/C 912, as the case may be. A cautuon order indicating the programmes of the machines clearly, i.e. number of machines working with location of each and instructions given to each of such machines, whether to proceed to next station or return to the same station etc. shall be handed over to each machine along with the Block Ticket.

(iii) The Person-in-charges of the machines will personally supervise the movement by travelling in the machines to keep the same at a minimum safety margin of 180 m. in the same direction.

(iv) To and from movement of the machines while moving to and from the site of work is not permitted.

(v) Caution Order as indicated above shall be handed over to the Person-in-charge of each machine and their acknowledgement obtained. Similarly, the Block Ticket should be issued to the Person-in-charge of second or subsequent machine obtaining their acknowledgement.

(vi) Before issuing Block Tieket for the second or subsequent machine, the SM on duty of the sending station must obtain the details of kilometreage from the Person-in- charge where each machine will work, exchange message with the SM on duty at the other end of block section with private numbers. The Person-in-charge must exercise vigilance and look out for safe running and working of the machine in all respects.

(vii) SM on duty at both the station should make a suitable entry in train register in red ink for second or subsequent machine(s) in addition to normal entry of the leading machine.

(viii) At stations provided with end Cabins and worked by SWM/CLM, the SM on duty at the station must intimate the SWM/CLM under exchange of Private Numbers regarding the working of 2nd and 3rd machine(s) on Block Ticket(s).

(ix) On arrival of the Machines at the station, the SM on duty must obtain signature of Person-in-charge on the complete arrival register in token of complete arrival of the units and the section is clear of all obstructions.

(x) On Single line section, the authority to Proceed (a Token or line Clear Ticket) must be handed over to the Person-in- charge of the leading machine and he must not hand over the authority to Proceed on arrival at the station on completion of work, till such time the second or subsequent machine(s) has / have arrived complete.

(xi) Before sending the "Train out of section/ Block removal report", the SM and Cabin Master on duty (where provided) must satisfy that all Machines have arrived complete, Block Ticket(s) collected and cancelled and, assurance of Person-in-charge is taken as indicated in item (ix) above.

**(c) Working procedure for Heavy Duty on- Track The Tamper in automatic signalling system-**

(i) Automatic signalling system between the proposed stations of work should be suspended by the SMs on duty under exchange of messages with private numbers ensuring the section concerned is clear of all trains and in consultation with the section controller.

(ii) Procedure indicated in clause (a) and (b) above shall be followed except that on single line, the leading machine shall be allowed with a 'Paper line clear ticket'. The SM of sending -station will take line clear from the SM of the station at the other end of the section concerned before issuing the PLCT.

(iii) 2nd and subsequent machines may be allowed to work as per the procedure indicated in item(b)(ii) above.

(iv) Normal working should be resumed on completion of work under exchange of messages with Private Numbers after taking assurance vide item (ix) and (xii) of (b) above.

(d) (i) The Operator shall be responsible to see at the time of commencement of the journey that the Heavy Duty on-Track Tie Tamper machine is fit in all respects to undertake the intended journey i.e. its brakes and horns are in efficiently working order and the equipment as detailed in para (d) of Rule No. 9.05 are complete and in good order. While approaching level crossings and curves, horns should be freely sounded to warn pedestrains, cattle etc.

(ii) No Heavy Duty on-Track Tie Tamper machine should work on the line during fog, dust-storm or in such weather / conditions as impair the visibility and prevent a good lookout being kept.

(iii) Heavy Duty On -Track lie Tamper machine shall, as far as possible, be kept stabled at a point nearest to the site of work so that unnecessary and idle running of Machine is avoided.

**9.07. Control of running and stabling of Heavy Duty on-Track Tie Tamper Machine.-**

(a) The running and stabling of a Heavy Duty on-Track tie Tamper machine shall be arranged by the Station Master in consultation with the Section Controller. In case of suspension of control working the Station Master in consultation with the Station Masters of adjoining station shall, arrange running of Heavy Duty on-Track Tie Tamper machine provided that no trains are detained.

(b) The Heavy Duty on-Track Tie Tamper machine shall not be permitted to work during total interruption of communication.

(c) Whenever Heavy Duty on-Track Tie Tamper machine is in a running line at a station, the mechanical hand brake shall be applied and the machine shall be securly chained to the rails in accordance with General & Subsidiary Rules 5.23. Lever collars must be used as per General and Subsidiary Rules 5.04.01.

(d) No unauthorised person shall be allowed on the Heavy Duty on-Track Tie Tamper machine.

(e) In case of machine is stabled in the siding, in addition to securing of the same as mentioned above, the siding points should be set in their normal position, clamped and padlocked. Key of the padlock should be kept with the SM on duty. No shunt movement should be allowed over the machine when stabled.

**9.08. Shunting movement.-**

The unit shall not be moved into/from or inside the traffic yard without the written authority of the Station Master on duty and unless hand signalled by traffic staff.

**9.09. Accidents.-**

Failure of the Heavy Duty on- Track Tie Tamper machine and other accidents shall be treated in the same manner as train accidents and action taken as described in Chapter-VI of General- and Subsidiary Rules and in the Accident Manual.

**9.10. Failure of Heavy Duty on-Track Tie Tamper machine.-**

In cases of failure of a Heavy Duty on-Track Tie Tamper machine in a Block Section the Person- in-charge, may decide to push the disabled unit to the nearest station provided the brake power is in good condition; otherwise intimation should be sent to the nearest Station Master

through a special messenger and to control through portable telephone asking for a light engine to tow the unit from the engine end by means of chain so as to clear the section.

In the event of break down, the unit must be protected as per General & Subsidiary Rules 6.03.

The speed of the locomotive when hauling a Heavy Duty on-Track Tie Tamper machine shall not exceed 15 KMPH on straights and 10 KMPH, on curves.

On arrival of the Heavy-Duty on-Track Tie Tamper machine with the locomotive at the nearest Block Station the Person-in-charge must certify in writing that the Block section has been cleared and nothing has been left over to cause obstructions.

# CHAPTER -X
# MARSHALLING YARD

**10.01. Introductory.-**

A marshalling yard consists of a net works of tracks divided into several grids for receiving, sorting, forming and despatching of trains. Facilities for transhipment, repairs to wagons marked sick, lines for stabling of brakevans, special type stock, etc are also provided. Certain yards where trains are only received and despatched without much sorting or marshalling are called mid-terminal. yards as distinct from marshalling yards. On the other hand terminal yards are yards where trains originate or terminate and are generally provided near terminal goods shed viz. Shalimar, where a large number of wagons are loaded or unloaded. Terminal yards may be marshalling yards also.

**10.02. Functions.-**

(a) The function of a marshalling yard is to form duly marshalled trains to the farthest point. The unit of loading is a wagon, while the unit of trasport is a train. In order to despatch the wagons to their final destinations they are to be coilected and formed into trains. Therefore, a marshalling yard is necessary to receive trains, sort them out and despatch them onwards to reach their destination by the quickest possible means. Broadly speaking the primary and subsidiary functions of a marshalling yard can be defined as follows :-

(b) Primary functions:-

(1) To form Goods trains to the farthest points according to the scheduled laid down.

(2) To form Shunting and Van Goods trains according to the prescribed marshalling orders.

(3) To keep wagon detention to the minimum while planning item No. (1) and (2).

*(c) Subsidiary functions:-*

(1) Placement and removal of inward loaded wagons for the goods depots, Loco Shed, Private sidings, etc. served by the marshalling yard.

(2) Placement and removal of wagons in and from the repacking Shed attached to the yard.

(3) Placement and removal of the sick wagons from the nominated sidings.

(4) Assessment of room by shunting for road- side stations and to arrange room accordingly by the nominated shunting trains.

(5) Arrangements for supply of stock as required by the road-side stations in accordance with the orders received from the Stock Controller.

(6) Weighment of wagons if the yard concerned is also nominated a weigh-bridge station and adjustment of loads.

(7) Maintenance of a correct tally of the daily output of the yard.

(8) Maintenance of record of detentions to the through loaded stock in transit across the yard.

(9) Maintenance of record of detention to other kinds of stock such as local loaded, sick wagons, empties special stock etc

(10) Economy in operation.

(d) The wagons are said to be dealt within a yard if they are actually marshalled and do not include wagons on through passing trains.

(e) The traffic dealt within a yard may originate in its vicinity or may be received from other yard in the form of trains may be received from important loading centres having no yard facilities to form trains.

**10.03. Kinds of yard.-**

*Yards are classified in three groups* as *follows:-*

**(i) *Marshalling yard:-*** A yard is designated as a 'Marshalling yard' on the basis of work done and the volume of traffic dealt with. General yards which deal with more than 20000 wagons in a month are termed as marshalling yards. Marshalling yards can be classified under three groups on the basis of the method of sorting out trains:-

**(a) *Flat yards:-*** Flat yards are generally laid on flat or level land where shunting operations are carried on with the help of engine power by push and pull method and as such the working of flat yards is slow. Flat yards may serve the purpose if the number of trains to be received, sorted and formed is few.

**(b) *Gravity yard :-*** Gravity yards are constructed where the natural contour of land permits a suitable falling gradient stretched over a sufficient length. The falling gradient is made use of to the fullest extent in marshalling wagons/trains, thus minimising the use of engine power. Therefore, gravity yards are more economical than flat yards but the layout of a gravity yard is dependent on the availability of plenty of land .with the required topography which is seldom possible.

**(c) *Hump yards:-*** Hump yards are similar to gravity yards in nature excepting that the gradient is created by constructing an artificial hump suitable for the purpose. The gradient of the hump is constructed in such a manner that the wagons roll down of their own to specified classification lines from the summit of the hump. The wagons are pushed up to the hump summit by engine power where from they are allowed to roll down. The apex of the hump is constructed between the reception and the classification yards. The starting gradient falls steeply towards the classification grids gradually easing up and finally getting absorbed into classification lines.

In hump shunting, the use of engine power is minimised and the number of wagons dealt with is more than that in other kinds of yards, Hump yards have been considered to be the most economical and practical where sufficiently large number of trains have to be sorted out. Such yards can be designed and laid out as required and are no primarily dependent on topographical conditions of the line.

**10.04. Components of Marshalling Yard.-**

A marshalling yard comprises of reception classification, sorting and despatch facilities for the purpose of sorting, formation and despatching trains.

**(i)** ***Reception Yard :-*** Reception yard is ; yard where incoming trains are received Incoming trains may be composed of wagons which are to go through after changing of power, crew and Guard or of wagons required sorting and marshalling. Two separate grids may be provided in the reception yard- one for through trains and the other for teminating trains. Separate reception yards may be provided for up and down trains. In yards where no separate hump for up and down trains are provided, the reception yards for both up and down trains are laid behind the common hump, so that the hump is utilised more economically, the grid for through trains by pass the hump.

(ii) ***Classification yard:-*** In the classification yard the incoming trains are broken up on lines specified for different directions or destinations of loads or types of wagons.

(iii) ***Departure yard:-In*** departure yard, loads are kept formed and ready for onward despatch. Separate departure yards for up down trains are provided In large yards.

(iv) ***Special sidings:-*** Special sidings are provided for keeping brake-vans, special type stock, cattle wagons or wagons containing commodities like explosive which cannot be humped.

(v) ***Sick lines:-*** Sick lines are provided near the classification yard for repairs to sick , wagons which are marked for repairs either on the in-coming or out-going trains.

(vi) ***Bypass lines:-*** By-pass or avoiding line is a line which skirts the hump. Its objective is to avoid the hump engine having to move over the hump and is also used for vehicles which cannot be passed over the hump into the classification yard.

(vii) ***Transfer lines:-*** Transfer lines are provided for transferring wagons where two yards exist side by side or also for transferring wagons from one sphere to another in the said yard.

(viii) ***Engine run-round lines:-*** Separate lines are earmarked for movement of in-coming and out-going engines between the loco Shed and the Yard.

(ix) ***King points :-*** The first pair of points a wagon meets after passing over the hump are called 'King points'. They divide the classification yard into two portions.

(x) ***Queen points:-*** The second pair of points a wagon meets on its way downwards are called 'Queen points', which further divide the classification yard into four portions.

(xi) ***Jack points:-*** The third pair of points a wagon meets are called the 'Jack points' and these serve to divert the rolling wagons into the different grides of the classification yard.

**Note:-** In a hump yard there are usually a pair of 'King points two pairs of 'Queen points' and four pairs of 'Jack points'.

(xii) ***Retarders:-*** One of the main problems in the working of a hump yard is to adjust suitably the speed of the humped wagons rolling down the hump so that they may not cause damage by humping violently against wagons already standing on the same line. The speed of the humped vehicles varies according to the force of the push given by the engine, the height of the hump the weight, the nature of the axle box (viz. roller bearing or plain bearing), as also on the weather prevailing.

In mechanised yards retarders or rail- brakes are installed to reduce and keep the speed of humped vehicles under control. The retarders may be automatic or manually operated.

(xiii) ***Skids:-*** At yards where mechanical retarders are not provided skids are placed on the classification lines to control the speed of the humped

wagons. These skids are placed by skid porters and the skids are removed after the wagon has come to a stop.

**10.05. Equipment of Marshalling Yards.-**

A marshalling yard should necessarily have the following equipment and arrangements for proper functioning and efficient supervision of work:-

(i) Telecommunication arrangement:- Since a marshalling yard covers a considerably big area, the distance between its different points and portions becomes naturally long. Therefore, telecommunication facilities between all important points in the yard is imperative so that instructions to the supervisory staff can be conveyed quickly over telephone to the person or persons concerned.

Yard officials concerned with control circuit as well as with various officials, Sheds, offices etc. on telephones.

(ii) *Paging and talk-back arrangement:*- Major marshalling yards on this Railway have been provided with paging and talk-back sets through which orders and instructions are issued to staff concerned working in different spheres in the yard from one central point. Similarly the staff can also convey any information to the central point. This help co-ordination between different spheres of the yard.

(iii) Loud speakers are also provided at convenient points so that order and instructions can be conveyed to the staff working in the same sphere. For example, loudspeakers are provided in the classification yard so that the person-in-charge of the hump can convey instructions relating to the skid porters regarding the line on to which wagons are being humped.

**10.06. Yard working instructions.-**

For proper and efficient working of each yard, general directions for working in each shift should be laid down in the yard working instructions. The instructions should deal with all aspects of working in detail other than the procedure for reception and despatch of trains, etc. which are given in the Station Working Rules. These instructions will be useful for the general guidance of staff working in the yard as well as relieving staff and new-comers. The yard working instructions should be prepared generally under the following heads :-

(1) Full description of the yard. It is preferable to attach sketch also showing the whole yard indicating therein the cabins the nomenclature of the lines, etc.

(2) Strength of the yard staff in each shift.

(3) Marshalling orders in force.

(4) Shunting engines available in each shift and the purpose for which they are to be utilised.

(5) Procedure of work to be carried out generally in each shift.

(6) Directions to Shunting Jamadars, Yard Masters and Assistant Yard Masters on duty, in reg,ard to advance planning of the work etc. during their shift.

**(7) Miscellaneous instructions :-**

CYM /DYCYM/YM / AYM should see that the yard working instructions are properly followed by all concerned staff.

**10.07. Yard Records. -**

Charts and records will be maintained in each yard in accordance wiith the local orders in force. The following are the principal records which shall be maintained in each yard :-

(a) *Runing Balance Register:-* This will be maintained by the Head Trains Clerk a- Trains Clerk-in-charge personnally. All stock entering into the yard i.e. received by incoming trains or from shed, tranship shed, sidings including departmental sidings, should be posted with blue or blue black pencil showing date, train No. time, loads or empties against different columns directionwise as directed by the Divisional Operations manager or the Chief Controller of the Division, While this will be done by the red pencil for the out-going trains or when stock will be leaving the traffic yard for placement in shed, sidings departmental siding and trainship shed etc. The posting will be done from time to time commencing from 00-00 hours and every 4 hours the balance will be closed after adding the incoming stock while the departing stock is substracted and the balance repeated to the control for the purpose of train ordering and controlling of incoming trains as necessary. This register forms the basic record to show at any time the condition of the yard controlling the loads and empties offering for ordering out trains, the trend of traffic and loads held up as well as to prepare certain statements and statistical figures.

(b) Wagon Link Cards:-Wagon link cards contain particulars of each wagon dealt with in a yard namely, owning railway, wagon number, load empty and type wagon, from and to station, including its arrival and despatch timings and total detention. Link cards should be maintained in 10 groups digitwise as follows:-

Wagons whose numbers end in ‘0’ will be one group.

“ “ “ ‘1’ “ 2nd group

“ “ “ ‘2’ “ 3rd group

and so on.

**Example:** Suppose wagon Nos. SE 34970, ER 25311 and NR 32932 have been detached at a station/yard from a train. The wagon SE 34970 will be ent~red in the link card for digit ‘o’ ER 253331 in the link card for digit 1 and NR 32932 in the link card for digit 2.

Separate link cards should be maintained for loaded and empty wagons, as well as for special type stock. In orders to keep a watch on loaded wagons detained in the yard, separate link cards are also maintained for :-

Wagon detained over 24 hours

Wagon detained over 48 hours

Wagon detained over 72 hours

(c) *Trains Clerks’s Hand* Book:-Particulars of all wagons entering or leaving the marshalling yard area must be recorded in the Trains Clerk’s hand Book directly from the trains by which they are received or despatched. Wagons works into or out of the yard

and to outlying shed and sidings by pilots are to be treated in the same way as wagons arriving or leaving by trains. Separate Trains Clerk's Hand Books must be maintained for incoming and outgoing trains, each book being earmarked for a particular direction. These Hand Books from the basic records from which the Running Balance Register and the Wagon Link Cards are posted.

(d) *Register showing receipt and despatch of wagons:-* A register is maintained in form OPT/442 to show, the detention at different stages i.e. from arrival to placement, release and despatch of all. wagons dealt with at a station. From this register details of detention to goods stock in goods sheds, sidings, tranship sheds, sick lines and departmental sidings can be checked. The register is jointly maintained by the Operating / Commercial, Carriage & Wagon staff as the case may be.

(e) Loaded wagons Detention Register:- This register is maintained direction-wise to watch the detention to through loaded wagons. The register is provided with the following columns:-

From this register the Y.D. (Yard detention) return is submitted to the Divisional Operations Manager with a copy to the Chief Operations Manager at the end of each ten day period ending viz.periods ending on the 10th, 20th and the last day of the month.

(g) *Shunting Engine Log Book:-* A Log book for each shunting engine should be maintained by the Yard Master or the Shunting Jamadar in charge of each engine. In this book the daily performance of the shunting engine should be recorded with timings from the time it arrives into the traffic yard till the time it leaves the traffic yard for the Loco Shed with the detentions in the yard on Loco account e.g. temporary repairs, defective brakes etc.

(h) *Yard performances Register:-* Yard Performance Registers must be maintained at all marshalling yards. The columns of the this register are shown below :-

In entering up the various columns the instruction given in para 11.08 below in respect of monthly marshalling yard statistics should be followed.

(h) Graphs:-A graphical record of the following items should be maintained:-

(i) Daily average wagon holding at 0-0 hour. (ii) Average number of wagons dealt with monthly.

(iii) Average number of wagons dealt with per shunting engine hour.

(iv) Daily average number of wagons received and average number of wagons despatched.

(v) Daily percentage of right time starts to trains originating from the yard.

(vi) Average number of wagons marked sick daily.

(vii) Daily average detention to through loaded wagons.

(viii) Average detention to all wagons.

**10.08. Monthly Marshalling Yard Statistics:-**

(A) These are required to be compiled by selected marshalling yards in the following proforma:-

| Item<br>(1) | Name of Marshalling yard (2) | Remarks<br>(3) |
|---|---|---|
| 1. Wagon despatched.<br>1.01. Number of wagons despatched by train during the month.<br>1.02 Number of wagons placed from the Marshalling Yard outside the yards by pilots in goods sheds, military sidings, assisted sidings etc.<br><br>1.03 Number of wagons dealt with during the month.<br>2. Daily average sidings number of wagons despatched.<br>3. Number of Trains received-<br>3.01 (a) Number of "by passing trains".<br>(b) Number of Terminating trains.<br>(c) Total (a) + (b) =<br>3.02. Average detention to "by passing Trains"<br>Target :-<br>Actual :-<br>3.03. Number of wagons carried by-passing trains included in item 3.01 (a)...<br>4. Number of trains despatched.<br>4.01 Number of by-passing trains.<br>4.02 Number of originating trains.<br>4.03 TOTAL :<br>5. Number of wagons dealt with per | | |
| 5.02. Total shunting engine hours outside marshalling yards.<br>5.03. Total shunting engine hours of regular shunting engine employed for work inside marshalling yards.<br>5.05. Total time taken for locomotive duties and minor repairs<br>5.06. Number of wagons dealt with per shunting engine hour.<br>6. Average detenation per wagons:-<br>6.01 All wagons - Target<br>Actual.<br>6.02 Through loaded wagons- | | |

(B) The following instructions should be followed rigidly in compiling the Marshalling Yard statistics as per prescribed proforma:-

**General Instructions:-**

(i) The marshalling yard statistics should be prepared for selected yards generally dealing with 20,000 four-wheelers wagons and over per month in respect of broad gauge yards. Prior approval of the Railway Board should however, be obtained for addition or deletion of any yard.

(ii) For the purpose of compilation of data for this statements wagons should be counted in terms of four-wheelers and not as unit unless otherwise specified.

(iii) Brake-vans are to be included.

(iv) The area of each marshalling yard is to be carefully defined and no,extra allowance is to be made for any work done within that area. A diagram showing the marshalling yard area clearly demarcated should be prepared for the yards for which statistics are. required to be compiled by the Railways for the Board. This diagram should be readily available at the stations to enable any inspecting officer to obtain a clear indication of the extent of the marshalling yard.

Sick lines and repacking sheds, transhipment points, goods sheds, departmental sidings and other industrial sidings etc. may, as a general rule, be treated as lying outside Marshalling yards for purpose of calculation of marshalling yard statistics.

(v) At places, where there are points like the Goods Terminal Station and / or Break of gauge transhipment point, etc. contiguous to the Marshalling Yard, and the detention statistics for each of these yards are compiled separately either for submission to the Railway Board or for inclusion in the Railway's own Domestic statistics the sum total of detention in each yard should accord with the total detention from arrival of a wagon till its final despatch from that station. To ensure this, the supervisory staff in-charge should exercise a check, at least once a month, on a random sampling basis. This check should be broad-based covering not only the important categories of

wagons e.g. four wheeler, box wagons, oil tanks etc., but also the main stream of movement of wagons to and from different directions. This exercise should cover at least 10% of the total number of. local wagons dealt with in the marshalling yard during the previous month and the records of such checks should be properly maintained to be available for scrutiny by inspecting personnel.

(vi) In the case of wagons whose detention or despatch particulars are not available, their detention should not be omitted but reckoned on the basis of the average detention during the month for similar type of stock while working out the average

detention per wagon. The number of such wagons should be indicated separately under 'Through loaded' and 'All wagons' for each yard in a foot-note, to the statement.

(vii) Yards provided with humps are to be denoted by an asterick and terminal yards should be specified by a note to that effect.

(viii) Except where otherwise stated, all results are to be worked out correct to one place of decimal, but those which are less than 10 should be worked out correct to two places of decimal.

**1. Wagons despatched.**

Item 1.01 and 1.02.- Self explanatory. A wagon should be included under item No. 1.02 as many times as it leaves the marshalling yard.

Wagons on 'by passing' trains (i.e. through goods trains, as defined in note under item 1 of Statement 2) will not be included under 1.01.

Item 1.03 - Items 1.01 + 1.02.

**2.** Daily average number of wagons despatched:-

$$\text{Item 2} = \frac{\text{Item 1.03}}{\text{Number of days in the month.}}$$

**3 & 4. -** Number of trains received and despatched:-

(a) A train for this purpose is a set of wagons or vehicles worked by locomotive, or any other self- propelled unit, or rail-motor vehicles, empty or converying traffic when running, under a particular number or a distinct name, from a fixed point or departure to a fixed destination.

(b) All trains, both terminating and by-passing (i.e. through goods trains) are to be included. "By passing trains" should be accounted both under the number received and despatched.

**5.** Number of wagons dealt with per shunting engine hour.

Item 5.06 = Item 1.03 + Item 5.03 + 5.04.

**Note:-** (i) While compiling shunting hours under item 5.93 and 5.04 the following instructions should be kept in view:-

(a) Shunting hours are to include the shunting hours of regular shunting engines and train engines before and after working a train or during its run when employed in shunting goods wagons only, in the marshalling yard area. The shunting time within the marshalling yard area should only be taken into account and not the time spent outside its limits.

(b) Shunting engine hours are to be reckoned from the time of arrival of the shunting engines in the marshalling yard upto the time of their departure from the yard on the basis of shunting vouchers. The time spent on locomotive duties whether in the yard itself or outside the yard is to be included. However, any extra time taken over the normal time prescribed for carrying out legitimate locomotive duties should be excluded; the normal time will be determined by the DOMs of the Divisions taking into account the local conditions.

If a shunting engine is required to be repaired in the yard itself the extra time beyond 30 minutes spent on such repairs in a shift should also be excluded.

(c) The time spent in the marshalling yard for change of crew and / or fuelling, should be accounted for.

(d) Since shunting engines shunt both coaching and goods vehicles, the allocation of shunting engine hours to goods and coaching stock may be fixed for each yard on a percentage basis after an examination of the work done. This percentage is to be re-checked at least once a year and also when any change occurs in the type of traffic passing through that yard. Where daily records are kept of the working of shunting engines according to hours spent (i) inside the marshalling yard, (ii) outside the marshalling yard and (iii) in shunting coaching vehicles, it will not be necessary to fix a percentage, as the actual hours spent in the marshalling yard in shunting goods vehicles will be available. Time taken by shunting engine in placing wagons in such lines is to be included in shunting hours when such lines forms part of the marshalling yard' area.

Note:- (ii) Time spent for locomotive duties record separately under item 5.05. should be included under item 5.03 also Item 5.05. will include the time taken by shunting . locomotives for locomotive duties and minor repairs upto 30 minutes per shift as per note (i) (b) under item 5.

6. *Average detention per wagon:* - The detention time should have reference only to the detention within the marshalling yard territory as defined in para (iv) of general instructions and the incoming and outgoing wagons from and local out lying sheds, sidings etc. should be counted as many times as they enter the yard. This will include detention to sick wagons in the Marshalling Yard although their detention is separately shown, against item 6.06.

(b) The average detention is to be obtained by recording in the wagon exchange register or similar record, the hour of detention to each wagon, that is, the interval between its arrival and departure. At the end of the month the hours of detention to wagons despatched during the month under different types must be totalled, and both detentions and number of wagons for each type must be multiplied by the factor of equivalent to four-wheeler and then consolidated to workout the average detentions per

wagon. The following example will illustrate the method of calculation of the average detention per wagon.

**Example**

Suppose Yard A has despatched 100 four- wheelers with a total detention of 400 hours, 20 bogie wagons (equivalent to 40 four-wheelers) with a total detention of 200 Hours and 10 BOX wagons (equivalent to 25 four-wheelers) with a total detention of 150 Hours.

$$\text{Average detention per wagon will be} = \frac{400x1+200x2+150x2.5}{100x1 +20x2+ 10 x 2.5}$$

$$= 7.1 \text{ Hours}$$

The detention of wagons arriving in one month and despatched in the next will be shown in the month in which they are despatched, but the time must be reckoned from the date of arrival. Stations which maintain a wagon card index may obtain the figures therefrom instead of from the wagon exchange register. The number and detention of brakevans will be excluded for the purpose of this item.

(c) The 'target' detention hours will be fixed by the Railway Board from time to time having regard to the past performance of each yard and also materialisation of different streams of traffic, marshalling commitments and the facilities available. A pointer to the correct level of a target would be the best result achieved, in the past one or two years, assuming that there has been no noticeable improvement or deterioration in the operating conditions and methods. The target should be some what better than the actual recorded performance so that it may call for better effort on the part of the staff concerned to achieve the margin if improvement remaining between the actual and the target.

**6.01.** All wagons, the term "all wagons" includes through loaded, through empty, local loaded, local empty and departmental wagons. Wagons on' through trains' (as defined in item 1.01 & 1.02) not receiving marshalling, will be excluded. Sick and damaged wagons will be included wherever the sick lines from part of the marshalling yard area.

In respect of the yards which may as well as be depots for holding empties, such empties should notbe included for the purpose of this item. These yards should, however, be denoted by a suitable foot note specifying there-in the average daily holding of the depot.

The 'exit' and 're-entrance' timings may be fixed on the basis of sample observations made once a year. These fixed timings may be re-checked annually and also when any major change occurs in the working of the marshalling yard.

**6.02.** *Through loaded wagons:-* The term "through loaded wagons" means loaded wagons which neither originate nor terminate at the station, but which are dealt within the yard and are not on 'by passing' trains (as defined in the item 1.01 and 1.02).

**6.03** *Through Empty wagons:-* The term through empty wagons means empty wagons which neither originate nor terminate at the station, but which are dealt within the yard and are not on 'by passing' trains (as defined in item1.01 and 1.02).

**6.04** This item will include detention to local wagons despatched by trains from the Marshalling yard i.e. from the time of their entry into the Marshalling yard from the outlying sheds and sidings till their despatch by trains.

**6.05** This will include the detention to local wagons from time of their arrival in the Marshalling yard till their placement into the local sidings.

**6.06** Detention to sick wagons in the Marshalling yard will be included under this item as also under "all wagons". In case the sick lines from part of the marshalling yard the detention in the sick lines will also be included under this item. If the sick lines are outside the yard, such detention will be excluded.

**10.09. Mechanical Hump Yard.-**

**1. Layout :-**

(i) The height of the hump, gradients preceding and following the crest and the layout of the tracks shall be such as to permit satisfactory working of the yard having regard to-

(a) The range of rolling resistances of. wagons,

(b) Wind velocity prevalent,

(c) The type of equipment envisaged,

(d) The weight of the wagons, and

(e) The size of and interval between the cuts.

The wagon with worst rolling resistances shall be able to clear about 1/5 length of any of the classification lines.

(ii) The distance from hump crest to the fouling marks of the various classification lines shall, as far as possible, be equal and kept to minimum.

(iii) The points and crossings shall be so designed as to-

(a) provide uniform curve resistance for all classification lines to the extent practicable by using symmetrical split points and crossings.

(b) permit as high a speed as possible for wagons expected to negotiate the turn-outs, and

(c) permit maximum number of cuts to be handled in minimum time.

**2. Control Tower:-**

(i) All classification points, hump signals, shunt signals and retarders shall be controlled from a control tower.

(ii) The control tower shall be properly designed and so located as to afford the operator good and clear visibility of the wagons passing over the retarders. He shall be able to get a good view of the approach to the hump, switching area and classification lines.

**3. Panel:-**

(i) Control panel shall be in the form of a console of suitable design.

(ii) The reproduction of the layout on the panel shall be well proportioned, representing geographically the actual layout.

(iii) (a) Point control switches / push buttons of classification yards shall be geogra- phically located on the control panel.

(b) Where control switches are used they shall be of 3 position type. The central position shall be for automatic working and the other two positions shall be for operating the points manually. The position of the point switches shall correspond to the route being set manually.

**4. Controls:-**

(i) Automatic operation of classification points according to preset programme and automatic / semi-automatic control of retarders may be provided where necessary, to improve the speed of humping.

(ii) It shall be possible to pre-store the data for adequate number of cuts. At least 5 of the stored data shall be displayed on the panel.

(iii) It shall be possible to cancel and modify the stored cut data before the cut occupies the controlled area.

**5. Automatic and Semi-automatic operation:-**

(i) Where called for by the type of system installed suitable speed measuring devices shall be provided for automatic and semi- automatic control and release of the retarders at the predetermined speed of the wagons.

(ii) A wet/dry control switch may be provided to enable the pressure to be raised in wet or frosty weather in the case of semi- automatic / automatic reterders.

(iii) The facility of manual control over-riding the automatic controls shall be provided.

(iv) Wherever multi-stage automatic retarders are provided, it is necessary to instal wind velocity and direction measuring devices so that the computed release speed can take into consideration the wind effects.

**6. Indications:-**

(i) The position of the points shall be indicated clearly by distinguishing lights near each individual point switch / button. The condition of occupied track / rail circuits shall be indicated on the panel.

(ii) Points failing to set to the required position within 600 ms shall return to the original setting. If any point fails to set to the required position, a flashing indication shall be displayed.

(iii) Audio-visual indication shall be provided to indicate catch up of cuts.

(iv) Occupation indicator, preferably automatic, for the classification lines may be provided on the retarder control panel.

(v) Indications for compressor running, air- hydraulic pressure and power supply shall be suitably provided on the panel.

**7. Weight and Rollability Detection Devices:—**

(i) Where called for by the system of retarders employed, weight classification in various categories, obtained by means of a suitable weight detection device installed in rear of the king point, shall be indicated on the retarder control panel. The mean weight on the basis of the first six axles shall be assessed in the case of multi-wagon cuts.

(Ii) Where semi-automatic retarders are provided, rollability classified into categories shall be indicated for each cut on the retarder control panel at the time of selection of the exit speed for the cut.

**8. Retarders:-**

(i) The number of stages of retardation shall be such that the control of wagons will be effected to ensure requisite minimum space interval between any two successive cuts while humping at the rated speed.

(ii) Single stage manually operated retarders with weight category indication (except where weight compensated retarders are used) may be provided in smaller yards.

(iii) In large yards, multistage retarders may be used depending upon the layout and requirements.

(iv) The retarders in open position shall permit locomotive of the various types in use to pass freely.

**9. Operation of retarders:-**

(i) Primary retarders shall preferably be automatic.

(ii) Subsequent retarders may be manual, semi- automatic or fully automatic.

**10. Braking Effect of Retarders:-**

(i) Wherever practicable, arrangements should be provided to modify the braking effort of the retarders while in operation.

(ii) The design of the retarder system shall be such that it shall be possible to bring the heaviest wagon to a stop.

(iii) The retarder jaws shall be provided with suitable guiding flares at the entrance and re-railers at the exits.

**11. Vehicles with non-standard wheels:-**

The retarders shall be kept in operative when locomotive wheels or non-standard wheels of the wagons that might cause damage to the wheels or equivalent or result in derailments are passing over them.

**12. Signals:-**

(i) Hump signal shall be provided near the hump crest.

(ii) A control switch shall be provided on the main hump signal post for placing the hump signal to danger in emergency.

**13. Repeater Signals:-**

The shunting loco Loco Pilot shall have continuous indication of aspects of the hump signals during humping operations. Repeaters may be provided wherever necessary.

**14. Aspects of signals:-**

Hump signal and hump repeater signals shall be of the colour light multi-unit type with the following indications:-

(a) Stop - Red

(b) Hump slow - Yellow

(c) Hump fast - Green

(d) 'Go Back' - Flashing red.

**15. Point Machine:-**

(i) Point Machines with a short operating time of approximately 0.5 secs. shall be used for points leading to the classification lines. They shall preferably be trailable.

(ii) Points in the classification area need not be provided with locking arrangement and independent switch detection.

**16. Track circuits:-**

(i) Track/ rail circuits used in the switching area shall be of quick acting type.

(ii) Track circuiting shall be extended upto the clearance points of the classification lines for providing indications to the panel operator to prevent side collision of wagon entering the classification lines.

(iii) Where a common track feed source is provided for a number of rail/track circuits, a suitable standby source with automatic alarm with indication of failure may be provided.

**17. Telecommunication:-**

Suitable telephone communication facilities and adequate paging and talk back networks shall be provided in the yard for communication between the pannel operator and field staff. Suitable radio communication may be provided between the panel operator and the humping locomotive Loco Pilot.

**18. Drainage:-**

(i) Adequate drainage arrangement to drain the water from the retarder pits, Air Receiver Pits and Compressed air pipe line manholes shall be provided. Plan for the drains shall be prepared taking into consideration the layout of pipe line, cable run, manholes etc.

(ii) Control valves of retarder and Pneumatic point machine shall be located at such level that they do not get flooded in the rainy season.

**19. Layout of pipes:-**

(i) The layout of the main pipe line shall such that the number of joints and sharp bends are kept to a minimum. It shall be in the form of ring main so that any particular section can be cut out for maintenance.

(ii) Suitable troughings shall be provided for main pipe lines when laid above the ground level

(iii) All air and hydraulic pressure pipes exposed to sun shall be provided with expansion .bonds at suitable intervals.

**20. Special sleepers:-**

Special-sized sleepers, if any, required for Retarder base and point machines shall be well seasoned and free from cracks. 'Co clamps may be fixed at the end of the sleepers to avoid developing of' cracks.

**21. Insulated Rail Joints:-**

(i) As far as possible insulated rail joints on the retarder rail shall be avoided.

(ii) It is desirable to prepare a detailed location drawing of all insulated rail joints in - consulation with Engineering peptt.

**22. Gradient and Level Pillars:-**

For maintenance of the gradients, level pillars shall be provided at suitable intervals from hump crest to fouling mark and at both ends of the retarders on either side of the track.

**23. Lighting :-**

The entire switching area from hump crest to the fouling mark of classification lines shall be adequately illuminated during the night.

**24. Lifting arrangement in Compressor Room :-**

A suitable travelling hoist / pulley block of adequate capacity may be provided in the compressor room to facilitate lifting of heavy equipment for POH.

**25. Air-conditioning :-**

Relay room shall be air-conditioned.

**26. Maintenance Panel:-**

Maintenance panel with indication of all relays associated with route setting, means for injecting codes and means for simulting occupations may be provided for maintenance, testing and quick detection of faults.

**27. Power Supply:-**

(i) Adequate standby power supply arrangement shall be provided. Audible alarm, shall be provided on the control panel to indicate both the failure and resumption of main supply.

(ii) Where necessary, voltage stabilizers may be provided to ensure correct supply voltage.

**28. Standby Compressors :-**

Duplicate compressors of adequate capacity shall be provided which shall be worked alternately. In addition, it is desirable to provide an emergency standby diesel compressor of adequate capacity.

**29. Air Receivers:-**

(i) Air receivers and pressure vessels of hydraulic systems shall not be commissioned before inspection and certification by Boiler Inspector.

(ii) The total capacity of air-receivers shall be adequate to continue the humping for a period of about ten minutes after the failure of the power supply.

(iii) The air-receivers shall be suitable for outdoor installation.

(iv) Air line filters shall be provided to exclude oil.

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## CHAPTER -XI

# CONTROL AND DISTRIBUTION OF GOODS STOCK

**11.01. Definition of Goods stock.-**

"Goods stock" means and includes all goods wagons, i.e. all rolling stock other than coaching stock.

**11.02. Goods stock.-**

(i) A "Unit" of Goods is one-four wheeled wagon.

(ii) The goods stock is divided into the following four categories : -

(a) *Pooled wagons.-* are those wagons which have been contributed to the wagon pool and therefore can be used freely on the Railways which is a party to the wagon pool till the wagon becomes due for periodical overhaul.

(b) *Non-pooled wagons:-* are those which have not been contributed to the wagons pool and marked with letters "NP" in a circle on the both sides of the wagon. Such wagons can be used freely over the owning Railway and under certain conditions on the foreign Railways.

(c) *"Local loading only" or "Local traffic wagons".-* are those wagons which are excluded from the wagon pool. These are intended exclusively for local traffic and not accepted in inter-change. They have the words "For Local Traffic only" or "Lt" painted on both sides of the wagon.

(d) *Departmental wagons.-* are those wagons which have been placed at the disposal of one or the other department of the Railway for its exclusive use.

(iii) Wagons may be classified into four wheeler or bogies or into covered or open. Apart from the normal pooled wagons of special types such as BFR, BRH, BOX, End-falling trucks (KM, KU, KF),Well -wagons (BFU), Tank wagons etc. the South East Central Railway has special type stock particularly suited for the transport of different kinds of raw materials to Steel Plants viz. KO BOBS, BOBX, BOBC & BOI, BOX'N' etc.

(a) KO & BOBC wagons are bogie Hopper Stock fitted with conventional screw couplers and have bottom centre discharge facilities. KOH are similar type but with bigger capacity and have bottom side discharge facilities as well. These were the earlier type of wagons utilised in transporting raw materials such as, iron ore, limestone, manganese ,ore and dolomite to the Steel Plants.

(b) BOBS & BOBX type to bogie Hopper wagons are further modifications of the earlier type of Hopper wagons.

(1) BOBS wagons are bogie Hopper wagons with centre buffer coupling arrangements and side discharge facilities. There are two types of BOBS wagons in use -The Talbot type or ISW type. In Ire Talbot type there is a wheel arrangement on either side for opening the side doors and in the ISW type there is a lever at either end of the wagon and by operating the wheel or lever the doors are opened. Talbot type BOBS has a carrying capacity of 65.00 tonnes and tare weight of 26.4 tonnes; the ISW type is of

61.25 tonnes carrying capacity and 20.75 tonnes tare weight. These wagons are utilised normally for movement of raw materials to Steel Plants.

(2) BOBX wagons are bogie Hopper wagons with bottom centre as well as bottom side discharge arrangements. The earlier lot of BOBX wagons are fitted with screw coupling and side buffers, whereas the late ones, called modified type, are provided with centre buffer couplers. Other features are common. The doors are opened for unloading the contents by turning the wheels provided for this purpose at one end of wagon. Small platforms have been provided at either end of the wagon; from there the wheels can be handled conveniently. The tare weight of BOBX wagons of the conventional screw coupling type is 25. 72 tonnes and carrying is 65.28 tonnes. The tare weight of modified BOBX wagons (centre buffer coupler type) is 27.7 tonnes and carrying capacity is 63.8 tonnes. These two types are also utilised for transport of raw material to Steel Plants.

(c) BOI type Congola wagons are bogie wagons similar to BOX type wagons but without doors and with side panels of lesser height than those of BOX wagons. These wagons cannot normally be loaded with commodities which require manual loading and unloading as they have no doors. For unloading the contents, the wagons have to be tippled. They are specially built for movement of ore export and tipplers are installed for unloading at the Vishakapatnam Port.

(d) Box 'N' are fitted with air brakes and are generally intended for movent of bulk traffic like Coal, Iron ore etc.

**11.03. Object and nature of Control.-**

The system of control and the best possible utilisation of Goods stock has an important bearing upon the economy and efficiency of Railway operation. Its main object is to see maximum utilisation of wagons consistent with the requirement of traffic. Control is exercised at the Divisional level through the medium of daily Stock Reports submitted by stations and at the Headquarters level through the medium of daily Stock Reports submitted by the Divisions. These reports enable a day-to-day watch to be kept on the clearance of traffic and on the transit, transhipment and loading and unloading of wagons.

**11.04. Distribution of Goods Stock.-**

The distribution of Goods stock between the various Divisions on the Railway rests with the Chief Operations manager. Target for wagon holding for each Division are laid down taking into account the following factors:-

(i) Inward traffic.

(ii) Cross traffic

(iii) Outward traffic.

(iv) Operating difficulties & special feature of working.

If requirements of outward traffic are more than the inward wagon receipts on a Division, empties are worked to that Division from other Divisions where the inward receipts are relatively more than the requirement of traffic in that area.

**11.05. Watch over movement of special type stock.-**

To avoid delays in movement and to ensure regular supply at important loading points a special watch is kept over the special type of stock in the Divisional and Headquarters office.

In order to watch the day-to-day position of special type stock link cards are maintained for each special type and registers are posted indicating the position from day-to-day. Special type stock being limited, the loading and unloading of such stock should be done without undue detention and their transit, whether loaded or empty, must be carried out with all speed.

**11.06. Divisional Control.-**

The Executive Officer-in-charge of Goods operation of the Division is the Sr. Divisional Operations Manager/Divisional Operations Manager who may have one or more Divisional Operations manager(s)/ Assistant Operations Manager(s) to help in this work. The responsibility of the Sr. Divisional Operations Manager in Goods Operation can be summarised as under:-

(i) To accept and move expeditiously the traffic received from adjoining Divisions and Railways.

(ii) To maintain the loading on his Division at the maximum level depending on the resources available to meet the traffic demands.

(iii) To meet the commitments that he may have with regard to handling over empties to adjoining Railways or Divisions and with regard to marshalling of through trains.

(iv) To maintain the various targets of operating efficiency fixed by the Headquarters.

**Towards this aim, he has to-**

(a) Keep an intensive watch over the working of Marshalling, Terminal and other important yards.

(b) Supervise the ordering and working of Goods trains;

(c) maintain an affective on the utilisation and movement of Goods trains engines from the time it leaves the Home Shed till it returns to the Home Shed;

(d) arrange supply of empty stock to various loading points in conformity with the directives issued by the Headquarters daily; and

(e) watch the detention to wagons in Marshalling Yards, Terminal Deports, stations, transhipment points and in other yards.

**11.07. Head Office Control.-**

While the detailed day-to-day operation is the executive responsibility of the Division, the overall responsibility for the operation on the Railway as a whole is of the Head office. The Head Office is also responsible for seeing that policies laid down by the Railway Board are translated and incorporated in the instructions issued to the Divisions and that these are faithfully implemented. The control is exercised by the Chief Operations Manager through the subordinate Officers concerned at the Headquarters

who are responsible for giving general orders, advice and guidance to Divisions according to their relative degree of responsibility.

**11.08. Operating Restrictions.-**

(i) Restriction orders issued from Headquarters when congestions take place and there are no other means of getting the congestions resolved. Such orders are also issued when due to accidents, floods etc, there is a breach of Railway communications or when due to festivals or melas requiring running of extra trains for passengers, Goods traffic has to be restricted. Such restrictions are known as Operating restrictions. All concerned must observe these restrictions without fail.

(ii) Divisions are not authorised to impose restrictions in booking and movement of traffic from and to other Divisions, If imposition of a booking restriction in necessary, the Head Office must be approached to impose restrictions on booking and movement of traffic.

**11.09. Station stock Reports.-**

(i) Every stations must submit a Daily Stock Report to the Control office in respect of the position obtaining at 23.59 hours or such other time as may be prescribed by local instructions. These stock Reports must contain the following items of information as well as any other items that may be required from time to time :-

| | | | |
|---|---|---|---|
| A. | (a) Loading during previous 24 hours (full loads) | (1) From Station<br>(2) To Station<br>(3) Commodities with wagon No. type | |
| | (b) Smalls, Road Vans and owning Railway | | |
| | (c) Total | Cv. Spl. | |
| B. | Opening balance of Loaded wagons | “ | |
| C. | Opening balance of empty Wagons | “ | |
| D. | No. of loaded wagons received during previous 24 hours | “ | |
| E. | No. of empty wagons received during previous 24 hours | “ | |
| F. | No. of loaded wagons cleared during previous 24 hours | “ | |
| G. | No. of empty wagons Cleared during previous 24 hours | “ | |
| H. | Spare empties on hand | “ | |
| I. | No. of wagons detained over 48 hours indicating unconnected, if any | “ | |

J. Requirement of empties to meet the allotment "

| | Up | | Down | |
|---|---|---|---|---|
| K. No. of wagons to be cleared | Cv. | Open Spl. Qts. | Cv. | Open Spl. Qts. |
| L. No. of packages to be cleared | | | | |

ii) Repacking stations shall include in their Stock Reports the following additional particulars :-

a) Opening balance Cv. Open Spl
   (1) Repacking "
   (2) Checking "
   (3) Adjustment "
   (4) Transhipment "
b) No. of vans placed during previous 24 hours for repacking, Checking adjustment & Transhipment "
c) No. of vans cleared during previous 24 hours for repacking, checking, adjustment & transhipment Cv. Open Spl
d) Closing balance "
e) Fresh empties placed for repacking & transhipment "
f) No. of vans repacked or transhipped during previous 24 hours "
g) No. of vans awaiting "
h) Unconnected "
i) Crane consignments "

**11.10 Divisional Stock Reports :-**

Each Divisional control office must prepare daily a divisional stock reports based on station stock Reports and on other date regarding Marshalling yard operation, transhipment operation and interchange transaction. This Divisional Stock Report shall contain the following inforamtion :-

(a) Interchange with other Railway and adjoining Divisions.

(b) Wagon holdings.

(c) Break down of coal indent and allotment and supply.

(d) Break down of indents, allotment and supply of other goods.

(e) Break down of outstanding indents via various routes.

(f) Break down of short supply, if any

(g) Inward loads received and placed for release.

(h) Number of unconnected wagons.

(i) Loads on the Divisional for different destinations.

(j) Position of Crane consignments.

(k) Interchange with Steel Works.

(l) Worksite balance.

(m) Yard balance of important yards.

(n) Transhipment position of various transhipment sheds.

(0) Goods shed position of important Goods, loading stations.

(p) Class-wise general merchandise loading.

(q) Break down of outstanding indents.

(r) Empties on hand on the Division.

(s) Empties made over to adjoining Divisions and other Railways.

(t) Empties received from adjoining Divisions and other Railways.

(u) Particulars of trains stabled.

(v) Position of sick wagons.

(w) Mineral loading for steel works.

***Note:-*** Item (c), (k), (l) and (w) refer only to Divisions which have Steel Plants and/or load coal and raw materials to Steel Works.

### 11.11. Headquarters Stock Position Report.-

From the detailed information received through the Divisional Stock Reports a summarised report for the entire Railway is prepared in Central Control, for General Manager/Chief Operations Manager and other concerned Operating Officers of the Headquarters Office. Each item of this Stock Report is analysed in Headquarters Office and the salient points of the Operating position are discussed daily by the nominated officers at the Headquarters according to their espective spheres of working with the Sr. Divisional Operating Manager, Divisional Operations manager Asstt. Operations manager. or the Chief Controller of the Divisions.

## CHAPTER-XlI

# REGISTRATION, ALLOTMENT AND LOADING OF GOODS

(Detailed instructions regarding Registration and Booking of Goods traffic are contained in the I.R.C.A. Goods Tariff Part I).

## I. REGISTRATION

**12.01. Preferential and non-preferential traffic.-**

(a) Movement of goods traffic in wagon loads is regulated by the Preferential Traffic schedule; notified by the Railway Board every six months under Section 27 A of the Indian Railway Act 1890 (IX of 1890) and circulated by the Chief Operations Manager. The Preferential Traffic Schedule which is . otherwise known as the Priority Schedule is designed to ensure that certain essential commodities and urgent movement are accorded. necessary preference when transport facilities. available are not adequate to meet all the demands in full.

(b) Under the Preferential traffic Schedule, traffic is classified under five heads or item viz. 'A', 'B', 'C', 'D', and 'E'. This alphabetical sequence of . items also represents their respective order of .. preference between the different categories of traffic' mentioned therein. Commodities registered in the lower head/item cannot get preference over those registered in the higher classification although the former may have been registered much earlier.

(C) Special preference to any particular consignment or commodity otherwise than in accordance with sub-paras (a) & (b) above can only be accorded under orders from the Railway Board.

(d) The Priority Schedule does not, however, apply to "smalls" which should be accepted and booked subject to the restrictions in force and to the quotas that may be fixed for each station.

**12.02. Sponsored movements.-**

(a) A list of Officers authorised to sponsor movement is circulated from time to time by the Chief Operations Manager indicating their names and official designations. Movement of consignments will become entitled under a higher class of priority only when the letter sponsoring the movement is signed by the official notified under his own signature.

(b) When an indent is placed by a Station Master relating to a sponsored programme notified by the Chief Operations Manager, the serial number. and the programme number shall be clearly quoted in the records majntained at that station and also in the invoice as well as wagon and bracket labels.

**12.03. Registration of Goods.-**

(a) The Station Master at a Station unless some other representative is nominated by the Divisional Operations Manager shall accept indents from the indentors.

(b) All requests for wagons should be made on Form T. 193. The number oif wagons required, the commodity, the weight of each consignment, the destination station and the route by which the consignment is to be booked are to be recorded by the indentor is governed by quota limitations in force.

(c) Station will copy the indents serially into a register on form T. 191. Indents for free destinations can be accepted without any ceiling limit.

(d) Except where otherwise specially notified, registrations will continue to be accepted even when temporary operational restrictions are in force.

(e) Registration shall not be accepted in contravention of:-

(i) Rationalisation schemes.

(ii) Civil or any other bans.

(iii) In excess of prescribed limits for vegetable, oil tanks and Petroleum and other oil tanks and such like.

## II ALLOTMENT

**12.04. Submission of indents and allotment of wagons.-**

(A) The Station Masters will allot wagons for free destinations in accordance with the procedure detailed below: -

(i) The Station Master or Goods Clerk-in- charge at the end of each day will tabulate the indent registered at his station in the following manner:-

Indents for- (a) free destinations.

(b) quota limitations, and

(c) restricted destinations.

(ii) The Station Master will also tabulate the indents under three different heads, viz ore traffic, bamboo and other general goods. The applications in Form T.-193 and the T-191 Register will remain in the custody of the Station Master.

(iii) The Station Master will advise the Section Controller or the Deputy Wagon Check every day at 14.00 hours or at any other convenient time that may be fixed by the Divisional Operations Manager, (a) the number of indents outstanding, (b) the number of indents that have been received and (c) the total number indents for ore, bamboos and general goods and also indicate the number of indents for via BHC, via JSG, via Chitpur, via Tikiapara, K.P. Docks, via Gomoh, via Asansol and other local stations. These particulars furnished to the Control should be given to the Deputy Wagon check who will issue instructions for supply of wagons after obtaining orders from the Sr. Divisional Operations Manager/Divisional Operations Manager or in his absence the Assistant Operations. Manager. The Station Master shall send a confirmation copy of this advice by dak the next day to the Divisional office.

(iv) Indents will be treated as having been met only after the wagons have been supplied. Allotment will be given by the Station Master depending on the instructions issued by the Control in regard to the number of empties or inward loads that would be worked into the station for unloading. The Station Master shall not allot wagons when he has not been given any indication of what empties are being worked to the Station.

(B) In case of destinations governed by quota, indents accepted by the Station Master in form T.191 will be submitted daily for allotment of wagons to the Senior Divisional Operations Manager / Divisional Operations Manager on form T. 570 (OP/T 419, 'A' Foil).

On receipt of daily report from stations, the Allotment Section of the Sr. Divisional Operations Manager's office will copy these indents in a register and will then put up to the Officer who makes allotment every day. On receipt of the allotment, the stations will be advised accordingly.

The allotment given by the Divisional Office shall have precedence over the allotment given by the Station Master in regard to supply of wagons as mentioned in (A) (iv) above but maintaining the priority.

**12.05. Advice of daily allotment and restriction.-**

The Station Master shall post the daily allotment and the restrictions that are inforce on the day, on the Notice Board at his station or Goods Shed.

## III LOADING

**12.06. Supply and loading of wagons.-**

(a) The first call on the Railways in the matter of Supply of wagons is for all movement under item 'A'. After meeting demands under 'A' to 'D' available empties are distributed to traffic falling under item 'E', For the significance of. items 'A', 'B', 'C', 'D' & 'E' (see para 12.01).

(b) Covered wagons should normally not be supplied for traffic which should normally move in open. If, however, the operating conditions permit, covered wagons may be supplied for traffic which would normally move in opens, provided the indents indicate that either covered or open, whichever is available, would be loaded.

(c) *Submission of loading report.*- Wagons loaded at stations are recorded in the daily loading reports (in T. 570 'C') submitted. by station giving full particulars of wagons loaded to each destination, commodity and weight of the consignment and the allotment order number and date against which such loading is done.

(d) Station Masters will submit daily loading statements on form T. 570 'C' on the next day of loading so as to reach the Divisional Office not later than the third day from the date of loading the wagon (s). Such loading statements will also be submitted for wagons allotted by the Station Masters themselves. In addition, they will submit a ten-day loading report on form T. 267 to the Divisional office for each ten-day period, i.e. 10th, 20th and the last day of the month. This loading report should reach the Divisional office by the third day after the close of the period.

(e) *Checking of goods loading.*- Regular systematic checks are to be exercised in the wagon Analysis Branch of the Allotment Section in the Divisional Office on the loading on the loading at station with a view to detecting irregularities mentioned below:-

Stringent and deterrent action shquld be taken against the staff responsible for such irregularities as:-

(i) Loading without allotment orders.

(ii) Not loading in accordance with allotment orders.

(iii) loading a commodity other than that allotted.

(iv) Change of destination or commodity.

(v) Loading of wagon (s) in excess of allotment.

(vi) Loading in contravention of the restriction orders.

(vii) Supply of wagons in violation of seniority in registration under respective items of priority in accordance with the preference schedule vide paras 12;01 & 12.06.

(viii) Splitting up of consignments to circumvent class and other restrictions.

**12.07. Cancellation of indents.-**

If a consignor fails to commence loading of a wagon or wagons placed in position for loading, within the free time permissible on the wagon or wagons in accordance with the rules contained in the Goods Tariff and lor other extant rules, the indents should be cancelled by the Station Master unless the consignor requests the Station Master in writing to detain the wagon beyond the free time as may be admissible in accordance with the rules. The Station Master in such cases, i.e. when the indent is cancelled, will allot such wagon or wagons against the next indent in turn of priority at his station. The free time permissible on different types of wagons is notified from time to time through special circulars.

# CHAPTER- XIII

# INTERCHANGE OF ROLLING STOCK

**13.01. Introductory.-**

Some of the salient features governing the interchange of coaching and goods stock as between one Railway and another and maintenance of such stock for the purpose of interchange, are described in this Chapter. The detailed rules in this regard are laid down in Part II and III of the I.R.C.A. Conference Rules.

**13.02. Definitions.-**

Some important terms which are frequently used in the rules are described in the definitions listed below :-

(i) "Owning railway" means and Railway to which a vehicle or wagon belongs.

(ii) "Forwarding railway" means and includes each Railway sending a vehicle or wagon to another Railway, whether on the outward or homeward journey.

(iii) "Receiving railway" means and includes each Railway receiving a vehicle or wagon from another Railway, whether on the outward or homeward journey.

(iv) "Booking railway" means the Railway on which traffic originates.

(v) "Destination railway" means the Railway on. which traffic terminates.

(vi) "Intermediate railway" means any Railway between the booking Railway and the destination Railway.

(vii)"Working railway" means a Railway working ~ a junction.

(viii) "Using railway" means a Railway using a junction worked by another Railway.

(ix) "Rolling stock" includes both coaching stock and goods stock.

(x) (a) "Coaching stock" means all coaching vehicles such as Postal, Motor and Coaching traffic vans, Horse boxes, and Military cars in addition to passenger carrying vehicles. Coaching vehicles belonging to different Railways and of different kinds are identified by a code signifying what type of vehicle it is and on each vehicle is also painted the initial of the owning Railway and a number. Thus S.E.C. 423 indicates passenger coaching vehicle belonging to South East Central Railway with accommodation for first, and second classes bearing number 423.

(b) Goods wagons intended for coaching traffic should be marked as such and used for coaching traffic only. They will be treated as coaching stock for interchange purposes but damages and deficiencies will be charged for at scheduled rates for goods stock.

(xi) "Goods stock" means rolling stock, other 4 than coaching stock, irrespective of contents, whether attached to Passenger or'Goods trains, and includes tanks, flats, vans and such like vehicles. Each type of wagon carries a code indication, the initial of the Railway and the wagon number. For

instance, SEC/C/12576 implies a S.E.C. Railway four-wheeler covered wagon bearing number 12576.

(xii) "Vehicle" applies only to coaching stock.

(xiii) "Wagon" applies only to goods stock.

(xiv) "Director" means the Director of wagon Interchange.

(xv) "Interchange junction" means the junction at which the stock between two or more Railway is interchanged.

**Note;-** A complete list of code letters of coaching stock in use on the Indian Railways is contained in the coaching and goods stock code and is printed as Appendix to Conference Rules Part III.

**13.03. Standards.-**

For the purpose of interchange each coaching vehicle or goods wagon is counted as follows:-

(a) Coaching stock :-

A four or six wheeled vehicle = One Unit.

A bogie vehicle = Two units.

(b) Goods stock :-

A four-wheeled wagon = One unit.

A six-wheeled wagon = One unit.

A eight-wheeled wagon = Two units

A twelve-wheeled wagon = Three units.

A twenty four-wheeled wagon = Six units

A BG bogie hopper wagon (KOH, BOBX, BOBS) = Three units.

A BG bogie hopper wagon (BKH, BOB) = Two and half units.

A BG bogie KO, BFR = Two units.

A BG bogie open wagon (BOX, BOX'N', BOI) = Two and half units.

A BG bogie rail truck (BRS, BRH) = Two and half units.

A BG bogie covered wagon (BCX, BCN) = Two and half units.

**13.04. Rules for interchange of coaching stock.-**

(a) There are certain rules laid down for interchange of coaching stock Individual Railway, however, may enter into mutual arrangements between themselves for the interchange of coaching stock other than in accordance with these rules.

(b) The General Rules for interchange, however provide that an empty coaching vehicles shall be returned to its owning Railway by the shortest route.

(c) Coaching vehicles may be returned loaded by the received Railways to a station:-

(i) on the shortest route back to the owning Railway,

or

(ii) on the route via which received.

or

(iii) on the owning Railway.

(d)(i) A vehicle which has been dealt with in contravention of para (c) above shall be returned to the owning Railway by the shortest route unless reloaded to or via the owning Railway when it shall be sent to the owning Railway by the booked route.

(ii) Special vans i.e. luggage parcel, motor vans and horse boxes booked by the owning Railway to another Railway shall be returned to the owning Railway as quickly as possible but in any case not exceeding the total period calculated as specified in sub-para (iii) below unless otherwise ordered.

(iii) A day for every 121 kilometres or part 121 kilometres from the interchange junction to the destination station plus 2 days at the destination. For example, if the distance between the interchange junction and the destination is 300 kilometres, the total time allowed for the vehicle to be returned is plus 2=5 days.

(e) In the event of interruption of through communication form any cause whatever, the Railway on which the interruption occurs shall within 48 hours of the occurrence, despatch telegraphic advice of the fact to all Railways whose vehicles are detained on account of the interruption.

(f) If a Railway affixes any fittings on interchange stock in respect of which special instructions are necessary, it must send copies of such instructions to the Railways with which such stock is interchanged.

**13.05. Damages caused by Passengers or troop.-**

Prior to the departure of any troop or special train or before attaching to a train, the individual carriages reserved or chartered for troop, individuals or parties, a statement must be prepared by the C& W officials to show the existing damages or deficiencies if any or NIL in the internal fittings of the stock. One copy of the statement will be retained by the despatching station, one copy will be handed over to the Guard of the train for transmission through to destination and one copy will be given to the officer-in-charge of the troop or the person chartering the special, or in the case of individual carriage the person reserving such carriage. On arrival at destination all damages if any must be reported without delay to the Guard and the Station Master, in order that the cost may be recovered from the officer-in-charge of the troop train or from the person concerned.

**13.06 Interchange junctions.-**

The following are the junctions of interchange for rolling stock between the South Eastern and other Zonal Railways :-

| Stations | Working Rly | Using Rly. | Remarks |
|---|---|---|---|
| Ajni | Central | SEC | Goods Stock |

| | | | | |
|---|---|---|---|---|
| Nagpur | | Central | SEC | Coaching and Goods Stock |
| New Katani | West Central | SEC | Goods Stock | |
| Katani | West Central | SEC | Coaching Stock | |
| RVH | SEC | ECO | Coaching Stock | |
| Jharsuguda | SEC | SEC | Coaching Stock | |

**13.07. Rules for interchange of Goods stock.-**

There are different types of Goods stock:-

(a) (i) Pooled wagons which include (i) General

service wagons viz. the wagons of all Railways irrespective of ownership and which are available for loading from any station to any station.

(ii) Brake-vans which are also interchangeable.

(b) Non-pooled wagons which are excluded from the pool mentioned in para (a) above and which are marked “NP” in a circle adjacent to the number on both sides of the wagons. The inter-change of such wagons is in accordance with the rules described in para (e) below.

(c) *Local traffic wagons:-* Wagons of less than 13 tonnes carrying capacity and any other wagons marked for “Local traffic only” are also marked “NP” as in para(b) above. These wagons are not used for interchange traffic generally. By mutual agreement, however, between 2 or 3 Railways, they may be permitted for short distance traffic during a specified period.

(d) *Point of interchange:-* All goods stock without exception shall be considered and interchanged on arrival at the junction from the using Railway and on departure from the junction to the using Railway.

(e) Foreign Railway “NP” Wagons:-(i) Foreign Railway wagons marked “NP” may be loaded by the receiving Railway to a Station either-

(a) on the route via which received, or

(b) on the owning Railway.

(ii) *Diversion of “NP” wagons to secure* a

*l oad:-Empty* wagons marked “NP” may not be diverted by other than owning Railway to secure a load except by special arrangement and with the approval of the Director of wagon interchange.

(iii) *Return of empty “NP” wagons:-* If loads are not available for “NP” wagons, they shall be returned to the owning Railway by the shortest route.

(iv) *Re-booking of loaded "NP" wagons:-* If goods loaded in a "NP" wagon, are required to be re-booked to another destination, the consignment may be sent on in the original wagon.

(v) *Hold up of wagon due to interruption in through communication:-In* the event of interruption of through communication from any cause whatsoever, the Railway on which the interruption occurs shall, within 48 hours of the occurrence, despatch telegraphic advice of the fact to all Railways whose wagons are detained on account of the interruption.

(vi) The owning Railway shall bring to the notice of the adjoining Railways whenever "NP" wagons are booked in contravention of clause (e).

*Note:-* Information regarding tile Railway on which a particular wagon is moving can be furnished by the Director on request.

**13.08. Stencilling of wagons at interchange stations.-**

To enable the stations to return foreign "NP" wagons via station by which they are received, each "NP" wagon passing a station of interchange on the outward journey must be stencilled with the junction station code initials and date before the wagon leaves the station.

**13.09. Periodical Overhaul (POH) Wagons.-**

(i) (a) A wagon becomes "due overhaul" during the month of the year indicated by the word "Return" stencilled on the end panels of a wagon.

(b) All wagons are stencilled with the word "Return..." followed by the month and year. This indicates that the wagon is required by the owning Railway during the month of the year stencilled on the sides of the wagon for periodical overhaul in order to keep it fit for moving and in good condition.

(c) After the last date of the month of the year stencilled on the end panel of the wagon it will be called an "Overdue Overhaul or Time Expired Wagon".

(d) no wagon due periodical overhaul may be loaded, except to, or in the direction of the owning Railway-

(ii) The Director of Wagon Interchange may on representation from a Railway, exempt wagons belonging to that Railway due periodical overhaul from being returned to the owning Railway and may permit such wagons being retained in the pool service for a period not exceeding 6 months.

**13.10. Restrictions on the acceptance in Interchange of certain descriptions of Broad Gauge wagons.-**

(a) Listed below are the types of BG wagons which are not accepted in interchange. They are exemptions, however, in respect of some of these wagons and the exemptions are indicated below against each type of wagons.

1. Local traffic wagons- [ See also para 13.07(c) ]

2. Pooled or "NP" wagons due to overhaul i.e. on the expiry of the month shown in the return date:- [ See also para 13.07 (a) & (b)]

Exemptions:-

(i) Pooled and “NP” wagons loaded prior to the expiry of the return date they bear should be accepted in interchange.

(ii) In order to avoid transhipment, a time- expired wagon, if loaded, should be allowed to proceed to destination if it is safe to run or can be made so, without unloading the contents provided it was loaded within one month from the date of expiry of the return date 11-06 should not be rejected at a train examining centre or in interchange provided it has been loaded prior to the 1st November 2006.

(iii) All cases of wagons loaded after the dated of expiry of the return date should, however, be reported by the train examining staff.

(iv) Pooled and non-pooled wagons loaded with coal, coke, manganese ore, live-stock, perishable goods, explosives and dangerous goods and such articles as cannot be transhiped without a crane as well as tank wagons should be accepted in interchange provided the wagons were loaded not later than a month from the date of expiry of the return date or booked to the parent line.

Note:- Exemptions (ii). (iii) & (iv) are to be followed as “... a temporary measure.

3. *Shoe-ended bearing springs:-* Wagon with shoe-ended bearing springs when despatched by any trains other than Goods trains.

4. *Train piped wagon:-* A train piped wagon is a wagon without vacuum cylinder and brake rigging. However, it has the vacuum pipe (train pipe) for continuity of vacuum. Such wagons for or via Central, South East Central & South Central Railways cannot be accepted by Passenger or Mixed trains or Coaching special trains such as Mango special, Horse special etc. booked on coaching rates. However, a train piped wagon can be accepted by a Goods train.

Exemptions:-

(i) Train piped wagons on Troop Special trains conveying Military stores, etc. will be accepted by the_Central South East Central and South Central Railways. However, the availability of brake power should be taken into consideration as mentioned in Chapter XVII of the Operating Manual. If it should be necessary to attach a piped wagon outside the rear brake-van it should be protected by a fully automatic vacuum braked vehicle in rear.

5. *Rail trucks:-* Empty rail or timber trucks not fully equipped with bolsters, stanchions, lashing chains, couplings, etc. from the owning Railway for back-loading of rails, timber, etc.

*Exemptions:-*

Bogie rail trucks not fitted with bolsters but fitted with their full complement of stanchions, lashing chains and coupling for back-loading should be accepted in interchange.

6. *Open wagons:-* Open wagons with end or side portable doors deficient.

*Exemptions:-*

(i) Loaded or empty wagons proceeding to or in the direction of the owning Railway.

(ii) Loaded wagons requiring a crane for transhipment.

(b) When on account of the non-observance of the restriction notified in (a) above a loaded wagon is received at the point of interchange or at a stations beyond and it becomes necessary to tranship the loaded wagons, the matter should be reported by the transhipping Railway to the loading Railway.

**13.11 Time allowed for repairing, billing and examination of Goods Trains .-**

(i) *Trains from the using Railway :-* On arrival of a train from the using Railway the time allowed to that Railway for petty repairs shall be one hour 45 minutes per train with an additional 15 minutes for completion of billing.

> **Note:-** When the time available is more than 2 hours the Transportation staff should advise the Train Examining staff and when extra time is allowed at least 30 minutes' notice must be given of the time the train is required by the Transportation staff so as to enable billing to be completed. When the Transportation staff require work to be performed is less than the normal time, they must, in each case, advise the Train Examining staff so that special arrangements can be made to comply with their requirements. In such cases the minimum time for repairs and billing shall be 1 hour.

(ii) *Train from the working Railway.-* Trains from the working Railway will be attended to immediately on arrival at an interchange station by the staff of that Railway who will not damage of label any vehicle or wagon unfit to run. The time allowed for examination on arrival shall be 45 minutes.

(ii) *Trains to the using Railway:-* Trains for despatch to the using Railway must be ready and made available to the Train Examining staff of the working Railway 2 hours and 15 minutes before the advertised time of departure. Normally the limit of 2 hours and 15 minutes for petty repairs and billing should be worked to. The train engine shall be attached 30 minutes before the departure time to enable the vacuum test to be carried out and, during the first 15 minutes of this period, billing must be completed.

> Note:- When the Transportation staff can allow more than 2 hours and 15 minutes, they must advise the train Examining staff of the increase in time permitted.
>
> When the transportation staff require work to be performed in less than the normal time, they must, in each case advise the Train Examining staff so that special arrangements can be made to comply with their requirements. In such cases the minimum time for repairs and billing shall be one hour.

(iv) *Trains to the working Railway:-* Trains for despatch to the Working Railway must be ready and made available to the Train Examining staff of that Railway one hour before the advertised time of departure. The train engine shall be attached 30 minutes before the advertised time of departure to enable the vacuum test to be carried out.

**13.12. Neutral Control Examination of wagons.-**

(a) At certain junctions of interchange Neutral Control Train Examining staff are posted by the I. R .C. A. These staff do the examination of trains on arrival and before departure for interchange. The object is to carry out an impartial examination of trains for interchange in order to avoid disputes between Railways as to the fitness or otherwise of a wagon.

(b) The main principles of Neutral Control Examination of wagons are as under :-

(i) *Trains on arrival from the using Railway:-* Trains on arrival from the using Railway will be subjected to a preliminary examination by Neutral staff who will indicate to the using Railway by chalk-marking all deficiencies, damages and 100 fittings, wagons or vehicles found unfit and lial to be rejected. On the expiry of the time allowed for repair the Neutral staff will examine the trail record damages and deficiencies and bill the sat against the using Railway.

(ii) *Trains for despatch to the using Railway :-* On receipt of the trains ordering advice, trains despatch to the using Railway will be subjected a preliminary examination by Neutral staff who, indicate to the working Railway by chalk-mark all deficiencies damages and loose fittings. On expiry of the time allowed for repairs, the Neutral staff will again examine the trains, record damage and deficiencies and bill the same against working Railway, wagons or vehicles found being rejected. ~ Neutral SSE / SE / JE (C&W), obtain the signature of the working Railway staff, in token of petty repairs having be completed by himself, and sign the same in token of his having completed the billing. He will obtain the Loco Pilot's signature on the using Railway vacuum brake memo, one copy of which will be handed over to the Loco Pilot, one copy being sent the Head to SSE / SE / JE (C&W) of the using Railway and one copy being retained by the Head Neutral SSE / SE / JE (C&W) for record. The Neutral SSE / SE / JE (C&W) after obtaining the Loco Pilot's signature, will ISSUE Fit Certificate to the working Railway Transportal Department retaining the signed acknowledgem foil for record.

(iii) For the purpose of fixing responsibility case of accidents, the Neutral Train Examining staff shall be considered as belonging to the accepting Railway.

(c) *Junction at which Neutral Control Examination is in force:-* The junctions at which the Neutral Control Examination is in force and the working rules at these points are given in Conference Rules Part-III.

(d) The Neutral Control staff are posted at workshops, Marshalling Yards, Sick lines and wagon Repair Depots for the purpose of examining the repaired wagons and ensuring that the repairs are carried out in accordance with the standard laid down in Conference Rules Part III so that such wagons may be fit to pass in interchange.

**13.13. Wagon census.-**

(a) B. G. wagon census including brakevans is held every year and any differences found as a result of each census shall be adjusted by the joint Director (Computer services) / Railway Board.

(b) After the census, enumerations are checked with the records of individual railways, it often happens that some wagons remain untraced. These generally come under the following categories:-

(i) Stock in existence but not enumerated.

(ii) Stock not in existence but enumerated.

(iii) Duplicate enumeration.

Such irregularities are rectified in the computer Services / Railway Board as far as possible after scrutiny of records of each. Railway.

(c) The results of each census shall be taken as the opening figures for each railway and hire charges adjusted by adding or deducting, as the case may be, the net daily difference in interchange and carrying forward day by day the aggregate debit or credit of each railway. Settlement shall be made monthly. The current wagon/brakevan balance shall be adjusted in accordance with the census results.

(d) The result of the census are notified in 2 stages, one as preliminary and the other as final immediately the total number of wagons aft enumeration railway-wise is known, preliminary census balance is announced. The final census results are announced after a through check made to trace the wagons which have either missed enumeration or have been enumerated incorrectly.

After finalisation of the census result in computer services / Railway Board, if any wagon is found missing for two successive census they are deleted from the existing stock of individual Railway. The list of such wagons are circulated by Joint Director (computer Services) / Railway Board.

**13.14. Hlre.-**

(i) Hire charges for different type BG wag< are fixed by the Board from time to time

(ii) Hire charges shall be calculated by the daily aggregate balances at junction at midnight.

(iii) The hire levied on debtor Railways will divided among creditor Railways proportion to their credits, debits be raised a.nd credits being allowed on gross figures for the month.

(iv) The Director shall communicate monthly the Accounts Officer to be appointed for the purpose the aggregate debits or credits on account of hire charges for adjustment with the Railways concerned.

**13.15. Junction accounts and Returns.-**

Each interchange junction shall maintain separate returns for wagons/ brake-vans from and to each Railway for all goods stock interchanged, whether pooled or non-pooled. These shall be written up from the Number Taker's Books by means of carbon in four foils which shall be dealt with daily as follows:-

(a) First foil to be sent to the Director.

(b) Second and third foils to be sent to the Chief Operations Manager of the Railways concerned.

(c) Fourth foil to be retained at the junction as junction record.

**13.16. Daily junction message.-**

(a) Each interchange point must issue the following message to the Joint Director (Computer Services) / Railway Board and the Chief Operations Managers of the Railways concerned by fax or e-mail.

(b) Daily message showing the total number of wagons in terms of four wheelers/brakevans received as also the number of loaded and empty covered and

open wagons under 18 categories (as per proforma shown in Appendix-B/2 of I. R. C. A. Conference Rules-part.II) exchanged between Railways. Confirmation copies of the messages should be sent by post.

(c) Following code have been allotted to the various railways for use in interchange messages :-

| Railway | Headquarter | Code | STD Code |
|---|---|---|---|
| Eastern | Kolkata | A | 020 |
| Western | Mumbai | B | 090 |
| Bangladesh | -- | C | -- |
| Northern | New Delhi | D | 030 |
| Central | Mumbai | E | 010 |
| Southern | Chennai | F | 060 |
| North Eastern | Gorakhpur | G | 040 |
| Pakistan | -- | H | -- |
| Northeast Frontier | Gowahati | J | 050 |
| South Eastern | Kolkata | K | 080 |
| CPT | -- | M | -- |
| South Central | Secundrabad | N | 070 |
| Kokan | Navi Mumbai | P | -- |
| East Central | Hazipur | R | 025 |
| North Western | Jaipur | S | 050 |
| North Central | Allahabad | T | 035 |
| West Central | Jabalpur | V | 015 |
| East West | Bhubneshwar | X | 085 |
| South Western | Hubli | Y | 065 |
| South East Central | Bilaspur | Z | 075 |

(d) Code cum Completion message :- This message is issued to the Joint Director (CS)/Railway Board giving the individual number of wagons of the train with types, loaded or empty interchanged between Railways, Serial Number of the consists is to be maintainted in the message.

**13.17. Returns and Statements to be submited by Railways and the Director.-**

(A) *From Head Offices :-*

(i) *Tri-monthly :-* Traffic reports showing the total number of wagons loaded with commodities, for each 10 day period in the month.

(ii) *Monthly:-* (a) Statement of wagons temporarily out of services on the line daily as found on actual count.

(b) Statements of additions and alterations to goods stock.

(B) *From the Director/Railway Board:-* The following statements will be submitted to the Railways and Railway Board:-

(i) *Tri- monthly:-(a)* Advices of wagon balances on the 10th, 20th and last day of each month.

(b) Traffic report showing loading position.

(ii) *Monthly:-* Wagon performance statement.

**13.18. Correction letters.-**

(a) Every Railway shall submit to the other Railway concerned and the Director (Computer Services) Railway Board advices of all corrections and omissions detected in the process of documentation at the interchange station. This should be done immediately the omissions are detected. All such claims for adjustment must be submitted within 6 months of the date of interchange after which they will not be accepted.

(b) Any adjustment in hire charges and wagon balances / brake-van balances that may be necessary on account of correction letters will be made during the month in which they are received.

**13.19. Access to records for Inspection.-**

The records relating to interchange maintained in the office of the Director (Computer Services)/ Railway Board and at stations shall be open to inspection and check by any of the Railways. Any '. error or omission detected shall be notified to the Director (Computer Services) / Railway Board for verification and adjustment, if in order.

**13.20. Notice regarding irrepairably damaged Wagon.-**

When wagons of other than the owning Railway are irrepairably damaged on any Railway, notice in general terms stating how and when the damage took place and the nature of it, shall be sent within one month by the damaging Railway to the owning Railway, a copy of the notice being forwarded by the damaging Railway to the Director (Computer - Services)/ Railway Board who will adjust wagon balances accordingly.

**13.21. Loading.-**

Rolling stock which is unevenly loaded or overloaded must be damage labelled by the Train Examiner and arrangements must be made for it to be attended to. After the defect has been rectified a fit memo must be issued.

**13.22. Alteration in equipment of wagon. etc.-**

When Railways make any alterations in the equipment of wagons or change the design of any gear or decide to treat as obsolete any wagon fittings affecting interchange transactions, they should intimate the Director General / RDSO who will advise all concerned.

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## CHAPTER -XIV

# OPERATING STATISTICS

**14.01. Definition.-**

Statistics is a “study of methods applied in collecting, analysing and interpreting quantitative data in any department of enquiry “Statistics are also” numerical statements of facts”, placed in relation to each other.

**14.02. Function.-**

The function of statistics is:-

(i) to simplify a mass of complex data,

(ii) to compare these simplified data, viz. the efficiency and performance indices and to judge their relationship, and

(iii) to serve as eyes of the administration, so that effective supervision and control on the management, expenditure and operation of public undertakings, of which the Railways are one, can be exercised.

**14.03. Divisions.-**

Railway statistics, broadly speaking, can be divided into two, namely, (i) descriptive and (ii) analytic statistics.

(i) *Descriptive statistics:-* Descriptive statistics comprise such primary information as (a) the length of the track, in terms of different gauges and other sub-divisions (Route, Track, Siding, K.M., percentages of gradients and curvatures), (b) number of stations classified according to signalling equipments and commercial stand points, (c) ownership and holding of rolling stock e.g., locomotives by traction and type, coaching vehicles by classes and types, freight cars by types, (d) strength of staff, (e) Capital outlay etc.

It also includes other information pertaining to the work done by the Railways, such as (a) the number of wagons loaded, (b) passengers booked and carried, (c) freight tonnes lifted and the earnings derived therefrom.

(ii) Analytical statistics:- Under this group are included figures and units combining two or more concepts. As in any other department of enquiry, Railway statistics are influenced by a multiple of causes and factors, each of which is distinctly different from the other. Interplay of these different factors and phenomena, make the Railway’s working composite. For instance, locomotives are employed to haul the traffic with the help of vehicles moving over the track. In order to measure and reflect the usage of as many of these multiple factors as possible joint concept statistics, such as, the gross tonne or net tonne kilometre per day, engine and wagon kilometres per route kilometre, etc. are complied. These analytical units are called the derivatives, units of costs and efficiency, statistical co-efficients, etc. These units reflect the standard of efficiency and economy with which the Railways are worked.

**14.04. Factors and concepts.-**

(a) Railway statistics are based on factors of quantity, distance, duration and service. The primary factors denoting these units are expressed as follows:-

(i) Quantity = in number of tonnes and passengers transported and in earnings derived,

(ii) Distance = in kilometres;

(iii) Duration = hours and days; and

(iv) Service performed in trains, vehicles, wagons and engines.

(b) These primary units are linked together to denote joint conceptions and are expressed In composite terms called “Fundamental Units”, viz tonne kilometres, representing the product of the quantity and distance travelled. Passenger kilometres, train kilometres, wagon kilometres, engine hours, wagon days, etc. are obtained in a similar manner.

(c) The eventual conceptions i.e. the relationship that exists between two sets of primary or fundamental units and the results thus arrived at are termed “Derivative Units”. The process by which this relationship is ascertained is illustrated in the following examples:-

(i) Passenger Earnings (Primary) divided by Passenger carried (Primary)-Earnings per Passenger.

(ii) Passenger Earnings (Primary) divided by Passenger kilometres (Fundamental)-Earnings per Passenger per kilometre (Rate).

(iii) Passenger kilometres (Fundamental) divided by Number of passenger (Primary) -Average Distance Travelled per Passenger (Lead).

(iv) Wagon kilometres (Fundamental) divided by Goods Train kilometres (Fundamental)- Average load in wagon per train, etc.

(d) These “Derivative Units” serve to bring out the character of particular aspects of transportation and Railway working.

**14.05. Classification of Railway Statistics.-**

The principal heads under which Railway Statistics are generally grouped are indicated below:-

(a) *Economic and Financial statistics:-* Under this head are to be included the detailed statistics relating to the advance tri-monthly approximate figures of earnings, traffic handled in the shape of passengers booked and tonnage lifted and wagons loaded for current information, and the statistics of revenue and expenditure booked in monthly and yearly accounts.

(b) *Operating statistics:-* These include statistics reflecting both the total transport output (i.e. work done) and efficiency of operation.

Examples are:-

(i) Total transport output- the number of trains run, train kilometres, shunting kilometres wagon or vehicles kilometres, engine kilometres, total coal and oil consumed, tonne kilometres transported etc.

(ii) Efficiency of operation-punctuality of Passenger trains, speed and leads of Goods trains, wagon usage as indicated by wagon kilometres per wagon day,

net tonne kilometres per day, average starting wagon loads and average load during the run, engine usage, namely engine kilometres per day per engine in use and line on different services; net tonne kilometre per engine day and per engine hour, auxiliary i.e. unproductive services such as shunting kilo metres per: 100 train kilometres, percentage of train hours to total engine hours, etc. marshalling yard, terminal goods stations and break-off- gauge points detention statistics and coal consumed per engine kilometres and per 1000 gross tonne kilometres, etc.

(c) *Commercial statistics.*- Under this head are included the statistics relating to number of passenger/tonnes carried, passenger kilometres, tonnes kilometres, average rate per passenger of rate per tonne, average lead of traffic, freight traffic and earnings by commodities etc. Claims for compensation of goods or parcels lost or damaged are also included in this category.

The basic difference between Operating and Commercial statistics is that the former principally reflects the usage of the Railway's assets while latter helps proper appreciation of the pay traffic. The former covers the gross load, and the latter the pay load.

(d) *Rolling stock and Workshop repair statistics:*- Under this head are grouped statistics concerning repairs and maintenance of rolling stock, cost of repairs, hot boxes, etc. as well as out-turn and other information relating to rolling stock workshop.

(e) *Administrative and other Miscellaneous statistics:-statistics* relating to staff matters, their number and cost by pay categories and classes, nu.mber of stations by classes and by standards of interlocking; medical and engineering statistics etc. also come under this group.

**14.06. Compilation of Railway statistics.-**

(a) Compilation of statistics of Indian Railways falls broadly under two categories viz.(i) the statistics required to be compiled by the Railways for resubmission to the Railway Board in order to keep the Board informed about the different activities, progress etc. on the Indian Railways and (ii) further detailed Railway statistics which individual Railways may undertake for their own domestic requirements.

(b) The station compilation work on the S.E.C. Railway is in the charge of a Statistical officers / S.E. Rly. GRC Kolkata assisted by an Asstt. Statistical Officer. It is fully mechanised.

(c) The rules governing the methods of compilation of the Trimonthly, Monthly and the Annual Statistics required to be submitted to the Board are incorporated in the Manual of Statistical Instructions, Volume I and II q.v.

**14.07. Publications.-**

Statistics for the Indian Railways are issued in the form of different pamphlets, published periodically by the Railway Board. Detailed statistics relating to each division and gauge of the zonal Railways are contained in various parts of the Zonal Railway's "Domestic Statistics" pamphlets,

**14.08. Basic documents (Primary data) :-**

(A) *Monthly statistics:-*

(i) Commercial:-

Passenger- (a) Passenger classifications.

(b) Blank Paper ticket and Excess Fare Ticket returns.

Goods- (a)"To-pay","paid" invoices.

(b) "Weight Only" Forwarding Notes.

The traffic accounting system on the Indian Government Railways has been mechanised and integrated with the processing of the Commercial statistics. The mechanical side of both traffic accounting and statistical processing is done in the Statistical office with the help of data processing machines.

(ii) Operating-(a) 'Guards and Loco Pilots' combined Train Report (T34 HF/new)

(b) Shunting Vouchers.

Due care should be taken by staff concerned in preparing these basic documents, as incorrect primary information contained in these returns would affect the end results.

(B) *Tri-monthly statistics:-*

(i) Statement of Approximate Gross Earnings and traffic handled:

(a) ST.5 returns prepared by stations/booking points showing earnings against principal items of passenger and goods traffic. The term approximate is used as these returns are prepared from unaudited documents. These returns are due to reach the Statistical Office by the 4th day following each ten-day period through courier service.

(b) "Weight only" bills received from the Accounts office.

**(ii) Statement of Commodity Wagon Loading:-**

Wagon loading statements on form OPT/107B returns submitted by the Divisions to the Statistical Office, not later than 6th day following every ten-day period, through courier service.

**14.09. Passenger train performance.-**

(a) *Panctuality:-* The principal yardstick with which the travelling public measure the efficiency of Passenger train performance is the standard of its punctual running. The Passenger punctuality statistics are complied separately for "Mail & Express", "Other passengers", and "Suburban" trains on the following basis:-

(i) Running of passenger, Mixed trains (Traffic)

(a) Mail & Express trains.

1.01. Total number of trains run.

1.02. ii) Booked train hour (Time Table)

1.03. Number of trains not losing time.

1.04. Percentage of trains not losing time.

1.05. Trains arriving right time.

i) Number.

ii) Percentage of total No. of train run.

1.06 Total time lost of home Rlys. Accounts.

1.07. Percentage of time lost to total booked hours.

(b) Other Pass. trains including mixed trains EMU trains and Rail Cars.

1.08. Total No. of Trains run (EMU Others),

1.09. No. of trains not losing time (EMU Others),

1.10. Percntage of trains not losing time (EMU Others),

1.11. Trains arriving tight time.

i) Number (EMU Others),

ii) % of total no. of trains (EMU Others),

(c) All Pass. trains (a) to (c)

1.12. Total No. of trains run (EMU Others),

1.13. No. of trains not losing time (EMU Others),

1.14. Percentage of trains not losing time (EMU Others),

1.15.Trains arriving right time

(i) Number (EMU Others)

(ii) % of total No. of trains run (EMU Others).

While the Percentage of trains to; total not losing time statistics reflects the operating efficiency of any Railway / Division / vis-a-vis its contiguous Railway / Division, the percentage of trains arriving right time, etc. statistics indicate the performance on any Railway as a service to the public.

(ii) Average number of vehicles (4-wheelers) per Passenger Train. This figure indicating the utilisation of Coaching stock is arriving at by dividing the vehicle kilometres by the train kilometres; everything also being equal, the higher this figure the greater the utilisation the coaching stock.

(iii) *Vehicle kilometres per Passenger/othel Coaching vehicles day:-* These statistics indicate the extent to which coaching vehicles are kept or the move. The factors affecting the results are:-

(a) The average speed of trains;

(b) The average length of train runs;

(c) The idle periods in the rake links; and

(d) The percentage of vehicles under or / and waiting repairs to total on line.

The result is calculated by dividing the Coachin! vehicle kilometres by the vehicle days which is the product of average number of coaching vehicles on line and the number of days in the period in question.

Since the length of passenger train runs are not susceptible to changes, nor is there any appreciable scope for improving the speed, the performance can be improved by tightening up of rake-links, elimination of overlaps at terminal points, reduction in the number under repairs or awaiting repairs. The results are affected by too many special and other coaching stock, short branch lines and slip coaches.

(iv) *Average Booked speed:-* This figure represents the average time-table speed of Passenger trains. The higher this figure, the better the service to the passenger and the more intensive utilisation of coaching stock.

(v) *Shunting kilometres per 100 Train kilometres:-* (passenger including proportion of Mixed):-

(a) This figure indicates the amount of unproductive service that has to be performed per 100 train kilometres (Passenger including proportion of Mixed). Since the amount of shunting to be done on a Passenger train depends upon various local factors, the figure will vary from division and from Railway to Railway.

(b) The figure is arrived at by multiplying by 100 the quotient of shunting kilometres divided by train kilometres (Passenger including proportion of Mixed).

**14.10. Goods train performances.-**

(1) *Average speed of Goods trains:-* (a) This is calculated separately for "through goods trains" and "all goods trains" and is arrived at by dividing the total train kilometres by total train engine hours of the concerned services. Halts of Goods trains at stations enroute enter into these calculations and have the effect of bringing down average speeds.

(b) Some of the factors on which the average speed of Goods trains depends are:-

(i) The ratio of density of trains to sectional line capacity. The nearer a section is worked to its sectional capacity, the lesser the speeds obtained.

(ii) Hauling power of the engine used, quality of coal and quality and adequacy of water supply, standard of maintenance of engines and time taken by Loco Pilots for loco requirements.

(iii) Loads of trains.

(iv) Condition and type of rolling stock.

(v) Standards and maintenance of signalling and interlocking.

(vi) Facilities at watering stations, facilities at ' roadside stations to complete shunting in the minimum time.

(vii) Length of block sections. ...

(viii) Capacity of the terminals to receive trains freely.

(ix) Engineering restrictions, permanent and temporary, gradients and curves.

(2) *Average Net Train Loads (in tonnes):-* This figure refers to the average freight load carried in tonnes, i.e. that portion of load which earns revenue for the Railway. Non-revenue traffic viz. Railway coal and stores (but not what is moved by departmental material trains) are, however, included.

(3) *Average Gross Train Loads (in tonnes):-* This figure represents the average overall load of Goods trains i.e. the freight load plus the weight of the rolling stock. The principal factors affecting this figure are:-

(a) The tractive capacities of engines employed on Goods train services;

(b) The gradients on various sections of the line; and

(c) The nature of goods carried.

(4) *Shunting Engine Kilometres per 100 train Kilometres:-*

(a) The figure indicates the amount of unproductive work done per 100 train kilometres (Goods and proportion of mixed). Every thing else being equal, drop in train kilometres or use of additional shunting engines without a corresponding rise in train kilometres, increase in terminal work, etc. affects this result.

(b) For the same division or Railway, the pattern of traffic remaining the same, a rise in this figure is indicative of wasteful shunting.

(5) *Net tonne kilometres per engine hour:-* The net tonne kilometres per goods and proportion of Mixed, Engines hours in operation, i.e. the time. engines used for and on goods services, including proportion of mixed, shunting and departmental, from bahar line to bahar line. This figure is a very useful index of the efficiency of freight working on a division. Net tonne kilometres indicate the amount revenue earning work done while engine hours . measure the cost of doing it. A decrease in net tonne kilometres per engine hour may be due to factor such as:

(a) Shunting engine hours not being cut down in proportion to the decrease in traffic offering;

(b) increase in departmental, assisting required, assisting not required and light engine running;

(c) decrease in the average train load and/ or the average speed of Goods train;

(d) decrease in the average starting wagon \ load or in the wagon loads or wagons received from other division;

(e) increase in the proportion of unbalanced traffic; and the type of traffic carried- heavy or light.

**14.11 Wagon usage.-**

(i) *Average starting wagon load:-* (a) This figure is compiled separately for coal and coke heavy merchandise and light merchandise, thus affording an indication of the extent to which wagon space is utilised at stations at which traffic originates, It is extremely important that wagons be given as full a load as possible because this means

economy in wagon usage and consequently economy in engine power, fuel consumption and less strain on line and yard capacity. Even a slight improvement in the starting wagon load means a tremendous saving to the Railway.

(b) This result is calculated by dividing the number of tonnes charged for by the number of wagons loaded (in terms of four wheelers).

(ii) *Wagon kilometres per wagon day:-* (a) The wagon kilometre per wagon day figure is arrived at by dividing wagon kilometres, loaded and empty, on the open line, but excluding departmental wagon kilometres by wagon days “on line” which includes all foreign Railway wagons on home railway but excludes (i) home Railways wagon on other Railways, (ii) armoured train vehicles, ash vans, crane, dummy trucks, engineering ballast trucks, brake-vans, shop service wagons, water tanks (for staff) weigh bridge test wagons and wheel vans, (iii) wagons lent to other departments for home line constructions or to foreign Railway, (iv) wagon used for coaching traffic and empties on coaching trains, (v) wagon on port Trust Railways, (vi) wagons absent on sidings not worked by the Railways, (vii) missing wagons (not found in census). This figure is a measure of wagon usage and indicates the average number of kilometres moved by a wagon per day, both loaded and empty journeys being included. Delays in marshalling yards, at loading or unloading points, delays in clearance from roadside stations, decrease in average speed of Goods trains, increase in the number wagons under or awaiting repairs, and shorter leads of trains, holding pocket of surplus empties, restrictions by contiguous Railways on loaded traffic are some of the factors normally responsible for poor mobility

(b) This result is obtained by dividing wagon kilometres by wagon days which is the product of daily average number of wagons on line and number of days in the period.

(iii) *Net tonne kilometres per wagon day:-* (a) This unit is a measure of the revenue earning work done by the wagons and reflects both mobility and loading. A decrease in this figure may be due to inter-alia to any of the causes which affect the figure of wagon kilometres per wagon day. The proportion of loaded to total wagon kilometreage, the average load of a loaded wagon and the relative amount of heavy and light merchandise carried, are some of the other factors which may affect this figure.

(b) The numerator in this case is the net tonne kilo metres (excluding departmental) and the denominator wagon days.

(iv) *Wagon Turn round:-* This figure expresses the ratio between the total number of serviceable on a Railway and the number of wagons required daily for effective use on the Railway for its outward, inward and transhipment traffic. Stated in a different way, wagon turn round represents the average period of time in which a particular wagon completes its average loaded trip, after which it again becomes available for loading. In other words it is the time interval between successive loadings.

The wagon turn round figure as between Railways can only be of general interest. No useful purpose is served in comparing the turn round between different Railways as a number of factors influence the figure and these factors differ from Railway to Railway. The factors governing wagon turn round are:-

Average load, traffic density, ruling grades, line facilities such as double or single lines, main and branch lines, break of gauge, strength of track and bridges, types of locomotives in use, normal loads of trains, standards of signalling provided, facilities at terminal yards, and communications available etc.

As between different periods on the same Railway or division! district of a Railway, however, the figure is a useful indication of efficiency as it also varies with such factors as speeds of Goods trains, detentions in yards, stabled loads, condition of locomotives, engine failures and accidents.

Wagon turn round is calculated by means of the following formula:

Wagon turn round= Effective average daily wagon holding * divided by average No. of wagons loaded daily including loading and transhipment at break of gauge points plus average No. of inward loaded wagons received daily from other Railways divisions.

* Departmental wagons and wagons loaded for departmental use, stock used for coaching traffic, wagons under or awaiting repairs daily in Mechanical Workshops and Wagons out of commission in sick lines are to be excluded from the wagon holding.

(v) *Average Wagon load during the run:-* (a) This unit is a good index of wagon utilisation as it refers to the average load of all loaded wagons carried. It suffer from the drawback that it does not directly reflect the performance of the division, gauge or Railway to which it applies, as only a proportion of the loaded wagons carried is loaded locally and the balance consists of both received traffic and cross traffic.

For obtaining this figure net tonne kilometres are divided by loaded wagon kilometres, (the figures relating to departmental trains are excluded).

**14.12. Locomotive Performance.-**

(i) *Engine kilometres per day per Engine in use:-* This figure is compiled separately for each type of traction and separately for Passenger, Mixed and Goods train services as well as for all services. This is affected by such factors as :-"-

(a) the average run of trains;

(b) the average speed of trains;

(c) the engine links; and

(d) the location of engine sheds with respect to the stations which they serve.

(ii) *Engine kilometres per day per Engine on line:-* This figure is also compiled separately for each type of traction and separately for Passenger, Mixed and Goods trains services as well as for all services.

The proportion that this figure bears to the corresponding figure of "Engine Kilometre per Engine day per Engine in use" indicates the proportion of available engines "on line"" that were put to effective use during the period in question.

(iii) *Consumption of fuel per engine kilometre by services:-* The unit of measurement of consumption is liters per engine kilometre for Diesel traction.

The factors affecting this consumption rate are percentage of train engine kilometre to total engine kilometres, terminal detentions etc. It must be noted that this

consumption rate does not take into consideration the loads hauled and as such this rate is not such a good index of consumption. However, in the case of diesel locomotives, this rate can be used to estimate the approximate distances, which the locomotive can cover without refuelling.

(iv) *Consumption of fuel per 1000 GTKM by services:-* This figure indicates the oil consumption in relation to the work done and is, therefore, a better index of fuel consumption than the "litres of fuel" consumed per engine kilometre figure. The unit is litres/1000 GTKM for diesel traction. The unit of consumption for electrical traction is KWH/ 1000 GTKM. The main factors that influence this result are the gross load and speed of the trains. In general, the higher the speed and greater the average load hauled, the better the fuel consumption rates.

(v) *Cubic decimetres of lubricating oil per 100 engine kilometres by services:-* This figures to the consumption of lubricating oil used on engines. In general the condition of the locomotive and the quantity of the lubricant affect this figure. This is particularly so in the case of diesel locomotives.

(vi) *Cubic decimetres of lubricating oil per 1000 vehicle kilometres:-* This figure refers to the consumption of lubricating oil used on vehicles and is an index of maintenance standards and oil quality.

**14.13. Marshalling Yard statistics.-**

(i) *Average detention per wagon (a) All wagons, (b) through loaded wagons:-* Detention suffered by stock in a yard depends interalia, on the type and layout of the yard and on the number of trains per day that can be despatched in various directions. Target figures have been laid down for each yard for detentions to all wagons and through loaded wagons. Such targets take into consideration the conditions of work and facilities available in the yard concerned. Detentions in excess of this figure indicate inefficient yard work. Detentions less than the target mean lesser cost of handling wagons in yards and therefore reflect improvement in working.

(ii) *Number of wagons dealt with per Shunting Engine Hour:-* The number of wagons that a given yard can deal with per shunting hour depends, interalia on its layout and facilities and the percentage of mixed traffic requiring heavy sorting to total. Accordingly, a target figure has been prescribed for each yard to enable the efficiency of yard work to be gauged. As shunting involves cost the higher the figure the greater the efficiency of the yard.

# CHAPTER - XV

# MOVEMENT OF OUT-OF-GAUGE LOADS AND HEAVY, BULKY AND LONG ARTICLES.

**15.01. Definition.-**

*Over Dimensional Consignment (0. D.C):-* When a bulky consignment with its packing and lashings is loaded in a wagon and its length, width and height are such that one or more of these infringe Standard Moving Dimensions at any point during the run of the wagon from start to destination, then the consignment is called an "Over Dimensional Consignment" (O.D.C.). It is also known as Out-of Gauge load.

Before a forwarding note is accepted for a bulky consignment it must be ensured that the full dimensions of the consignments are given therein, so that it may be determined whether the consignment falls in the category of Over Dimensional Consignments.

**15.02. Standard Moving Dimensions.-**

(A) Standard Moving Dimensions are shown in Annexure 'A'.

Briefly, however, if any package, before loading exceeds the following dimensions, it is to be treated as over dimensional or out of gauge load.

| | Broad Gauge system. |
|---|---|
| (a) Length | ...13716 mm/(45'-Q") |
| (b) Height (i) at centre | ...2743 mm/(9'-Q") |
| (ii) at corner | ...2133 mm/(7'-Q") |
| (c) Width | ...2997 mm/(9'-10") |
| (d) Top width | ...610 mm/(2'-Q" |

Note:- (i) Weight of the consignment should not exceed carrying capacity of the wagon.

(ii) Gross weight of the wagon with the consignment loaded on it should not also exceed the axle load limitation of the section.

(B) When Over Dimensional Consignments are accepted for carriage, certain precautions have to be taken and for purpose of such precautions, Over Dimensional Consignments are classified in different categories according to the extent to which the clearance in respect of length, width and height of any consignment are less than what they should be if within Standard Moving Dimensions.

(C) The clearances referred to above are two types- gross clearances and net clearances. Gross clearances mean the extent of clearances when the .consignment is stationary and the net clearances mean the extent of clearances after allowing for horizontal lurching and vertical bouncing.

**15.03. Classification of Over Dimensional Consignments.-**

(a) Depending on the extent to which the clearances of consignments are short of normal clearance the loads are classed on this Railway into three categories-'A' Class loads, 'B' class loads and 'C' Class loads:

(i) *'A' Class loads:*- Loads having a net clearance of not less than 15.24 c.m/6"(six inches) [(Gross clearance of 22.86 c.m/ 9"(nine inches) and above)] from the fixed structure all round but which nevertheless infringe the Standard Moving Dimensions.

(ii) *'B' Class loads:*- Loads having a net clearance of not less than 7.62 c.m/3"(three inches) but less than 15.24 c.m/6" (six inches)[(Gross clearance of 15.24 c.rn/6" (six inches) and above but less than 22.86 c.m/ 9" (nine inches)] from fixed structures.

(iii) *'c' Class loads:*- Loads having a net clearance of less than 7.62c.m/3" (three inches) but not less than 2.54c.m/1 II (one inches)[ (gross clearance of less than 15.24 c.m/6" (six inches) but not be less than 10.16 c.m/4"(four inches)] from fixed structures.

(b) General Restrictions on movement of over dimensional loads.

(i) *'A' Class Load:*- 'A' Class over-dimensional load is permitted to run both during day and night with a speed of 40 KMPH. This load may run at higher speed upto which trains carrying four wheelers are permitted to run on the section, subject to the speed being limited to 30 KMPH in vicinity of fixed structures having gross clearance of less than 15"(380mm) and all such locations being indicated in the instructions to be given to the Loco Pilots.

(ii) *'B' Class Load:*- 'B' Class over- dimensional load may be allowed to run at speed of 40 KMPH during day as well as night. However, for night running following additional conditions shall be observed:

(a) SSE(C&W) / SE shall accompany the load with the details of all those structures from which the net clearance is less than 6" and he will be responsible to ensure that the consignment does not shift from its position enroute.

(b) At the approach of each of the structure, where the net clearance is less than 6", the train carrying the load would be stopped and the consignment checked to see that there has been no shifting.

Note:-A further speed restriction of 15 KMPH should be observed while passing stations, yards, curves and turnouts throughout the run in general and subject to observance of such special restrictions as may be stipulated by the Sanctioning Authority. The train carrying 'B' class loads will be required to pass such tight structures having net clearance of less than 15.24 CM/6" or gross clearance of less than 22.86 c.m/9" excluding curve allowance (if the structure is situated on curve) with speed restriction of 8 KMPH. The train with 'B' class loads will be examined and checked at the interchanged points and in the yards where intensive/safe to run examination exists. SSE/SE/JEC (O&W) will accompany the 'B' class OOC during day light hour at the critical section where the existence of fixed structures render the consignment as 'B' Class. The load should be attached next to engine of a goods train alongwith an additional brakevan just after the load when/wherever train examiner will accompany the load.

(iii) *'C' Class Load* :- 'C' Class over- dimensional load may be run during day light only. The speed of the train carrying the load must be restricted to 25 Kilometres per hour which must further be restricted to 8 Kilometres per hour while passing through stations, yards, - curves, gradients and turnouts

Note:- In addition to these precautions, a speed restriction of 8 KM per hour should be observed for all structures having net clearance of less than 15.24.c.m (6")but more than 7.82.c.m/(3"). For structures having net clearance less than 7 .62c.m.(3") but not less than 2.54c.m.(1")the load should be stopped short of the structures, the dimension should be checked and adjusted, if necessary, and then the load should be piloted through the structure at walking speed by a representative of the Engineering Department not below the rank of JE (Pway)

Such consignments shall move in special train only accompanied by Supervisory Staff of Civil Engineering, Traffic Carriage and Wagon Departments Supervisory staff of signal (Maintenance) and Electrical (Traction) Departments should also accompany the train carrying the load, where necessary and as may be stipulated.

The load must not move on any line along which there exists any structure infringing item No.8 of Chapter I and item No.11 of Chapter II of Schedule of Dimensions (B.G) unless there is specific sanction for such movement for passing such structure.

**15.04. Acceptance of booking and movement of over Dimensional Consignments.-**

(a) When a consignment is offered for booking and the dimensions are such that they exceed standard Moving Dimensions then the Station Master will apply to the Seniormost Divisional Operations manager for permission to move the consignment. Depending on the dimensions of the consignment will fall under category 'A', B' or 'C'. The following officers are empowered to sanction transport of over Dimensional Consignments:-

'A' *Class loads :* For local booking only- Divisional Railway Manager.

-do- : *For booking to foreign .Railways*- acceptance to be communicated by the Chief Operations manager.

'B' Class loads : For local booking as well as for booking to Foreign Railways- acceptance to be communicated by the Chief Operations manager.

'C' Class loads: For booking both local and foreign railways, CRS' *s* sanction should be obtained through the Principal Chief Engineer.

(b) No out-of gauge loads should move except under sanction accorded by an Officer not below the rank of a Senior Scale Officer, the sanction being received from the Division or from the Head- quarters depending on the category.

(c) In communicating sanction for the movement of over Dimensional Consignments the specific route through which the particular consignment will move, should be indicated in the sanction and it will be the responsibility of the Station Masters of the Stations from which the load originate and the section Controller to ensure that the

particular consignment takes the specific routes and line for which movement sanction is issued.

In addition to strictly adhering to the specific route the restrictions (e.g. speed restrictions, night running restrictions, platform restrictions etc.) notified for the conveyance of the consignment over that route must also be scrupulously adhered to and no relaxation in this regard is permitted.

**15.05. General Instructions regarding loading and movement of Over Dimensional Consignments.-**

(i) On receipt of loading instructions from the sanctioning authority, the consignment must be loaded carefully and packed properly on the trucks so as to avoid any chances of shifting on route.

(ii) The greatest weight on any pair of wheel shall not exceed that for which the vehicle is designed and the weight shall as nearly as possible be evenly distributed on each wheel. In no case must the load rest on the end of vehicle in such a manner that the weight on any pair of wheels should be more than double that on any other pairs of wheels in the same vehicle.

(iii) No over-dimensional load should be drawn out from the loading point without first being examined by a responsible official not below the rank of a SE(C&W) and specific sanction be obtained from the sanctioning authority for movement right upto the destination station.

(vi) On the card label of over-dimensional loads, following particulars must be mentioned:-

(a) sanction no. for despatch and by whom sanctioned;

(b) route and via junctions;

(c) actual overall dimensions;

(d) weight of consignment loaded; and

(c) classification of over-dimensional load;

(v) The Over Dimensional load will leave the originating point only after permission has been accorded through. a memorandum issued by the authority competent to authorise the movement of the O.D.C. load in consultation with the control offices concerned which will nominate the train/ trains by which the load should move.

(vi) At the originating point, the individual number/ numbers of wagon/wagons carrying such consignment should be entered by the Trains Clerk! Station Master in the Vehicle Summary (Wagon Way Bill) to be passed on the Train Guard.

(vii) Before starting, t'le Train Guard should contact the Controller on duty and inform him about the over-dimensional load being on train giving the number and position of the wagon as also the details of staff accompanying the train, if any.

(viii) It will be the duty of the Dy. Chief Controller of that Control Office to keep the adjoining Control office informed about the movement of such consignment till such time the same is actually handed over to the adjoining Division by a specified train.

(ix) It will be the personal responsibility of the Dy. Chief Controller concerned also to ensure that the consignment is moved strictly by the authorised route.

(x) Loco yards, Goods sheds and Transhipment Platform Sheds must be avoided while transporting over dimensional loads when so specified.

This does not prohibit the use of portions of the line adjacent to the Goods Shed, and Transhipment! Platform Sheds, which are not directly in front of such sheds and which can be approached without the consignment having to move over a line directly in front of the shed. If the overall height of an over- dimensional load exceeds 4115 *mm.(13'-6j* from rail level, platform lines having IRS type cover must not be used except under special sanction from the Principal Chief Engineer.

(xi) Shunting of trains with an over-dimensional load should be avoided. Loose and fly shunting of vehicles containing over dimensional loads is prohibited.

(xii) Over-dimensional loads should move by through trains and not by work trains or shunting trains.

(xiii) If the overall width of an over dimensional load exceeds 1676 mm. (5'-6") from the centre line of the track, platform edges must be kept clear of passenger and their luggages during passage of such load through station platform lines.

(xiv) Owning to restriction of night running or for any other reasons, if any over-dimensional load is detached from any train at any station/Yard, the station/Yard staff are responsible for stabling the load in a safe place till same is despatched from the station.

(xv) The dimension of over dimensional load, both as regards its distance from the centre line of the track and also its height above the floor of the wagon will be carefully checked by each SE(C&W) at his Headquarters station throughout the run. If any shifting takes place, the articles must be brought back to proper place and position, and securely fastened before the train is allowed to proceed further.

**15.06. Electrified Sections.-**

In addition to the precautions laid down above, the following special precautions must be observed for transport of over-dimensional loads on the electrified sections:-

(i) In all cases where oversize consignment is moving, it should be remembered by all staff accompanying the O. D. C; that the overhead electrical equipment is always ‘LIVE’ except when a particular power block has been obtained from the Traction officials. Even when a power block has been obtained, it should be remembered that all the lines other than those for which the power block has been granted are ‘LIVE’ at (25,000 Volts).

(ii) No person should climb on the roof of carriages or wagons when those vehicles are located beneath the overhead equipment except when the equipment is made ‘DEAD’ and earthed.

(iii) The following are the prescribed clearances from contact wires for the passage of over- dimensional loads through electrified traction areas and the special restriction required :-

(a) Special speed restriction is not required when the gross clearance is at least 390 mm (1' - 31”_2 )

(b) Speed must be restricted to 15 kilometres per hour when the gross clearance is tn .. between 390 mm to 340 mm,(1' - 31”_2 to 1' - 11”_2 )

(c) Speed must be restricted to 15 kilometres per hour and overhead power must be switched off when the gross clearance is less than 340 mm. (1' - 11”_2 ).

(iv) No consignment with less than 100 mm (4") gross clearance from the overhead contact wires will be permitted over electrified section.

(v) A representative of the Traction Department should accompany all O. D. C. loads having width more than 1981 mm. (6'-6") for B.G. and 1910 mm for M.G. from the center line of the track.

(vi) A representative of the Traction Department should also accompany all over-dimensional loads having clearance as specified in item (b) and (c) of sub para (iii) above over electrified section,

(vii) Section Controller and Traction Power Controller must coordinate while as O. D. C. moves on electrified area.

(ix) A list of structures where the clearances are restricted on the electric traction area and also the clearance available under overbridges should be with the Section Controllers and Traction Power Controllers.

**15.07 Permanent Restrictions.-**

The following permanent restriction is to be strictly observed while transporting over-dimensional loads.-

Movement of ODCs between Kolumana-Nagpur for both directions via Itwari is prohibited. They are to move on single line only between kalumna-Nagpur.

## Annexure ‘A’

## STANDARD MOVING DIMENSIONS

1. Minimum clearance from Rail level 0.102m. (0’-4”).
2. Maximum width 2.44m. (8’-0”)from height 0.102 m. (0’-4”) to 0.305 m. (1’-0”) from Rail level.
3. Maximum width 3.050 m. (10’-0”) from height 0.305 m. (1’-0”) to 1.145 m. (3’.9”) from Rail level.
4. Maximum width 3.200 m. (10’-6”) from height 1.145 m. (3’-9”) to 3.505 m. (11’-6”) from Rail level, 4 for wheeled, Goods stock.

5. Maximum width 3.050 m. (10'-0") from height 1.145 m. (3'-9") to 3,534 m. (11'-71"_2 ) from Rail level for Bogie Goods stock.

6. Maximum width 2.743 m. (9'-0") upto height 3.593 m. (11'- 9 7"__17)

7. Maximum width 2.591 m. (8'-6") upto height 3.261 m. (11'- 10 9"__16) from Rail level.

8. Maximum width 2.438 m. (8'-0") upto height 3.651m. (11'- 11 3"__4 ) from Rail level.

9. Maximum width 2.286 m. (7'-6") upto height 3.708 7"__8 )m. (12'-") from Rail level.

10. Maximum width 2.134 m. (7'-0") upto height 3.708 m. (12'-2") from Rail level.

11. maximum width 1.981m. (6'-6") upto height 3.739 m. (12'- 3 3"__16) from Rail level.

12. Maximum width 1.821 m. (6'-0") upto height 3.767 m. (12'-4 5"__16) from Rail level.

13. Maximum width 1.676 m. (5'-6") upto height 3.797 m. (12'-5 1"_2) from Rail level.

14. Maximum width 1.524m. (5'-0") upto height 3.825 m. (12'-6 5"_8 )

15. Maximum width 1.372m. (4'-6") upto height 3.854 m. (12'-7 3"_4 ) from Rail level.

16. Maximum width 1.219 m. (4'-0") upto height 3.883m (12'-87"_8 ) from Rail level.

17. Maximum width 1.067 m. (3'-6") upto height 3.913m (12'-10 1"_16) from Rail level.

18. Maximum width 0.914 m. (3'-0") upto height 3.941m (12'-107"_16 ) from Rail level.

19. Maximum width 0.762 m. (2'-6") upto height 3.970m (13'- 5"_16 ) from Rail level.

20. Maximum width 0.610 m. (2'-0") upto height 4.115m (13'-6") from Rail level.

For consignments loaded in Bogie rail trucks 13716 mm. (45'-0") the following should be the maximum length, breadth, and height for keepinig them within standard moving dimensions and despatching with dummies on either end and without special precautions :-

The maximum degrees of curvature of track is assumed $7.86^0$ i.e. 1 in 8 1_2 turnouts.

| | | |
|---|---|---|
| (a) | Length be tween 13716 mm(45'-0") to 19812 | for an over hanging of not more than more than 3048 mm. (10'-0") on either end, the over all width should not exceed |

| | | | | |
|---|---|---|---|---|
| | mm. (65’-0”). | 2870 mm. (9’-5”) upto height 3505 mm. (11’-6”) from Rail level. | | |
| (b) | Length from between 3048 mm. (10’-0”) to 4572 (65’-0”) to (75’-0”) | for and over hanging portion mm. (15’-0”) on either end, the width should not exceed 2178 mm. (8’-11”) to 3505 mm (11’-6”) from Rail level. | 19812 22860 mm | mm. overall |
| (c) | Length from 22860 mm. (75’-0”) to 25 908 mm. (85’-0”) | for an over hanging portion between 4572 mm. (15’-0”) to 6096 mm. (20’-0”) on either ead, the over all width should not exceed 2561mm (8’-5”) upto height 3505 mm. (11’-6”) from rail level | | |

# CHAPTER -XVI

# CRANE

**16.01. Introductory.-**

(a) The following types of cranes are in use on this Railway:-

(i) Diesel (Rail) cranes;

(ii) Diesel (Road) cranes;

(iii) MFD/Lucas equipment; and

(iv) Hand cranes.

(b) The cranes are under the control of different departments as follows :-

(i) Loco coal Grab cranes in Loco sheds under the control of the Mechanical Department;

(ii) Cranes operating inside the Workshop at Motibagh under the Mechanical Department;

(iii) Cranes working in sick lines and carriage and wagon depots under the Mechanical Department;

(iv) Cranes working in Traffic Yards such as Transhipment points, Transit Sheds etc. under the Traffic Department.

(v) Cranes working inside the Sini Engineering work shop and also this 'Rhinoceros' Crane used for bridge work under the civil Engineering Department, and

(vi) Cranes working in Store Depots, scrap yard and Reclamation Yard under the Stores Department.

Note:-The instructions contained in this Operating Manual do apply to Workshop Cranes under the Mechanical and Civil Engineering Departments working within the limits of Workshops and Cranes under the Stores Department save when such cranes are in use on the open line. The Working of Cranes within the Workshops or Stores Yards or depots etc., will be governed by local instructions issued by the head of Department concerned.

**16.02. Competency Certificates.-**

(a) Competency certificates are necessary both for supervising and conducting Operations for- (i) Crane Supervisors (ii) Crane Loco Pilots and (iii) Crane

Maccadums.

(b) Normally the operation of diesel crane is entrusted to Crane Loco Pilots. However, in case of heavy consignments or in course of break-down operations on running lines or for operations in sick lines, a Supervisor is also provided to look after crane- operations and observance of the different Safety rules.

(c) Hand cranes are of lower lifting capacity and are operated manually. Overall charge of operating a hand crane is entrusted to a Maccadum who also directs and supervises the work of the gang attached to him for slinging and unslinging operations.

(d) The competency certificates referred to hereunder relate to both road and rail cranes in use.

(e) Competency certificates for supervising crane-operation or for operating cranes should be granted in prescribed proforma appended below, after due testing by the authorised officials, The officials authorised to issue competency certificates indicated below :-

| Description of Cranes | Authorised official |
|---|---|
| (i) For break-down cranes withworking capacity of 40.0 tonnes and above | Works Manager (General) / Kharagpur. |
| (ii) For crane with working Capacity of less than 40 tonnes utilised in traffic yard, carriage and wagon depots, sick lines, Loco sheds, goods sheds, stores depots etc. | Senior Divisional Mecha-nical Engineer/ Divisional Mechanical Engineer of the Division. |
| (iii) *Road cranes | Sr. Divisional Mech. Engin-ner/Divisional Mechaincal Engineer of the Division. |
| (iv) Hand cranes | Sr. Divi. Mechanical Engi-neer/Divisional Mechanical Engineer of the Division. |
| (v) 'Rhinoceros' crane under the Civil Engineer Department used for bridge work exclusively and under the control of the Bridge section of the Chief Engineer's office. | Principal Chief Engineer. |

*** Note:-** If the Road crane is to go on the public road, for whatever short period / length it may be, the Crane Loco Pilot must in possession of the licence for driving the crane issued by Motor Vehicles Section of the State.

(Proforma of competency certificate)

Name..... Designation .....

The above mentioned has been tested by me and is certified competent to take charge of and be responsible for the corfect and safe working operations of a Steam/Diesel crane of..... tonnes capacity.

Date..... Sr. Divisional Mech. Engineer / Divisional Mechanical Engineer / Works Manager/ Chief Engineer.

(f) Competency Certificates for supervising crane operation are granted to SSE(Loco), SSE(C&W), SE(Loco), SE(C&W), JE(C&W), Head Fitter, Asst. Head Fitters Mistries, Chargemen, Transportation Inspectors and such other Supervisory staff of other than Mechanical Department as may be permitted to supervise crane operations. In all cases

of crane operations on the Open line, SSE(Loco), SSE(C&W),SE(Loco), Mistries, Chargemen, SE/JE(C&W) possessing competency certificate. will alone be competent to supervise crane operations on running lines. The operation of Traffic Crane on running lines i or adjacent to the same in such a way as may foul the running line shall be under the supervision of a Transportation Inspector.

(g) In the case of the diesel cranes of 20 tonnes- capacity and below belonging to Operating or Commercial Department, Crane Loco Pilots who have the necessary competency certificates are allowed to supervise crane operations provided such operations are confined to sidings only.

(h) Competency certificates for supervising crane operations are valid for a period of 3 years only and have to be renewed from time to time. The knowledge and proficiency of the staff concerned are to be tested before renewal of competency certificate.

(i) The Crane Loco Pilots or Muccadums prior to the issue of Competency Certificates must undergo at least one week's training under the guidance of the Loco Foremen of the nearest Loco Shed where such crane are available, in the matter of technical knowledge in operation, upkeep of the crane, rules to be observed and the precautions to be taken for such operations. On completion of this training ,these staff must be examined by the authorised official concerned and competency certificate as per sub- para (e) above issued, if found fit.

(j) In addition to the Compet,ency Certificate referred to in sub-para (e) above, the Divisional officers are responsible for seeing that Crane Loco Pilots! Muccadums working in their departments are annually examined and are also in possession of a certificate of fitness from the SSE(Loco) of the Division to be deputed for the purpose by the Seniormost Divisional Mechanical Engineer. For this purpose SSE(loco) must annually test all Loco Pilots/ Muccadums in charge of cranes and see that they have full knowledge of their work and responsibilities and are able to operate the crane correctly, before issuing a certificate of fitness.

(k) The department using a crane will ensure that the crane is worked by a Loco Pilot or Muccadum as the case may be, holding a valid competency certificate and a certificate of Fitness. For supervision on operation of crane, it is necessary that the supervisor also possesses a valid competency certificate. It will be the duty of the Supervisor/Loco Pilot/ Muccadum to satisfy himself as to the competency of the other men of the gang.

**16.03. Maintenance.-**

(a) All Rail cranes, (Steam, Diesel or Hand operated), are classified as rolling stock. For repairs and up-keep, they are under the charge of the Chief Mechanical Engineer, and no repairs or adjustments, must be made to them except in the manner laid down by him. Girder crane "Rhinoceros. belonging to the Bridge section of the Engineering Department will, however, be maintained by the Engineering Department, Rail (Diesel or Hand) Cranes inside the store Depot of Nagpur is under the works Manager of the Shop for maintenance.

In the Divisions, the Seniormost Divisional Mechanical Engineer will be responsible for arranging maintenance of the cranes through the SSE(Loco) or JE(C&W) as mentioned in clause (b) below.

(b) SSE/SE(Loco) shall be responsible for the maintenance in proper working order of the Diesel and Hand Cranes under their charge and also the Diesl cranes belonging to or used by other departments. SSE/SE/JE(C&W) shall be responsible for the maintenance in proper working order of all hand cranes used in sick sidings as also hand and fixed Cranes used by other departments. Attention to running/lifting gear of all Cranes including those in sick line, and boiler of steam cranes including those at sick lines will be arranged by SSE/ SE(Loco)/Boiler Inspector of the loco Shed concerned.

(c) SSE/SE/Loco) and SSE/SE/JE(C&W) should examine the chains of the Cranes under their charge every three months, and see that they are in safe .working order. Chains used in accidents must be examined immediately afterwards and if any chain is found to be defective, it should be sent at once to Workshop for repairs.

(d) SSE/SE/(Loco) and SSE/SE/JE(C&W) must send the Crane chains to Kharagpur Workshop every 12 months for the purpose of examination and annealing and a certificate in form L. M. 36 must be obtained with each chain before it is brought back into use.

Note:- In the case of Cranes belonging to other departments the duties and responsibilities in respect of the periodical inspection, the annual examination, testing and annealing of chain will also devolve upon the SSE/SE(Loco) concerned.

(e) The lifting capacity must be painted conspicuously on the jib of the each crane and the lifting capacity of the chain stamped on the hook.

(f) When a Travelling Hand Crane is required to run on open line the Train Examining staff at the starting station will see that it is in a safe running condition and that the axle boxes are correctly packed and oiled.

**16.04. Periodical Overhaul.-**

Periodical overhaul of all cranes will be undertaken by the Shops and the time interval between periodical overhauls will be as under:-

| | |
|---|---|
| Steam Coaling cranes | 3 years. |
| All other Steam cranes | 5 “ |
| Diesel cranes | 5 “ |
| Hand-operated cranes | 7 “ |

Note:- Extension of 6 months at a time may be granted by the Dy. Chief Mechanical Engineer (Loco), if the Crane is sparingly used and if its condition is certified by the SSE/SE-in-charge of the maintenance. Life extension for the boiler will be sanctioned only by the Chief Mechanical Engineer.

**16.05. Use of Cranes under Mechanical Department by the other Departments.-**

(a) Break-down steam cranes must always be kept in readiness to be turned out at a moment’s notice in the event of accidents, and stabled in such a position as to minimise the amount of shunting required to get them into the traffic yard. Coal bunkers,

water tanks and-boilers of these Cranes must always be kept filled and Breakdown Cranes should invariably be worked by their own trained gangs earmarked for them.

(b) Except in cases of accidents, demand for use of Breakdown Cranes for traffic or engineering purpose must be made on the Senior most Divisional Mechanical Engineer, if the Crane is to be used within the Division and to the Dy. Chief Mechanical Engineer (Loco) if the Crane is required to leave the Division and work in another Division.

(c) In all cases except accidents, the date and time at which the Crane is required to be at work, the probable length of time for which the Crane will be required and the purpose for which the crane is required, must be stated.

(d) Requisitions for Cranes should be made by letters, and a week's notice being given except in cases of emergency, to enable the Dy. Chief Mechanical Engineer (Loco) or the Divisional Mechanical Engineer to decide the order of preference, in case more than one demand is pending. The Divisional Operations Manager will make the necessary arrangements for despatch of the Crane to and from Headquarters on receipt of the sanction from Dy. Chief Mechanical Engineer (Loco)/ Divisional Mechanical Engineer.

(e) Working away or Break-down Crane for other

purposes is to be discouraged. Divisional Officers should see that the Break-down Crane is not requisitioned, unless it is absolutely necessary. If the Relief Van is also required, it should be mentioned in the indent.

(f) Steam / Diesel/Cranes will be sent out in charge of the Loco Pilots of the Crane and Hand Cranes in charge of a certified Crane Muccadum. The Divisional Mechanical Engineer will decide whether a Crane Supervisor will also be required depending on the job to be undertaken.

(g) The Steam or Diesel Cranes of 40-tonne capacity or above are not permitted to pass over weighbridges.

**16.06. Operation.-**

(a) All instructions for the proper operation of Crane at the site of accidents and for its subsequent arrangements shall be given to the SSE/SE(Loco) by the Sr. DME/ DME/ AME. The SSE/SE(Loco) shall give the necessary order to the Loco Pilot who is incharge of the Crane and its staff. In the absence of the SSE/SE(Loco), the necessary orders shall be given to the Loco Pilot incharge by the Sr. DME/ DME/AME.

(b) No person other than the Sr. DME/ DME/ AME/ SSE/SE(Loco) will issue any order to the Loco Pilot incharge of the Crane at site of accident.

(c) However, in case of Crane attached to OHE Relief train, necessary orders for working the same may be issued to the Loco Pilot in charge by the SSE(OHE) or SE(OHE), or Divisional Electrical Engineer (Traction- Distribution) or Assistant Electrical Engineer (Traction Distribution).

(d) The Loco Pilot-in-charge is responsible for the safety of the Crane and its staff and will himself decide whether out-reggers or dogs shall be used and what other precautions must be taken. He must be afforded every assistance in strictly carrying out

the rules laid down for the use of Cranes, whether in actual work or being moved to the site of accident with the dummy truck removed.

(e) Relief vans and Cranes working at the site of accident should on no account be moved without the consent of the Senior Locomotive representative at the spot.

(f) No Steam / Diesel Crane or hand crane shall be worked near or adjacent to traction overhead equipment, unless such overhead equipment is made dead and earthed. The movement of the crane jibs shall be done with care so as not to foul the traction overhead equipment. Wherever possible, the direct blast from the Crane funnel to the overhead lines or insulators, shall be avoided.

(g) When cranes are required to be worked adjacent to traction overhead equipment, the person- in charge of the work shall give a prior intimation to the traction Power Controller who will make arrangements for overhead line staff to stand by for the purpose of Power Block etc. whenever required.

(h) Provision of Para 16.22 and 16.23 must be rigidly observed for operation of Crane.

(i) Before lifting operations are started, the following instructions will be observed:-

(i) The spring relieving screws will be screwed down on the spring buckle and where these are not provided, packing pieces must be inserted between the spring buckle and the sole bar of the Crane,

(ii) The rail clips should be securely fastened to the rail.

(iii) The out-rigger girders of Steam and Diesel Cranes should be placed in position and should project equally on both sides and packed at the outer ends with sleepers or wooden packing.

(j) Before lifting any load, however light, the balance weight box should be kept in its position until the lift is completed, on no account should any of the weights in the balance weight box be reduced at any time.

Note:- This does not, however, apply to the reduction that may be necessary to bring the weight down to the standard axle load when running on a train, but any weights that may have been removed for this purpose, should be restored to the balance weight box immediately the Crane arrives at its destination.

(k) The weight of the fixed balance weight is to be less than sufficient to counterpoise a weight of half the lifting capacity of the Crane suspended from the jib when at its lowest position of elevation and at right angles to the rails and is not to be more than : that will leave a safe margin of stability to enable the i Crane to be shunted with the jib at right angles to the rails and no load on it.

(l) The weight of balance weight should be conspicuously painted on it thus:-

Weight of balance weight:-

Tonnes. Kgs.

**16.07. Precautions before lifting with Hand Crane.-**

(a) Precautions laid down in para 16.06 (i) (i) (ii) should be observed.

(b) The blocking screws and wedges should be used.

(c) The tail may than be released.

(d) Handles should be secured to the winding shaft.

(e) In order to prevent the jib of the Crane slewing out of control when carrying a load, a guy rope should be fixed to the jib in order that it may be pulled in the direction opposite to that in which it tends to slew to control the jib. The Crane Muccadum will be responsible for warning all staff working with him to stand clear during such operations.

**16.08. Precautions while lifting with Hand Crane.-**

(a) Jib struts should be used when the Crane is handling a load up a bank or for warping a load which is beyond the sweep of the jib or in any other case when ordinary means do not appear adequate to ensure the equilibrium of the Crane. These. struts cannot be used if the jib is to be slewed with the load suspended.

(b) The Crane handles should not be left unmanned either in lifting or lowering. Lowering with the check of the brake only IS strictly prohibited.

(c) When lifting load above half the lifting capacity of a 10 tonne Hand Crane, the rising pulley block should invariably be used.

**16.09. Precautions when Cranes are not in use.-**

The following instructions should be observed when Cranes are not in use-

(a) The spring relieving screws are to be released and secured so that they cannot work down when running. The packing pieces are to be removed and hung on the hooks provided for the purpose.

(b) The out-rigger girders of Steam and Diesel Cranes are to be stowed away and secured so that they cannot foul the running road.

(c) The rail clips are to be released and secured on the hooks provided for the purpose.

**16.10. Precautions for resting jibs.-**

The Crane truck should be under the jib, the weight of which should be supported on the centre bearing slide. On the main line, Crane trucks should not be removed until the jib of the Crane has been placed parallel to the line of rails; off the main line, Crane trucks may be moved without this precaution only if the Crane is so weighted that there is no danger of its canting over,

**16.11. Attaching Crane to a train.-**

(A) Before attaching a crane to a train, the jib should be lowered on to the Crane track and locked to prevent it from swinging while in motion, and it should be certified that it is in proper running order. In the absence of Train examiner, the Crane Muccadum will be the duly authorised person to issue certificate as required vide G.R.4.27. Except in unavoidable circumstances the jib must point towards the rear of the train.

(B) The Chimney must be lowered to the running position.

(C) The spring relieving serews to be released and secured so that they cannot work down.

(D) The crane should as a rule, be placed four vehicles from the engine, but when proceeding to a breakdown the rule may be relaxed.

(E) The Loco Pilot-in-charge must travel with the Crane and will be responsible for oiling and safety of the crane throughout its journey.

(F) The speed of the train carrying crane shall i be restricted as indicated in S.R. 4.27.03. The speed , of 10-tonnes Diesel “Orton” cranes is restricted to 25 KMPH.

(G) However, the following speed limits with trailing and marshalled as last vehicle of the Break- down or Relief Train for track laid in 75-R or higher poundage rails with N+3 sleeper density and above and 203 mm. (8"inches) ballast cushion subject to any lower speed restriction notified locally:-

| Capacity of Cranes. | Max.Axle. load. | Max Speed. MPH | KMPH |
|---|---|---|---|
| 76.0Tonnes(Breakdown) | 19.81 tonnes | 25 | 40 |
| 66.0Tonnes(Breakdown) | 16.71 tonnes | 35 | 55 |
| 40.0 Tonnes | 16.55 tonnes | 30 | 50 |
| 30.0 Tonnes | 16.11 tonnes | 30 | 50 |
| 20.0 Tonnes | 16.31 tonnes | 30 | 50 |
| 20.0 Tonnes | 16.50 tonnes | 30 | 50 |
| 20.0 Tonnes | 14.53 tonnes | 30 | 50 |
| 20.0 Tonnes | 13.82 tonnes | 30 | 50 |
| 15.0 Tonnes | 14.99 tonnes | 30 | 50 |

The Divisional Railway Manager will notify locally the sections over which such higher speed for Cranes moving as last vehicles on Break-down or Relief Train will apply.

(H) 120 tonnes B.G. Diesel Crane manufactured by Mis. Orton Crane and Shovel Company, U.S.A. may be hauled in a train with the crane in running order and jib fully resting on the match truck, at speeds upto a maximum of 75 KMPH on:-

(i) Jharsuguda-Bilaspur-Nagpur

(ii) Bilaspur-Katni

Broad gauge sections of this Railway subject to the observance of the following:-

(i) Stipulation as laid down in CE-GRC’s lettel no. G/Crane/ Pt. 4 dated 1.7.85.

(ii) The match truck for the crane should bp suitable for being hauled at 75 KMPH.

(iii) The crane should be marshalled as per pari 16.11 (d) above.

(iv) Sectional speeds, all local and other speed restrictions as existing or as imposed from time to time.

(v) All other precaution as contained in thi chapter related to running and attaching c crane.

(I) 1. It is safe to run 140 t Gottwald B.G. diesel hydraulic break-down crane to RDSO Drawing No 1 WDH 140 CR (ALT5) which is fitted with 2 six wheels bogies with single stage helical and disc sprin suspension arrangement and the ji resting on match-truck fitted with two axl bogies having a similar single helical an disc spring suspension arrangement with maximum axle load of 20 T at a maximul speed of:-

(i) When hauled in a train as a trailing load I by diesel or electric locomotive with its 'ji resting on match-truck =75 kmph.

(ii) When travelling on its own power with or without loads = 5 kmph.

(iii) Bridges- The maximum permissible speed of the crane on bridges of BGML & PBG standard designs! drawings shall be as follows:-

Condition applicable for permissible speed= Max. permissible speed.

(a) As trailing load hauled by single WDM2, WAM4 or any other diesel Electric Locomotive with jib resting on match-truck.

(b) Driven by own power, free on rail and moving with a previously lifted load as shown in SK 1. WDH 140 CR ALT-5 and having wheel loads as in sketch LD/SK-612.

(i) Jib parallel to track and

(1) towards front bogie BGML & RBG standard bridges ...5 kmph

(2) towards hind bogie BGML standard bridges ...5 KMPH

(3) RBG standard bridges ...prohibited

(ii) Jib Inclined to track all bridges . ..prohibited.

(c) Driven by own power, free on rail and lifting the loads shown in sketch 1 WDH 140 CR ALT-5 and having wheel loads as in sketch LD/ SK-612.

(i) jib parallel to track and,

(1) towards front bogie:-
BGML standard bridges ...5 KMPH
RBG standard bridge ...Prohibited

(2) towards hind bogie:-
BGMURBG standard

bridges. ...Prohibited

(ii) jib inclined to track:- ...Prohibited All bridges

2. For bridges of lower standard than that mentioned above, the chief engineer concerned shall be referred to:-

For track of lower standard, the Chief Engineer concerned shall decide the lower maximum permissible speed. When the Chief Engineer considers that the road bed is not compact or there is improper drainage, he may suitably restrict the maximum permissible speed depending on the local condition.

3. The maximum permissible speed on curves to be decided on the basis of existing provisions of the Indian railways permanent way Manual.

4. Working of the crane:-

(i) The load shall be brought to the shortest possible radius. The jib should normally be brought parallel to the track.

(ii) Based on the type and conditions of the formation, the crane Loco Pilot/supervisor should take adequate pre-cautions to ensure that there is no settlement of the formation under the working crane.

(iii) During crane working, a special watch shall be kept on the condition of fish plates. Any damaged fish plate should be replaced before allowing traffic on the restored track.

(iv) The crane shall not be permitted to work on the girder bridges without the permission of Sr. DEN who will keep in view the provisions of para 3.2 (bridge) of RDSO,s speed certificate. Sr. DEN will obtain sanction of chief Bridge Engineer, if necessary.

5. The crane should as a rule be placed four vehicles from the engine, but when proceeding to a break-down the rule may be relaxed.

6. All the permanent and temporary speed restrictions inforce and those imposed from time to time due to track, bridges, curves signalling and Interlocking etc. shall be observed.

(J) When a Crane is attached to a train the Guard will hand over a memo to the Loco Pilot bringing the fact to his notice and giving him particulars as to the type of the Crane attached and the station to which it is booked. He will on no account start his train unless the Loco Pilot is in possession of this memo, and has received from there Loco Pilot a written acknowledgement for the same. A Caution Order indication the speed restriction to be observed shall also be made over to the Loco Pilot by the Station Master on duty. The Loco Pilot will thereafter be personally responsible to observe the speed restrictions required.

(K) Particular attention to these restrictions in speed must also be paid by Section Controllers and Deputy Chief Controllers so that suitable paths can be arranged for trains conveying Cranes and crossings decided upon in accordance with reduced speeds applicable in each case Excess speed should be avoided.

(L) On electrified sections the Crane supervisor / Loco Pilot / Muccadum will be personally responsible to secure the jib and other fitting in the Crane suitably to ensure that there is no infringement of electrical clearances and the Crane does not hit or damage any fixed structure or fittings.

**16.12. Movement of Cranes to the site of : Aaccident.-**

(a) It is usually necessary to approach a site of accident from the station nearest to it with the crane leading. The Official in charge of Relief Train will arrange for this marshalling in consultation with Control at the station short of the site of accident. Some Cranes have reversible dummy trucks which can be lifted bodily by the Crane itself and placed in rear. In case of Cranes which do not have reversible dummy truck these should be marshalled in rear of the Crane at the previous station and the site approached with jib trailing.

(b) It is possible in most cases, to avoid funning with the jib hoisted but should an occasion arise necessitating the Crane to run with the jib unsupported on the dummy truck, the jib must be in the central position, and its swivelling movement prevented by a dependable locking arrangement such as is provided under swivelling base and the speed must not exceed 8 kilometres per hour. The Supervisor-in-charge of the Crane shall see that the jib is hoisted not more than 4115mm.(13"-6") above the rail level so as to rule out the possibility of its fouling with any structure, overhead wires or any over-bridge, tunnel etc.

**16.13. Running of Hand Crane on Open Line.-**

(a) The precautions laid down in para 16.11 for Steam / Diesel Cranes must also be observed for Hand Cranes, except sub-para-h.

(b) Counter balance box, if provided should be moved inward to the fullest extent and securely fastened. The weight of the balance box shall be marked on it and no alteration in the weight shall be made except under written sanction of the Chief Mechanical Engineer.

(c) All the operating handles must be removed from the shafts:

(d) The gear for relieving the weight on the central pillar, where provided, must be locked in the travelling position.

> Note :- Any Hand Crane not fitted with buffing gear, spring gear, enclosed axle boxes or with a match truck, will not be considered as a travelling crane and must not be attached to any train without the specific orders of the Chief Mechanical Engineer.

**16.14. Lifting-10-tonne Hand Crane.-**

(a) The precautions laid down in para 16.07 must be observed.

(b) The maximum load must not exceed 10 tonnes in any circumstances and must be limited to reduce tonnage when prescribed.

(C) Care must be taken to ensure that the track is in good condition.

**16.15. Lifting-10-tonne Steam Crane.-**

(a) The Precautions load down in para 16.06 (i) to (i) (iii) must be observed.

(b) The maximum load must not exceed 10 tonnes under any conditions.

(c) Care must be taken to ensure that the track is in good condition.

(d) The working radius' of Crane is 6096 mm (20'ft). This position is marked on the tail of the jib.

**16.16. Lifting-15-tonne Steam Crane.-**

(a) The precautions laid down in para 16.06 (i) (i) to (iii) must be observed.

(b) The maximum load must tonnes under any conditions.

(c) The working radius of the Crane is 6096 mm.(20'ft) and this position is marked on the tail of the jib.

**16.17. Lifting-20-tonne Steam Crane.-**

(a) The precautions laid down in para 16.06 (1) (1) to (iii) must be observed.

(b) The maximum load must not exceed 20 tonnes under any circumstances.

(c) Care must be taken to ensure that the track is in good condition.

(d) The working radius of the Crane is 6096 mm. (20'ft) and this is marked on the tail of the jib.

**16.18. Lifting-25-tonne Steam Crane:-**

(a) The precautions laid down in para 16.09 (1) (i) to (iii) must be observed.

(b) Under no circumstances must the load exceed 25 tonnes.

(c) The working radius of the Crane is 6096 mm. (20'ft). This position a marked on the tail of the jib.

(d) With the jib at 6096 mm (20'ft) radius, with a load not exceeding 10 tonnes the Crane is independent, rail clips, out-rigger girders and chocks are not required.

(e) With the jib at 6096 mm.(20'ft) radius, if the load to be lifted exceeds 10 tonnes but less than 12.7 tonnes, the rail clips must be used.

(f) With the jib at 6096mm. (20'ft) radius, load from 12.7 tonnes upto 20.0 tonnes may be lifted and swung but chocks, out-rigger girders and rail clips must be used.

(g) Loads from 20 tonnes upto 25 tonnes may be lifted and swung but the jib must be within 5486 mm. (18' ft) radious and rail clips, chocks and out- rigger girders must be used.

(h) When the radious of the Crane is more than 6096 mm (20' ft) and the load to be lifted is over 4 tonnes but below 5 tonnes, rail clips must be used.

(i) When the jib is at radious exceeding 6096 mm (20' ft) and the load to be lifted is 6 tonnes or above, chocks and out-rigger girder must be used in addition to the rail clips.

(j) When hauling loads beyond the radius of the jib, the winding gear must be used and the rail clips and shocks secured.

(k) When lifting on a line which is on a curve or incline, the rail clips must always be secured irrespective of the load to be lifted.

(l) When lifting on a line that is likely to give way under the load, rail clips, chocks and out-rigger girders must be used for all loads.

**16.19. Lifting-40.6- Tonne Steam Crane.-**

(a) The precautions laid down in para 16.06 (I) (i) to (iii) must be observed.

(b) Under no circumstances may the maximum load exceed 40 tonnes.

(c) The Crane is designed to lift, slew and travel with:-

| Load . | Within Radius |
|---|---|
| 10 Tonnes. | 6096 mm (20 ft) |
| 5 Tonnes | 9144 mm (30 ft) |

and to lift and slew with out-rigger girders and rail clips in position.

| | |
|---|---|
| 40 Tonnes | 6400 mm (21 ft) |
| 24 Tonnes | 9144 mm (30 ft) |

**16.20. Lifting-76.0- Tonne Steam Crane.-**

(a) The precautions laid down in para 16.06 (i) to (iii) must be observed.

(b) Under no circumstances may the maximum load exceed 76.0 tonnes.

(c) (i) The Cranes are designed to lift, slew and travel with:-

| Load | Within Radius |
|---|---|
| 20.3 tonnes | 5486 mm (18 ft) |
| 17.3 tonnes | 6400 mm (21 ft) |
| 12.2 tonnes | 7620 mm (25 ft) |
| 10.00 tonnes (with main hook) | 9144 mm (30 ft) |
| 8.00 tonnes(with auxiliary hook) | 10668mm (35 ft) |

(ii) To lift and slew with out-rigger girders and rail clips in position:-

| Load | Radius | Prop | Base |
|---|---|---|---|
| 76.0 tonnes | 6.40 metres(21'-0") | 5.49metres | (18'-0') |
| 56.0 tonnes | 7.62 metres (25'-0") | do | do |
| 38.0 tonnes | 9.14 metres (30'-0") | do | do |
| 65.0 tonnes | 5.49 metres (18'-0") | 4.02 metres | (13'-2") |
| 50.0 tonnes | 6.40 metres (21'-0") | do | do |
| 37.0 tonnes | 7.62 metres (25'-0") | do | do |
| 28.0 tonnes | 9.14 metres (30'-0") | do | do |
| 46.0 tonnes | 5.49 metres (18-0") | 3.5 metres | (10'-0) |
| 36.0 tonnes | 6.40 metres (21'-0") | do | do |

| | | |
|---|---|---|
| 28.0 tonnes 7.62 metres (25'-0") | do | do |
| 21.0 tonnes 9.18 metres (30'-0") | do | do |

**16.21. Working of the** 76.0- **Tonne Steam Crane**

(a) *General hints far warking:-Care* should be taken to ensure that neither the specified loads nor the radius written on the Cranes are exceeded. Care shall be taken to ensure that when the Crane is on run, the running brake is right off' and the hand wheel operated travelling clutch is right home before moving the Crane under its own steam. The safety valve shall be tried to see that it is operating freely. It is very important to see that the spring relieving screws are screwed down on to the spring before (1) travelling the Crane under its own steam even with the bogies attached, (2) when lifting load, and (3) before removing the bogies; otherwise there is a chance of over straining the springs. The nut on the top of the centre post should be screwed down as tightly as is consistent with easy working with maximum load at a maximum radius. The gap between the top roller. path and the top of the rollers at the back of the Crane should never exceed with maximum load 12.7 .mm (1/2"). If this gap is allowed to be too great the weight is thrown on a small number of rollers at the front and this shifts the centre of gravity forward and make the crane stiff to turn.

Note :- The Crane should never be slewed with the jib at minimum radius with no load without being propped up, except when working on a travel track.

(b) Preparing for Running in a train:-

The out-riggers are to be racked in and secured with pins and the collars. The relieving bogies are to be brought into their places and put the vertical coupling pins and collars. The jib is to be lowered so that it is supported on the Crane truck. The boiler stop valves are to be closed and the engine cock opened. The bogies are to be screwed up by means of the ratchet handles provided, until the points are on the axle boxes of the tail and bogies coincide with the position marked "Running position tail end" on the indicator plates. In the same way the other bogies are to be screwed up until the pointer indicates "Running position jib end". The spring relieving screws are to be screwed up quite clear of the spring and the indicators on the bogie axle boxes are to be checked. After having done this, arrangements are to be made to lower chimney and canopy and screw jacks supporting the tail. The hand wheel operated travelling clutch is to be removed, thus disengaging travelling gear and leaving the Crane free to be toward by the locomotive. It should be ensured that the travelling brake is off.

(c) Preparing for lifting loads.

On arrival at site, preparation for lifting the load are to be made as follows:-

(i) Screw down the spring relieving screw until they are just down on the springs. Relieve the load from the relieving bogies. Unscrew the tail jacks raise the canopy and chimney. Derrick the jib to the required radius. Remove the vertical coupling pins from the bogie, Engage the travelling gear and the Crane is ready for unpropped duties.

(ii) When preparing for propped up duties, care should be taken to see that the packing is as sound as possible and that it covers as large an area of ground as is practicable. The best type of packing is one length of 35.56 cm x 35.56 cm (14"x14") timber running right underneath the out-riggers on each side of the Crane. Although somewhat cumbersome to handle, it will ensure the weight being distributed over a

considerable area of ground and constitute a very sound foundation for the out-rigger screws. If desired, the rail clips may also be used for preventing the carriage from being lifted at the tail when picking up the load.

Note:- Working of Cranes of 76 tonnes, 66 tonnes 40.6 tonnes in private or assisted or outlying sidings will be regulated by special instructions issued by the Seniormost Divisional Mechanical Engineer Divisional Operations Manager Divisional Engineer on each occasion, with the approval of Divisional Railway Manager.

**16.22. Crane working within Station limits.-**

(a) Before commencing operations, the Supervisor/ Loco Pilot/Muccadum will clearly indicate by a written memo to the Station Master/Yard Master on duty the nature of the work, the siding line on which the Crane will work, the line or lines to be blocked or fouled during Crane operation and the time required for the work and only on obtaining the written permission from the Station Master/Yard Master as per specimen below, operation will be commenced. On controlled sections where running lines are fouled, the Station Master on duty will not give the permission except with the prior approval of the Controller on duty. Record of such approval and permission asked for and given, must be entered in red ink in the Train Signal Register and Station Diary, including the number of line/lines/siding which will be blocked fouled.

(Proforma of certificate from the SM/YM)

The Crane is permitted to work on line No..... Siding..... from..... Hrs. .....to Hrs. The line/siding and adjacent line Nos have been protected by red banner flags and there will be no movement on the above lines/siding till the Crane working is completed and a written memo to this effect is received.

Date ..... Station Master

Time ..... Yard Master.

Station Stamp.

(b) Once permission is given to the Supervisor/ Loco Pilot/Muccadum of the Crane to commence operation as per proforma above, the Station Master/ Yard Master on duty will be responsible to see that no shunting or other movements are allowed which will interfere with the crane working and block the line/ lines on which the Crane will be working and the line likely to be fouled. The points giving access to the line (s) on which the crane will be working or which may be fouled, shall be set against entry; the. reception and departure signals for the lines concerned shall be kept at danger, and necessary lever collars shall be fixed on the respective points, slots and signal levers. The Station/Master on duty shall be responsible for advising the Switchman/ Cabin man to this effect and get their acknowledgement under exchange of Private Number. Slide collars shall also be fixed on the respective signal slide of the Station Master's slide control apparatus where provided. In case of non- interlocked point (s), it/these shall be kept set and clamped with padlock at either end against any entry; the keys of the clamped shall be kept by the Station Master/Yard Master on duty till the Crane working is completed. The Station Master shall make a suitable entry in the caution order register regarding working of crane with the line(s) occupied/fouled or likely to be fouled by the crane while working and the time from which the permission is given, and the outgoing

Station Master on duty shall responsible for getting the entry noted by his reliever before he goes off duty. the Station Master on duty shall advise the Station Master on duty at the adjacent Block station so that necessary caution order can be issued to the Loco Pilot and Guard of the train concerned indicating the location of crane work, speed and other precaution if any. The speed of the train over adjacent line at the site of crane work shall be restricted to 16 KMPH, and Loco Pilot should be advised to exercise extra caution.

(c) *Protection of line:-*

In addition to the precautions mentioned in para (b) above, the station Master/Yard Master on duty will be responsible for the protection of line(s) over which the crane will be working as also the line(s) likely to be fouled by the working of Crane. For this purpose two look out men with red hand signal shall be posted near the entrance point on either side and two red banner flags be placed at suitable distance from the crane on either side. The posting of men and placing of banner flags shall be decided with due regard to the safety of Crane working and minimising interference with the normal working of trains movements.

(d) Crane operations within station limits will be deemed “obstructions” on the line or lines concerned for the purposes of lowering of signals.

(e) If during the course of Crane operations, train movements or other operations are required to be performed on the line blocked or on lines which may be fouled due to Crane working, all Crane working shall be stopped by the Supervisor/Loco Pilot/Muccadum on obtaining a written request from the Station Master/Yard Master to suspend operation. After doing so, the Supervisor/Driver/Muccadum will give a written memo to the Station Master/ Yard Master in the form given below to the effect that Crane working is suspended, that the jib of the Crane is parallel to the track and the tail locked and no obstruction is fouling the line or lines where train movement or shunting movements are to take place. On receipt of this memo, the Station Master will authorise lowering of signals concerned for the train or perform other movement. The Station Master/Yard Master on duty will also be personally responsible to ensure that all obstructions have been removed from the nominated line before authorising lowering of signals. The certificate of the Crane Supervisor/Loco Pilot/Muccadum is to be kept pasted on the Station Diary.

(Proforma of suspension memo from the Supervisor/Loco Pilot/ Muccadum of the Crane)

To

The Station Master /Yard..... Master Station.

Please note that the Crane working on the line No..... /Siding No. ..... is suspended at..... Hrs and the line/siding and its adjacent lines are clear and nothins has been kept fouling the lines. Crane work will not be resume( till receipt of written permission from you. The crane is standing on line No. ...../Siding No. .....

Date..... Supvr./Loco Pilot/Muccadum.

(f) After the Crane work is over, the Superviser will issue a memo to the Station Master on duty to the effect that the work is over and the lines blocked and/or fouled are clear of obstructions and are safe for the passage of trains in the proforma appended below. The Station Master/Yard Master will keep the memo attached on the Station Diary.

(Proforma of completion memo from the Supervisor/Loco Pilot Muccadum of the Crane)

To

The Station Master/Yard Master,

.....Station.

Please note the Crane working on line No /
siding is completed at hrs. and the adjacent lines are clear and nothing has been kept fouling the lines. The Crane is standing on line No. ..... /Siding No. .....

Date..... Supvr./Loco Pilot/Muccadum.

Time .....

Note:- The certificate and the memo mentioned above may be in manuscript.

**16.23. Crane operations in Block section.-**

(a) In the case of crane operation in Block ection or any of the sidings in such a way as to affect the running line in the Block section, the Supervisor-in- charge of the Crane operation will clearly indicate by written memo to the Station Master on duty at the adjacent block station the nature of work, the line(s) of work or line(s) which will be fouled during the crane operation and the time required for the work, and on receipt of permission from the Station Master concerned in writing he will commence operations.

(b) The section concerned shall be blocked before allowing the Crane in block section and the block shall be removed only after clearance of the section by Crane.

(c) Cranes are not to be operated in the block section between sunset and sunrise except in case of accident and for the purpose of removal of obstruction.

(d) When Crane is working on double/triple line section the supervisor in charge should see that the adjacent line is not infringed and if any infringement is involved, or even apprehended, the adjacent line must also be blocked.

(e) On double/triple line section during the Crane operation on one line, the Loco Pilot and Guard of Train on adjacent line(s) shall be issued with caution orders indicating the location of Crane work, speed and other precautions if any. The speed of the train passing over the adjacent line(s) at the site of work should be restricted to not more than 16 KMPH at the site of Crane operation and Loco Pilot should be advised to exercise extra caution.

(f) The Supervisor-in-charge of the Crane operation will be responsible for protection of Crane/ Track vide GR 15.09(1) (a), 15.09 (3) and SR 15.01. The same procedure of protection shall also be followed for adjacent line(s) when it is/are fouled. When the adjacent line(s) is fare not fouled and trains are permitted to run vide para(e) above, signals shall be shown vide GR 15.09 (1) (c); and in such case the Crane

Supervisor will see that the jib of the crane is turned parallel to the track and tail locked before authorising the train to pass on the adjacent line(s). During night or when visibility is poor the banner flag/red hand signal flag shall be replaced by red signal lamp. Hand signal lamp in place of banner flag shall be placed at the centre of the track on a stand.

**16.24. Working of Cranes in sidings.-**

Working of Cranes, specially heavier capacity Cranes of 40 tonnes capacity and above in private or assisted sidings or any outlying sidings of the Railway will be regulated by special instructions issued by the Seniormost Divisional Mechanical Engineer/Seniormost Divisional Operations Manager Seniormost Divisional Engineer concerned, with the approval of the Divisional Railway Manager.

**16.25. Display of Rules.-**

Mounted copies of the rules of this Chapter are to be conspicuously displayed on the walls of all engine and carriage sheds workshops and offices of the departments using travelling Cranes. A copy of these rules enclosed in a suitable waters-proof frame should be fixed on the back of the balance weight box of travelling Crane or at any other suitable place in it for the guidance of the Loco Pilot.

**16.26. MFD Equipment.-**

(a) To facilitiate quicker re-railing operations in case of serious accident/derailment, specially in electrified sections where normal use of Break down Crane involves interference with OHE, this Railway has MFD vans containing re-railing equipment hydraulically operated with lifting straps, jacks, presses etc. for the purpose of re-railing rolling stock including Diesel and Electric Locomotives as well as Coaching and Goods stock.

(b) Such MFD equipment vans are provided at different locations on this Railway.

(c) The MFD van is under the charge of Seniormost Divisional Mechanical Engineer of the concerned Division. For operation of the MFD equipment as well as its supervision there are specially trained staff attached to the Loco Shed homing the MFD van and such special staff accompany the MFD van for its operation.

(d) If the use of MFD equipment is required, in a Division not provided at present with such equipment, a demand may be made on the Seniormost Divisional Mechanical Engineer of the adjacent Division homing MFD van.

(e) The staff working this MFD equipment must have competency certificate issued by the Senior Divisional Mechanical Engineer/Divisional Mechanical Engineer. This certificate will be valid for 3 years.

(f) The safety rules regarding blocking of lines fouled or obstructed and protection by banner flags/ danger signals applicable to crane working will apply to the working of MFD equipment as well.

**16.27. Working Mobile Road Cranes.-**

(a) The Mobile Road Crane of various capacities ranging from 1 tonne to 12.5. tonnes are in use on this Railway.

(b) Road Cranes have greater mobility as compared to Rail Cranes because they can be move in areas inaccessible by Rail Cranes and on steeper gradients. etc. The Road Cranes can move with a load after lifting over some distance with due care.

(C) The power transmission from the prime mover to the hoisting mechanism or to the propelling mechanism of the Crane is generally electric with push button controls. All motions, travelling forward or backward, derricking, slewing, lifting or lowering are achieved by the operation of electric motors, the current being provided by a main generator under the control of the operator from a switch box near his seat. There are other push buttons or lever type switches for the various operations as mentioned above. Usually, the Cranes are also provided with necessary safety devices against lifting of overloads, incorrect slewing, etc. as basic protection for the safety of the Cranes in operation. The method of working and the precautions to be observed have been notified in local instructions and should be rigidly observed.

(d) The operators manning the mobile Road Cranes under various departments are generally under the control of the officers of the using department. But it has to be ensured that such operator are trained in Kharagpur Shops where facilities exist for training of the operators. The operator must hold a Competency Certificate issued by the Senior Divisional Mechanical Engineers/ Divisional Mechanical Engineer concerned.

(e) The training given to a mobile Crane Loco Pilot does not permit him to interfere with any vital item in the Crane, and any defect, however small it may be, should be reported immediately to his superior who should get in touch with the Divisional Mechanical Engineer and also with the Works Manager(G). Any trouble shooting of electrical devices on the Cranes should be done by the operator who should report the matter to the Divisional Electrical Engineer of the Division and also the Works Manager(G).

(f) The Cranes have to be operated and maintained according to the instructions received from the manufactures, and in this regard necessary instructions are given to the mobile Crane Loco Pilot. It should be noted that as there are various makes of these Cranes, each Crane may have certain specialities and any Crane operator even though holding competency certificate should not be allowed to handle a Crane of a different maker unless he has received a course of instructions in handling the same from the SSE / SE(C&W} to be specified by the Divisional Mechanical Engineer for the purpose and holds an annual “Certificate of fitness” for handling that type of Crane from the SSE / SE(C&W} as per para 16.02 (J).

(g) The Cranes are given their maintenance schedules, change of oils and greases, etc. according to the Maker’s instructions, or special instructions issued by the competent authority. At wayside points away from Loco Sheds the Crane Loco Pilot should be instructed to be careful to see that Cranes are not worked overdue schedules. He should inform his superior in advance when the Crane is due schedule giving the date so that prior intimation can be sent to the necessary unit responsible for the normal schedule of mobile Crane. The major schedules of such Cranes will be controlled by W.M. (G). Any major break-down shall also be reported for attention to the Works Manager (G)

(h) For the guidance of the Crane Operator, the capacity at various radius for operation of the jib are indicated on the Crane itself. The operator is also made conversant during his training with the operating speed for traversing with load and without load and hoisting speeds etc. He should refrain from going against such instructions, as such actions may be dangerous.

(i) Instructions regarding the periodical attention to chains laid down in para 16.03 (c) and (d) must be followed for Road Cranes as well.

(j) The operation of these Cranes will be confined to the sidings alone. In case of working on running lines or working on a siding fouling or likely to foul the running line provisions of paras 16.22 and 16.23 must be observed and the Crane operations controlled by a Supervisor as per para 16.02(f).

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## CHAPTER - XVII

# I - AUTOMATIC VACUUM BRAKE

**17.01. Principles.-**

Automatic Vacuum Brake obtains its power from the pressure differential between atmospheric pressure and partial vacuum. Atmospheric pressure may be roughly taken as 15 Ibs. per sq. inch/1.0546 Kg.per sq. cm.

**17.02. Description.-**

(a) On a train composed of completely fitted or piped vehicles the automatic vacuum brake may be operated on every completely fitted vehicle, provided that the engine or tender hose pipe is coupled to the first vehicle of the train by means of the flexible hose pipe connection, and that each vehicle is coupled to its neighbour in a similar manner, the hose pipe in rear of the iast vehicle and in front of the leading engine being placed on the dummy plug.

(b) The gauges in the engine, and also in the Guard's van indicate the pressure available for stopping the train and should show not less than the following level of vacuum :-

| | Engine Gauge | Guards's van Gauge |
|---|---|---|
| (i) Mail/Express Trains .... | 53cm | 47cm |
| (ii) Passenger Trains.... | 50cm | 44cm |
| (iii) Goods trains with .... 40 or more BCX/ BOX/Wagons | 44cm | 34cm |
| (iv) Other Goods trains... | 46cm | 38cm |

The exact vacuum level in the locomotive and Guard's brakevan should be recorded by the JE(C&W) in the brake power certificate.

(c) More than 0.5 metres (20 inches) vacuum is unnecessary and the release valves on the Loco Pilot's ejector should be so set that the small ejector can maintain not more than that amount. Otherwise brake binding trouble is likely to be experienced.

**17.03. How applied and taken off.-**

(a) The brake is applied by the Engine Loco Pilot or the Guard admitting air into the train pipe.

(b) The first application when made by the Loco Pilot should be made sharply, by destroying not less than 5 inches (0.13 metres) of vacuum, in order to force the ball valves tightly on to their seats. The destruction of vacuum inch by inch should be avoided, as the ball valves fail to sit properly, in consequence of the feeble in rush of air, with the result that air leaks past the balls to the space above the pistons reducing the vacuum and therefore the brake power.

(c) In an emergency, the brake may be applied from the Guard's van or from any other vehicle in the train, where an application valve is fitted, provided the train pipe is continuous, by pressing down the valve lever to the full extent until the needle of the gauge falls to zero. The brake is then fully applied on each fitted vehicle and also on the engine.

(d) Should a train on which the automatic vacuum brake is in operation, become accidentally divided in the portion on which the brake is operated, the hose pipe-couplings between the divided vehicles will be disconnected, and the brake will be applied automatically on each fitted vehicle, and on the engine.

(e) The brake if released by the engine Loco Pilot restoring vacuum by means of the ejector, to the same condition as existed before the application of the brake.

(f) The automatic vacuum brake can be released on any vehicle by pulling the ball valve release. wire, which must be pulled until the brake comes fully off. The release wire should never be fastened over.

(g) The brake gear should be properly adjusted so that the brake blocks firmly grip the wheel treads in the brake applied condition, the test for which may be done by sounding the brake block with a hammer.

**17.04. Specification .-**

(a) The hose pipe couplings between the engine' and the first vehicle, and between each piped or fully braked vehicle and its neighbour must be properly connected. The hose pipe at the rear of the piped or fully braked vehicle forming the last of the / sequence from the engine must be put carefully on the dummy plug, and hose pipe in front of the leading engine as well.

(b) The Engine Loco Pilot must create the required vacuum and maintain it throughout the journey.

(c) Examination of trains before starting should be done as per General Rules 4.30, 4.31, 4.32, 4.33 and SRs thereto.

(d) Guards and Loco Pilots shall ensure at the time of taking over charge of a train, that their trains have the minimum prescribed vacuum and brake power as laid down below :-

1. *For Goods Trains:*

(i) The train must have the prescribed vacuum level as mentioned in para 17.02(b).

(ii) Brake power of freight trains :-

| Description | - | Originating station |
|---|---|---|
| Freight trains | - | |
| a) C.C. Rakes | - | 95% |
| b) Other goods train | - | 85% |

Not less than 95% of total number of cylinders in case of C. C. rakes and 85% in case of other goods trains shall be in working condition in case of train originating/examination point. There may be however, certain amount of deterioration in the brake power while the train is on run due to wear and tear. Taking into account the practical conditions, the goods trains including C. C. rakes may be worked with 75% active cylinders enroute. For the purpose of this rules "piped vehicle" (i.e. fitted with trains pipes and having no vacuum cylinder or other brake fittings) should be deemed to

have in operative cylinder(s). In case, however, a Loco Pilot feels that the brake power is not upto even this level (i.e. 75%), he shall suitably control the speed of the train and worked the train to the next station or next train examining station for necessary examination by train examining staff.

(iii) An active cylinder is one, the vacuum in " which can be created/destroyed by control from the engine, and which moreover satisfies the stipulation that its position should remain up, for not less than 30 mts. after the vacuum is destroyed.

(iv) On steep gradient sections 90% of the cylinders must be operative.

( v) The brake gear should be properly set to yield a piston stroke of $3^1/_2$ " to $4^1/_2$"/90 mms. to 115 mms. For a BOX/BOI wagon carrying slack adjuster (SA B) and "Empty-load Box", the piston stroke under 'load' should be 7" (178 mm) and in empty condition the same should be the 5" (127 mm).

(vi) No audible leak is permissible in the vacuum system along the train.

(vii) There should be atleast three fully vacuum braked vehicles (including brakevan) with operative cylinders out of the last four vehicles of a train.

(viii) The position of the empty/loaded handle on wagon should be placed on the appropriate position either 'empty' or 'loaded' according to whether the wagon is empty or loaded.

2. *For Passenger Carrying Trains:*

(i) From an originating station, the train must have 100% active vacuum cylinders on the vehicle.

(ii) At intermediate stations, not more than 10% inoperative cylinders (subject to a maximum of three cylinders only) can be permitted.

(e) When the engine is attached to the train, the Loco Pilot must see that the hose pipe coupling of the engine is properly connected to that on the train, and when the engine is detached that the hose pipe couplings of the engine and front vehicle are placed on their respective dummy plugs.

(f) The Loco Pilot must test the engine automatic vacuum brake apparatus before leaving shed. Should there be any difficulty in creating and maintaining the required vacuum after coupling to the train, steps should be taken to locate and remedy the fault, failing which the defective vehicles should be attached without infringing safety.

**17.05. Recording and Testing of vacuum indication by Guards and Loco Pilots .-**

(a) (i) The Guard must record in the appropriate column in the Guard's Rough Journal book and in the Guard's train report (T. 34 HF) what vacuum is indicated in the brake-van gauge every time the train starts after a halt. He will not give the starting signal to the Loco Pilot unless the vacuum as indicated in rule 17.02(b) is registered in his gauge or unless he is authorised by a representative of the Mechanical department to start at lower vacuum than prescribed.

(ii) At the first starting station and at all stations where the engine or any vehicles are detached from the train or any vehicles are attached to the train, before starting, when the Loco Pilot has created vacuum, the Guard must destroy 0.13 metres to 0.20

metres (5 to 8 inches) of vacuum by operating his brakevan valve observing the indicator needle and then replace his valve to normal and allow the Loco Pilot to recreate the required amount of vacuum. Without doing this the Guard must not give starting signal to the Loco Pilot.

(iii) If the indicator does not register correct vacuum as given in rule 17.02(b) the fact must be brought to the notice of either the SSE / SE / JE (C&W) or the Loco Pilot in writing.

(b) *Vacuum tightness test for locomotives by Loco Pilots* :-

(i) *Engine* :-Engine should be tested for vacuum leakage by connecting the engine hose pipe on dummy, or switching off the exhauster after creation of vacuum and after setting down for a period of 30 seconds, the vacuum leakage should not exceed 10 Cms. in one minute.

(ii) *On train* :- After creation of full vacuum the exhauster should be switched off and the vacuum may be allowed to settle for 30 seconds, thereafter the vacuum leakage should not exceed 15 Cms. in one minute including loco leakage.

**17.06. During journey.-**

(a) Loco Pilots and Guards must unscrew their hand- brakes fully ‘off’ before starting.

(b) Loco Pilots will be guided in the. use of their hand-brakes by the orders in force.

(c) If, during the journey, the Guard of any train, finds that the gauge in his vacuum indicator shows less than the required vacuum (unless he is satisfied that such is caused by an application of the brake) he must be prepared to apply his hand-brake, if required, and advise Loco Pilot of the defect at the next stopping station.

(d) The Loco Pilot and the Guard must report to the train Examining staff at the next train examining station any irregularity or defect in connection with the working of the automatic vacuum brake which may have occurred and the Guard must, in addition, note the particulars in his journal.

(e) When fitted or piped vehicles on which the automatic vacuum brake is being operated have to be parted for any purpose, the vacuum in the train pipes must be destroyed by opening the air valve on the engine, or on the nearest brake-van to which such value is fitted so that there may be no delay in uncoupling.

(f) In the case of failure of the automatic vacuum brake on any vehicle during the journey, and if the defect cannot at once be remedied, the train must proceed cautiously to the next convenient station, where the defective vehicle can be remarshalled / detached or otherwise dealt with. The speed of the train should be so regulated as to enable the Loco Pilot to have full control of the train. In all such cases the Guards must be on the alert, and assist in stopping the train.

(g) (i) When two engines are employed to draw a train, the Loco Pilot of the leading engine will be held responsible for the working of the automatic vacuum brake. The Loco Pilot of the second engine must, however, in case of emergency, assist in

stopping or reducing the speed of the train by applying the automatic vacuum or hand-brake, as may be required, but he must not maintain or re-create vacuum.

(ii) When an additional engine or engines are employed to push a train, the Loco Pilots thereof must not interfere with the working of the vacuum brake which shall be under the control of the leading engine Loco Pilot as laid down in para (g)(i) above.

(iii) Loco Pilots of all additional engines will, at all times, keep the handle of the vacuum ejectors in the running position and ensure that the small ejectors are closed.

(iv) In the event of the Loco Pilot of the engine in rear requiring in any emergency to attract the attention of the leading engine Loco Pilot, he shall give whistle signal as laid down in General Rule 4.50 and S.R.4.50.01.

Note:- These rules are laid down to avoid the serious danger which would arise, if the Guard or the Loco Pilots of additional engines were to attempt to put the brake 'on' while the leading Loco Pilot was trying to re-create vacuum.

**17.07. Stopping.-**

(a) Before the train is brought to a stand, the Loco Pilot will release the brake slightly to prevent a rebound of the vehicles and an undue strain on the couplings.

(b) In the case of a train becoming divided the Guard in the rear van must put his hand-brake hard on and secure it with the chain or sprag, where provided. He must also take any other precaution that may be necessary to prevent the rear portion moving, before going back to protect his train.

(c) In controlling trains on descending long and heavy grades, the Loco Pilots are cautioned against the exhaustibility of the automatic brake system. Destruction of vacuum above the pistons, owing to leakage takes place during the continuous application of the brake while descending long down grade and it is of the utmost importance that the vacuum above the pistons should be restored. Care should be taken that the speed during the release of the brakes is not allowed to increase beyond a safe limit. Neglect of this rules may lead to the train going out of control.

(d) On long and heavily graded sections when trains are braked only by vacuum, it is essential that the train be stopped at suitable time intervals during the run for recouping the lost vacuum and to ensure that the train can be kept under control and hence halts may be provided on such heavily graded sections either at station or in mid-section for recouping vacuum and these halts wherever provided are shown in the Working Time Table. Loco Pilots while working vacuum braked trains, must ensure that they strictly observe these halts regardless of whether they are given through signals or not.

(e) The fact that after the brake has been applied. the Vacuum above the pistons gradually decreases, owing to leakage, and that in less than half-an-hour the brakes may leak off altogether, must not be forgotton when a train is brought to a stand on a gradient steeper than 1 in 150. In all such cases measures must be taken to guard against the possibility of a runaway" For this purpose, precautions is mentioned in S.R.6.04.02(d) must be observed strictly.

The Guard and the Brakesman must always be vigilant and be prepared to assist the Loco Pilot by applying hand brakes, if called upon to do so by the Loco Pilot and if necessary in an emergency" If the Loco Pilot requires additional brake power, the Guard and Assistant Loco Pilot shall pin down hand brakes of as many vehicles as the Loco Pilot may consider necessary.

**17.08. Passenger train stopping apparatus.-**

(a) Passenger carriages are fitted with apparatus enabling Passengers, in case of emergency, to partially apply the automatic vacuum brake and so to attract the attention of the Loco Pilot and the Guard of the train except such particular carriages / trains as may be exempted vide GR. 4.18.

(b) On noticing the fall of pressure in the vacuum gauge, the Guard, Loco Pilot, Motorman, Assistant Loco Pilot and Brakeman will take necessary action as laid down in S.R. 4.18.01. and 4.18.02.

(c) To reset the apparatus to enable the train to proceed, it is only necessary for the Guard / Brakesman or Assistant Loco Pilot to push one of the discs into its socket or to turn the disc through 90 degree as the case may be, which action will cause both discs to resume their normal position and the brake blocks to be released.

**17.09. General.-**

(a) Hose pipe couplings must not be left hanging loose, but must be properly secured on the dummy plugs provided for the purpose.

(b) To couple the hose pipes, they must be taken one in each hand and lifted sufficiently high to enable the bottom horns of the couplings to the hooked together and then when lowered, the top lug of one coupling will fall into the slot of the other.

(c) To uncouple the hose pipes they must be lifted straight up, when the lug at the top will come out of the slot and the couplings will separate.

(d) When connecting or disconnecting hose pipe couplings the staff must be careful not to have in their hands waste or any other substance which might be drawn into the pipes by suction.

(e) Care must be taken in uncouplings hose pipe couplings that the rubber washers are not displaced or lost.

(f) Shunting staff and others when passing between vehicles must not stop on the hose pipe couplings to interfere with or damage them.

(g) When automatic vacuum braked vehicles are placed in sidings or stabled at the station the vehicles must be secured as per G.R.5.23 S.R.5.23.01 by the applicatipn of the hand-brake and by sprags and chains on the required number of vehicles.

(h) Guards and others concerned must take care that articles are not placed in Guard's vans in such a position as to come in contact with the lever of the automatic vacuum brake valve.

**17.10. Instructions to Loco Pilot, Guard and Assistant Guard in the use of vacuum brakes.-**

The Loco Pilots, Guards and Brakesman are being instructed in the training centre during their initial and refresher training period regarding the vacuum brake system and its use. However, they must be well acquainted with all the instructions of this Chapter and ensure strict observance.

**17.11. Recording of vacuum brake particulars by Guard**

(a) The Guards must be careful to show in their journals and on the copy handed to the Loco Pilot the particulars of vacuum and number of vehicles with active */* inactive cylinders on train.

(b) In all cases where the active cylinder is made inoperative or vice-versa, during the journey, the change and the stations where it took place must be noted by the Guard in his journal and on the copy handed by him to the Loco Pilot.

**17.12. Locomotive Loco Pilots to blow through.-**

In order to prevent the accumulation of foreign bodies, moisture or dirt in the pipes of the automatic vacuum brake apparatus, Loco Pilots are instructed that before leaving shed with their engines to work a train both hose pipes must be removed from the dummy plugs and a good blow through given. This must also be done before leaving their engines in the shed after finishing the work.

**17.13. Other responsibilities of staff.-**

(a) The working of the automatic vacuum brake by the engine Loco Pilot will not relieve the Guard of any responsibility as to the braking of the train. Guards must, therefore keep a good look-out and be prepared to apply the automatic vacuum brake or hand- brake whenever necessity arise.

(b) Engine Loco Pilots must satisfy themselves that the automatic vacuum brake is in proper working order before starting and at each station where any vehicle is attached or detached. They must also test the brakes before descending steep inclines and while approaching any danger signal or terminal stations, and speed of the train must be reduced if necessary so as to enable to stop the train at the proper place. Guards must watch the speed of the trains and assist the engine Loco Pilot by the use of their vacuum hand- brakes when necessary. .

(c) Unless the automatic vacuum brake is working properly while the train is on run the engine Loco Pilot must whistle for the Guard's hand-brakes, stop the train and inform the Guard that the automatic vacuum brake is not of order, and that the hand-brakes must be relied upon for working the train to the next convenient station. Special care must be taken by the Loco Pilot and Guard as laid down in para 17.06(f).

Note:- Special precautions to be observed on Ghat sections shall be laid down in the Working Time Table and also in the special Ghat section Rules by the Division.

**17.14. How to locate leakage in vacuum.-**

Commonly the leakages are at the joints of hose pipe couplings, at the dummy plug where the trailing and of the last hose pipe is put on, or at the brake- van valve. The leakage is usually detected by the hissing sound produced by the air being drawn in at the places as indicated above or at other places in case of any damage to hose pipe or train pipe.

**17.15. Trains with Vacuum brake.-**

(a) Normally trains must run fully vacuum-braked. (b) In case of emergency when a passenger train for any reasons has to run non-vacuum-braked, the speed must not exceed 40 KMPH and for Mixed and Goods trains must not exceed 32 KMPH subject to any lower speed restriction which may have been imposed over a particular section for any reason. In any case a Passenger train must not run non-vacuum over any portion of. the line without the permission of the Chief Operations Manager. However, running of Non-vacuum goods train in emergency may be permitted by the DRM.

(c) In such case the load of the train must be reduced, and the Loco Pilot and Guard .of the train will be responsible to see that the train is under control to stop wherever required.

**17.16. Vacuum for Ghat section.-**

(a) In addition to the specifications on vacuum requirements and all other instructions laid down for Goods train in earlier paras, it should be further ensured that a minimum of 90% of total number of cylinders are fully operative on trains for Ghat section.

(d) If the required brake power as defined above, is not available or if the Loco Pilot doubts whether the brake power is sufficient or adequate, he has to stop the train and sufficient number of hand brakes have to be pinned down to ensure control on a down gradient.

**17.17. Attaching of vehicles not fitted with Automatic Vacuum Brake gear to coaching trains.-**

(a) Mail, Express and Passenger trains on the S.E.C. Railway are equipped with automatic vacuum brake and no vehicle either coaching or goods not fitted with automatic vacuum brake gear (vehicles with train pipe only are not so equipped) may be attached to Mail and Express trains. Only one coaching vehicle fitted with train pipe only may, however, he attached to Passenger trains provided this vehicle is protected by one or more vehicles fitted with automatic vacuum brake gear being attached in rear of it.

(b) No goods vehicle fitted with train pipe only may be attached to coaching trains. Vehicles both coaching and goods fitted with train pipe only may be attached to troop trains and special trains conveying military stores, etc, but the specification of brake power laid down in Para 17.04 must be followed except if any relaxation is permitted by CME/ Sr.DME/DME in case of emergency.

**17.18. Disconnection of means of communication to prevent misuse.-**

If disconnection of means of communication to prevent misuse is permitted vide GR 4.18, the procedures and precautions laid down in the said GR and SR there to should be followed.

**17.19. Testing of communication and- Alarm Chains in Running trains.-**

(a) The communication provided in Passenger carriages for stopping the trains in case of emergency, must be tested by Divisional Operations Manager and Divisional Mechanical Engineers, their assistants, and also by the Divisional Transportation Inspectors and C & Wand Loco Inspectors in running trains at least once a month. The

test must be made by pulling the chain in one of the passenger carriages on the train, while the train is on the move but the test should be avoided while a train is ascending an incline or when a train is running late. Divisional Safety Officers shall also make similar checks.

(b) The result of the test must be recorded by the testing officials and reported to the Divisional Operations Manager or Divisional Safety Officer and the Divisional Mechanical Engineer at once. The following particular are to be recorded:-

(i) Date, Time, Train Number and the Number and Class of the Carriage in which the chain was pulled.

(ii) Time that was taken to stop the train after the chain was pulled.

(iii) Whether signals were properly exchanged between the Guard and the Loco Pilot.

(iv) The time that elapsed before the Guard came to the carriage from which the chain was pulled.

(v) Total duration of the halt.

(vi) Approximate estimated speed of the train at the time of Test.

**17.20. Application of Automatic vacuum brake from the Brakevan.-**

The Automatic vacuum brake may be applied from the brakevan in an emergency only. The application of the Automatic Vacuum Brake must, in such cases, be gradual as there is the risk of the train parting owing to sudden application of the vacuum brake from the rear.

**17.21. Blanking 'off' Automatic vacuum cylinder.-**

When an Automatic Vacuum cylinder or gear on a vehicle is out of order, the cylinder must be put out of action. This must be done by disconnecting the syphon pipes from the release valve and dummying the loose and the syphon pipe with a wooden plug. A couple of wooden plugs will form part of the Loco Pilot's personal equipment to be used for the purpose when required.

**17.22. Empty */* Load handle on BOX type wagons.-**

(a) The Box type wagons are provided with a mechanical device known as the Empty / Load box handle, by the manipulation of which, the brake power of the wagon can be increased or decreased.

(b) This equipment has been provided to ensure that the train has adequate brake power to enable it to be kept under proper control at all times, particularly on sections with heavy falling grades.

(c) When the wagon is loaded, its brake power must be increased and this is done by operating the small Empty/Load box handle (provided at the side of the wagon just below the floor) from the 'empty', position to the 'loaded' position. These two positions are clearly marked on the plate on which the handle is fixed, by legend and also by colour.

(d) When, however, the wagon is empty and as such increased brake power is not necessary the Empty/Load box handle MUST Be set at the 'Empty' position.

(e) If the Empty/Load box handle is not set in the correct position, a serious accident can happen, as in the loaded condition, the train will have inadequate brake power, on the other hand, when it is empty, severe application of brake will skid the wheels and cause them irrepairable damage.

(f) All station and yard staff both Operating and Commercial, also Train Examining and Running staff should be fully acquainted with the operation of the Empty/Load box device fitted on BOX type wagons. The following instructions should be strictly observed:-

(i) The Empty/Load handle of BOX type wagons should be put to the 'empty' position when the wagon is empty or when it is loaded partially or loaded with light materials like bamboo, etc, so that the gross weight of the wagon is not likely to exceed 50 tonnes. The handle should be set against 'loaded' position when BOX wagon is fully loaded or if the gross weight is above 50 tonnes.

(ii) The SSE/SE/JE(C&W)will be responsible for the correct setting of the Empty/load box handle at all originating stations where the train is examined and certified fit by the Carriage and Wagon staff and at stations where the trains are passed by them. This should be recorded in the vacuum certificate also.

(iii) The Guard will be responsible for the correct setting of the Empty/Load box handle at wayside stations where any shunting is done or when a stabled train is picked up. The Guard must, however, be vigilant to see that when his train is detained at a station for any length of time, no unauthorised person interferes with the handle. This caution is to be exercised particularly when the train is running empty.

(iv) The staff responsible for loading or unloading of the wagons should also ensure that the handle of the Empty/Load box is correctly set after loading or unloading.

## II. AUTOMATIC AIR BRAKE

17.23. Principles.-

In Automatic air braking system, the medium is compressed air pressure. It obtains its power from the pressure differential between control reservoir pressure and brake pipe pressure. The Brake pipe is originally charged to 5 Kg/CM2 of the compressed air.

**17.24. Description.-**

(a) In a Train composed of completely fitted or piped vehicles, the automatic air brake may be operated on every completely fitted vehicle, provided that the Engine air hose is coupled to the first vehicle of the train by means of air hose coupling, angle cocks opened, and that each vehicles is coupled to its neighbour in a similar manner, the rear angle cock of the last vehicle being closed and the air hose placed on the air hose support.

(b) The gauges on the Engine and in the guard's van when the train pipe is continuous indicate the air pressure available by reduction of which the train can be stopped. The gauges should show not less than the following:-

| | *Engine Gauge* | *Guard's Yan Gauge* |
|---|---|---|
| Passenger Train ... | 5 Kg./Cm² | 4.9 Kg./Cm² |
| Goods Train ... | 5 Kg./Cm² | 4.8 Kg./Cm² |

(c) More than 5 kg/Cm² is not necessary and the air brake combination in the engine (Ag. Valve) should be so set that the pressure charged in the brake pipe is not more than 5 kg./Cm2 as otherwise brake binding trouble is likely to be experienced.

**17.25. How applied and taken.-**

(a) The Brake is applied by the engine loco pilot or guard by reducing the brake pipe.

(b) The first application when made by the Loco Pilots should be made sharply by reducing not less than 0.4 kg/ Cm² of air pressure initially and further reduction in steps of 0.2 kg/Cm². The different sequence of Brake applications are minimum reduction 0.4 kg./Cm2, service applications 0.8 to 1 kg./Cm2, full service application 1.5 kg./Cm2 and emergency brake application, in which the maximum brake cylinder pressure attained in shortest period of time.

(c) In any emergency, the brake may be applied from the Guard's van or any other vehicle of the train, where an application valve is fitted (provided the brake pipe is continuous) by pressing down the valve lever, until the needle of the gauge falls to zero. The Brake is then fully applied on each fitted vehicle.

(d) Should a train on which the automatic air brake is in operation parts accidentally in the portion on which the brake is operated, the air hoses between the parted vehicles will get disconnected, and the brake will be applied, automatically on each of the fitted vehicles.

(e) The brake is released by the engine Loco Pilot by charging the air pressure by means of Loco Pilot's Break Valve (Ag Valve) to the same conditions as existed before the application of the brake.

(f) The automatic air brake can be released on any vehicle by pulling the released lever of the distributor. Unlike in vacuum brake the release rod need not be kept pulled till the Brake cylinder is exhausted.

(g) The Brake gear should be properly adjusted so that the brake blocks firmly grip the wheel treads in the brake applied condition, the test for which may be done by sounding the brake blocks with a hammer.

**17.26. Specification.-**

(a) The air hose coupling between the Engine and the first vehicle and between each piped or fully braked vehicle and its neighbour must be properly connected. The rear air hose of the piped or fully Braked vehicle forming the last of the sequence from the engines must be engaged on air hose support and the angle cock closed carefully.

(b) When the air hose couplings have been connected, and the angle cocks are opened, the engine Loco Pilot must charge the required air pressure 5Kg./Cm2 and maintain it through out the journey.

(c) Examination of trains before starting should be done as per General Rule 4.30,4.31, 4.32,4.33 and Subsidiary Rules thereto.

(d) Guard and Loco Pilots shall ensure at the time of taking over charge of a train, that their trains have the prescribed minimum brake power as laid down below.

1. *For Goods Trains:-(i)* There must be 5kg/ Cm2 air pressure registered in the Engine brake pipe gauge.

(ii) For the purpose of working out of the percentage of operative pistons on trains, piped vehicle should be deemed to have in-operative cylinder/cylinders. The percentage has not been expressed in terms of vehicles or four wheeler units but only in terms of brake cylinders, since bogie wagons have two cylinders and four wheelers have one cylinder.

(iii) An active brake cylinder is one in which the air pressure can be admitted through the auxiliary reservoir when the pressure In the brake pipe is reduced by control from the engine and which, moreover, satisfies the stipulation that its piston would remain in pushed-out position for not less than 30 minutes after the air pressure in the brake pipe is reduced.

(iv) On steep gradient sections 90% of the brake cylinders must be operative.

(v) The brake gear should be properly set to yield correct piston stroke. The piston strokes in the empty and loaded conditions shall be .as follows:

| | | EMPTY | LOAD |
|---|---|---|---|
| BOY | ... | 90+5 mm. | 120+_5 mm. |
| BOI | ... | 150mm. | 150mm. |
| BOX 'N' | ... | 85+10mm. | 130+_10mm. |

(vi) No audible leak is permissible in the air brake system along the train.

(vii) There should be at least three fully air braked vehicles (including brake-van) with operative cylinders out of the last four vehicle at the rear end of the train.

(viii) The position of Empty/ Load Box handle on wagon should be placed on the appropriate position either Empty/Load according to the loaded condition of the wagon.

2. *For Passenger Carrying Train* :-

(i) From an originating station the train must have all vehicles with active air brake cylinders.

(ii) At intermediate stations not more than 10% of in-operative cylinders. (Subject to maximum of 2 cylinders only) can be permitted.

(e) When the engine is attached to the train, the Loco Pilot must see that the air hose coupling on the engine is properly connected to that on the train. Both angle cocks

to be closed before detaching their hose couplings of the engine and front vehicles and air hoses are engaged on respective air hose supports.

(1) The Loco Pilot must test the engine automatic air brake apparatus before leaving the shed. Should there by any difficulty in charging and maintaining the required air pressure, after coupling to the train, steps should be taken to locate and remedy the fault, failing which the defective vehicle should be detached without infringing safety. Loco Pilots should ensure that the specified main reservoir Pressure is maintained.

**17.27. Recording and testing of Air pressure indication by Guards.-**

(a)(I) The Guard must record in the appropriate column in the Guard's rough journal book and Guard's train report (T 34 HF) what air pressure is indicated in the brakevan gauge every time the train starts after a halt. He will not give starting signal to the Loco Pilot unless the air pressure as indicated in rule 17.24(b) is registered in his gauge or unless he is authorised by a representative of Mechanical Department to start at lower air pressure than prescribed.

(ii) At the first starting station and at all stations where the engine or any vehicles are detached from the train or any vehicles are attached to the train, before starting when the Loco Pilot has charged the air pressure, the Guard must reduce 0.4 Kg./Cm2 air pressure by operating his brake van valve observing the indication needle and then replace his valve to normal and allow the Loco Pilot to charge the remained air pressure. Without doing the Guard must not give the starting signal to the Loco Pilot.

(iii) If the indicator is not registering correct air pressure as given in rule 17.24(b) the fact must be brought to the notice of either the SSE /SE / SE (C&W) or the Loco Pilot.

(b) Air pressure tightness test for Locomotives by Loco Pilots :-

1. *Engine* :-Engine should be tested for leakage test as follows :-

(A) Open the Loco angle cocks in front and in rear to allow the dirt or water to blowout and apply master gauge on rear air hose couplings. Close the front angle cock of the engine.

(B) Charge the brake pipe pressure to 5 Kg./ Cm² Ensure 5 Kg./Cm2 pressure is registered in the Engine brake power pressure gauge as well as in master gauge.

(C) Drop a pressure 1 Kg./Cm² by keeping the Loco Pilot's brake valve handle in application position.

(D) Keep the cut-out cock in 'OUT' position. Wait for 60 seconds.

(E) Note, there should not be any drop in the pressure gauge in the next 60 seconds.

(F) Any drop in pressure indicates the leakage in the Engine.

(G) Again charge the brake pipe pressure to 5 Kg./Cm² and ensure pressure is restored instantaneously.

II. *On Trains* ;-

(A) Couple up engine air hose to the train air hose.

(B) Open rear angle cock of the brake van to allow the dirt or water to blowout and apply master gauge.

(C) Charge the brake pipe pressure to 5 Kg./ Cm² Ensure the same amount of pressure is registered in the brake van pressure gauge and master gauge.

(D) Drop a pressure by 1 Kg./Cm² by Loco Pilots, brake valve.

(E) Keep the cut-out cock in the loco brake valve in out position and wait for 60 seconds.

(F) A drop of 0.2 Kg./Cm² (0.3 Kg./Cm² on longer trains) is permissible.

(G) Any excess leakage noticed is to be attended to.

(H) Again re-charge the brake pipe pressure to 5 Kg./Cm2 and ensure the pressure restores instantaneously in brake van.

(I) Close the rear angle cock of brake van and engage the respective air hose on support.

**17.28. During Journey.-**

(a) Loco Pilots and Guards must unscrew their hand brakes fully off before starting.

(b) Loco Pilots will be guided in the use of their air brakes and hand brakes by the orders in force.

(c) If during the journey the Guard of any train finds that the gauge in his Brakevan shows less than the required air pressure (unless he is satisfied that such is caused by an application of brakes) he must be prepared to apply his hand brake if required and advise the Loco Pilot of the defect at the next stopping station.

(d) The Loco Pilot and'the guard must report to the Train Examining staff at the next train examining station any irregularity or defect in connection with the working of the automatic air brake which may have occurred, and the Guard must in addition, note the particulars in his journal.

(e) When fitted or piped vehicles on which the automatic air brakes are being operated have to be parted for any purpose, the angle cocks of the vehicles where they have to be uncoupled must be closed so that there may be no delay in coupling and the men put on the job are not injured.

(f) In case of failure of the automatic air brake on any train during the journey, if the defect cannot at once be remedied, the train must proceed cautiously to the next convenient station, where the defective vehicle can be remarshalled, detached or otherwise dealt with, the speed of the train being so regutated as to enable the Loco Pilot to have full control of the train by the hand brakes. In all such cases the *J* Guards must be on the alert and assist in stopping the train with the hand brakes.

(g) (i) When two engines are employed to draw. a train, the Loco Pilot of the leading engine will be held responsible for the working of automatic air brake. The Loco Pilot of the second engine must, however in case of emergency, assist in stopping or reducing the speed of the train by applying the automatic air

brake, or hand brake, as may be required, but he must not maintain or recharge the air pressure.

(ii) When an additional engine or engines are employed to push a train, the Loco Pilots thereon must not interfere with the working of air brake which shall be under the control of the leading engine Loco Pilot as laid down in para (g) (i) above.

(iii) Loco Pilot of all additional engines will at all times keep the handles of the Loco Pilots brake valve in the release position.

(iv) In the event Loco Pilots of the engine in rear requiring in any emergency to attract the attention of the leading engine Loco Pilot, he shall give whistle code as laid down in G.R.4.50 and S.R.4.50.01.

Note:- These rules are laid down to avoid the serious danger which would arise if the Guard or the Loco Pilots of additional engines were to put the brake on, while the leading Loco Pilot was trying to recharge air pressure.

**17.29. Stopping.-**

(a) Before the train is brought to a stand, the Loco Pilot will release the brake slightly to prevent a rebound of the vehicles and an undue strain on the couplings.

(b) In case of a train becoming divided, the Guard in the rear van must put his hand brake hard on and secure it with the chain or sprag, where provided. He must also take any other precaution that may be necessary to prevent the rear portion moving, before going back to protect his train.

(c) In controlling trains on descending long and heavy grades, Loco Pilots are cautioned against the exhaustibility of the air brake system. Loco Pilots should know what is called the sensitive brake application and should take extreme care in avoiding the fading of the brake power. After repeated brake applications care should be taken that auxiliary reservoirs where the brake cylinders are fed from, are recharged to the original capacity (5 Kg./Cm2). Neglect of this rule may lead to the train going out of control.

(d) On long and heavily graded sections, when trains are braked only by compressed air pressure, it is essential that trains be stopped at suitable time intervals during the run for recoupling lost air pressure in auxiliary reservoir and to ensure that train be kept under control and hence halts may be provided on such heaviiy graded sections either at station or in mid sections for recoupling air pressure in the auxiliary reservoir and these halts wherever provided are shown in the working Time Tables. Loco Pilots while working air brake trains must ensure that they strictly observe these halts regardless of whether they are given through signals or not.

(e) The fact that after the brake has been applied the air pressure in the control reservoir gradually decreases due to leakage and that in less than half an hour the brakes may leak off altogether must not be forgotten when a train is brought to a stand on a gradient steeper than 1 in 150. In all such cases measures must be taken to guard against the possibility of a run-away. For this purpose, precautions mentioned in SR.6.04.02(d) must be observed strictly.

The Guard and the Brakesman must always be vigilant and be prepared to assist the Loco Pilot by applying hand brakes, if called upon to do so by the' Loco Pilot and if

necessary in an emergency. If the Loco Pilot requires additional brake power, the Guard and Assistant Loco Pilot shall pin down hand brakes on as many vehicles as the Loco Pilot may consider necessary.

**17.30. Passenger Train Stopping Apparatus.-**

(a) Passenger carriages are fitted with an apparatus enabling passengers, in case of emergency, to partially apply the automatic air brakes and so to attract the attention of the Loco Pilot and the Guard of the train except such particular carriages! trains as may be exempted vide GR. 4.18.

(b) On noticing the drop of pressure in the brake pipe pressure gauge, the Guard, Loco Pilot, Motorman, Asstt. Loco Pilot and Brakesman will take necessary action as laid down in SR.4.18.01 and 4.18.02.

(c) To reset the apparatus to enable the train to proceed, it is only necessary for the Guard/Brakesman or Asstt. Loco Pilot to push one of the discs to its socket or to turn the disc through 900 as the case may be, which will cause both disc to resume their normal position and the brake blocks to get released.

**17.31. General.-**

(a) Air Hose couplings must not be left hanging loose but must be properly secured on the air hose support provided for the purpose.

(b) To couple the air hoses, they must be taken one in each hand and lifted sufficiently high to enable the palm ends of both air hoses to be coupled together and when lowered the coupling packing ring of one palm end will fall in the coupling case of the other end and hold in position with the stop-pin.

(c) To uncouple the air horses, they must be lifted straight up, when the coupling packing ring of one palm end will come out of the coupling case of the other palm end and air hose palm ends will separate.

(d) When connecting and dis-connecting Air hoses, staff must be extremely careful. When the Air brake system is under charging, there will be a pressure of 5.0kg/$CM^2$ in Air Hose and hence before handling them, respective angle cocks should be closed and after uncoupling/coupling angle cocks should be opened.

(e) Care must be taken in un-coupling air hose Palm ends that the MU washers are not displaced or lost.

(f) Shunting staff and other when passing between vehicle~ must not step on the air hose coupling interfering with or damaging them.

(g) When automatic air brake vehicles are placed in siding or stabled with in the station limits, the brakes must be released, and vehicles kept from moving by the application of the hand brakes if fitted, or by sprags or chains on the required number of vehicles if necessary.

(h) Guards and other concerned staff must take care that articles are not placed in Guard’s vans in such a position as to come in the way of the lever of the Guard emergency valve.

**17.32. Instructions to Loco Pilot, Guard and Assistant Guard on the use of Air Brakes.-**

Loco Pilots, Guards and Brakesmen are being instructed in the training Centre during their initial and refresher training period regarding the air brake system and its use. They must be well acquainted with all the instructions of this chapter and ensure strict observance.

**17.33. Recording of Air Brake particulars by Guards.-**

(a) The Guards must be careful to show in their journals and on the copy handed to the Loco Pilot the , particulars of air pressure and number of vehicles with active / In-active cylinders on train.

(b) In all cases where the active cylinder is made in-operative or vice-versa, during the journey, the change and stations where it took place must be noted by the Guard in his journal and on the copy handed by him to the Loco Pilot.

**17.34. Locomotive Loco Pilot to blow through.-**

In order to prevent the accumulation of Moisture and dirt in the pipes of automatic air brake apparatus Loco Pilots are instructed that before leaving shed with their engine to work a train, a good blow through should be given with the Loco Pilots brake valve by opening the front and rear angle cocks. A through blow should be given by opening the dummy plug of main reservoir also. The accumulated moisture and oil will be drained out. Likewise before engine is attached to the train, the rear hose should be opened and blow-through given. After the engine is attached to the train and the rear air hose of the engine and the air hose of the first wagon of the train air hose coupled, the blow-through should be given by opening the rear angle cock of the last vehicle.

**17.35. Other responsibility of staff.-**

(a) The working of automatic air brake by the engine Loco Pilot will not relieve the Guard of any responsibility as to the braking of the train. Guards must therefore keep, a good look-out and be prepared to apply the automatic air brake or hand brake should any necessity arise.

(b) Engine Loco Pilot must satisfy themselves that the automatic air brake is in proper working order before starting and at each station where any vehicle is attached or detached. They must also test the brakes before descending steep inclines and while approaching any danger signal or terminal station; the speed of the train must be reduced if necessary so as to stop the train at the proper place. Guards must watch the speed of the train and assist the engine Loco Pilot by the use of their Air Brake and Hand brake when necessary.

(c) Unless the automatic air brake is working properly while the train is on run, the engine Loco Pilot must whistle for the Guard’s hand brakes, stop the train and inform the Guard that the automatic Air Brake is out of order and that the hand brakes must be relied upon for working the train to the next convenient station. Special care must be taken by , the Loco Pilot and Guard as laid down in Para 17.06(f).

Note :- Special precautions to be observed on Ghat sections shall be laid down in the working Time Table and also in the Special Ghat Section Rules by the Divisions.

**17.36. How to locate leakage in Air pressure.-**

Normally, the leakages are at the joints of the Air Hoses couplings namely at the palm ends and at nipples, at angle cock spindles, at the grip seal joints on main brake pipe, branch pipe etc. The leakage is usually detected by hissing sound produced by the air blowing-off. For detection of minor leaks, soap solution can be applied at joints where bubbles will be formed if leakage exists.

**17.37. Trains with air brakes.-**

(a) Normally, trains must run fully air braked.

(b) In case of emergency when a passenger train, for any reason has to run non-air braked, the speed must not exceed 40 KMPH and for mixed and goods train must not exceed 32 KMPH subject to, any lower speed restriction which may have been imposed over a particular section for any reason. In any case, a passenger train must not run non-air braked over any portion of the line without the. permission of the Chief Operations Manager. However, running of non-air braked goods train in emergency may be permitted by the DRM.

(C) In such case, the load of the trains must be reduced and the Loco Pilot and Guard of the train will be responsible to see the train is under control to stop wherever ‘required.

**17.38. Air pressure for Ghat section.-**

(a) In addition to the specification on air pressure requirements and all other instruction laid down for goods trains in the earlier paras, it should be further ensured that a minimum of 90% of total No.of cylinders are fully operative on train on ghat section.

(b) If the required brake power, as defined above is not available or if the Loco Pilot doubts whether the brake power is sufficient or not, he has to stop and sufficient number of hand brakes have to be pinned down to ensure control on a down gradient.

**17.39 Attaching of vehicles not fitted with automatic air brakes to coaching trains.-**

(a) Mail, Express and passenger trains fitted with automatic air brakes, brake piped vehicles (vehicles fitted with only brake pipe and not with distributor valve, brake cylinder, brake rigging etc.) may be attached not more than one. Such vehicle attached on a passenger train should be-protected by one or more vehicles fitted with automatic air brakes attached in rear of it.

(b) No goods vehicle fitted with brake pipe only is permitted to be attached to a coaching train. Vehicles, both coaching & goods, fitted with brake pipe only, may be attached to troop trains and special .trains conveying military stores etc., but the specification of brake power laid down in para 17.26. must be followed except if any relaxation is permitted by CME / Sr. DME/DME in case of emergency.

**17.40. Dis-connection of means of communication:-**

If disconnection of means of communication to prevent misuse is permitted vide G.R. 4.18, the procedure and precaution laid down in the said G.R & S.R. thereto should be followed.

**17.41. Testing of communications and alarm chains on running trains.-**

(a) The communication provided in passenger carriages for stopping trains in case of emergency, must be tested by Divl. Optn. manager, and Divl, Mech. Engineers, their Assistants and also by the Divisional Transportation Inspectors and C & W and Loco Inspectors in running train at least once a month. The test must be made by pulling the chains in one of the passenger carriages on the train, while the train is on the move but the test should be avoided while a train is ascending an incline or when a train is running late. Divisional Safety Officer shall also make similar checks.

(b) The result of the test must be recorded by the testing officials and reported to the Divisional Operations Manager or Divisional Safety Officer and the Divisional Mechanical Engineer at once the following particulars are to be recorded:-

(i) Date, time train Number and the number and class of the Carriage in which the chain was pulled.

(ii) Time that was taken to stop the train after the chain was pulled.

(iii) Whether signals were properly exchanged between the Guard and the Loco Pilot.

(iv) The time that elapsed before the Guard came to the carriage from which the chain was pulled.

(v) Total duration of the halt.

(vi) Approximate estimated speed of the train at the time of test.

**17.42. Application of automatic air brake from the brake van.-**

The Automatic air brake may be applied from the brakevan in an emergency only. The application of Automatic air brake must, in such cases, be gradual, as there is risk of the train parting owing to sudden application of the air brake from the rear.

**17.43. Blanking "off" automatic air brake distributor valve.-**

When an automatic air brake distributor valve or its brake cylinder on a vehicle is out of order, the distributor valve and brake cylinder must be put out of action. The brakes of the individual wagon can be isolated by shutting off the isolating cock. This isolating cock is either fitted on the distributor valve itself, or on the branch pipe connecting the brake pipe to the distributor valve.

**17.44. Empty load handle on special type bogie fitted wagons.-**

(a) The special type bogie fitted wagon with higher carrying capacity are provided with a mechanicar device known as empty Iload box, by the manipulation of which, the brake power of a wagon can be increased or decreased.

(b) This equipment has been provided to ensure that the train has adequate brake power in the empty as well as loaded condition of the wagon to enable it to be kept under proper control at all times.

(c) When the wagon is loaded, its brake power must be increased and this is done by operating a small Empty / Load Box handle (provided at the side of the wagon just below floor), from the "Empty" position to the "loaded position". These two positions are clearly marked on the plate on which the handle is fixed, by legend and also by colour.

(d) When, however, the wagon is empty and as such increased brake power is not necessary, the Empty / Load Box handle MUST BE set at the “Empty” position.

(e) If the Empty / Load Box handle is not set in the correct position, a serious accident can happen, as in the loaded condition the train will have inadequate brake power, on the other hand, when it is empty, severe application of brake will skid the wheels and cause them irrepairable damage.

(f) All station and yard staff both operating and commercial, also train examining and running staff should be fully acquainted with the operation of the Empty / Load Box device fitted on special type bogie fitted wagons. The following instructions should be strictly observed :-

(i) The handle of Empty / Load Box should be at the “Empty” position when the wagon is empty or when it is loaded with light materials like bamboo etc., so that the gross weight of the wagon is not likely to exceed 50 tonnes. The handle should be set to “loaded” position when the wagon is fully loaded or if the gross weight is above 50 tonnes.

(ii) The SSE/SE/JE(C&W)will be responsible for the correct setting of the Empty / Load Box handle at all originating stations where the train is examined and certified fit by the Carriage & Wagon staff and at stations where the trains are passed by them. This should be recorded in the Air pressure brake certificate also.

(iii) The Guard will be responsible for the correct setting of Empty / Load Box handle at Wayside stations where any shunting is done or when a stabled train is picked up. The Guard must, however, be vigilant to see that when his train is detained at a station for any length of time, no unauthorised person interferes with the handle. This caution is to be exercised particularly when the train is running empty.

(iii) The staff responsible for loading or unloading of the wagons should also ensure that the handle of Empty / Load Box is correctly set after loading or unloading. Just before unloading commences, the Empty / Load Box handle should be changed to “Empty” position.

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## CHAPTER -XVIII

# TRAIN LIGHTING

**18.01. Electrical Equipment in Coaching stock.-**

(a) Coaching stock is generally provided with lights and passenger coaches are provided with fans also. Some coaches are fitted with generator equipment such as Alternator/Dynamos and batteries whereas ott1er coaches are unequipped. While each light or fan has its switch inside the coach, equipped coaches have also a control switch fixed at the end of each coach.

(b) All defects in the lighting of trains are attended to by Electric Fitters of the train Lighting section posted at certain base stations and also at certain intermediate stations en-route.

(c) Flying Squad Fitters are provided in certain Mail and Express trains in addition to the Train Lighting staff in the Train Lighting Depots and the stations en- route. Guards are to ensure proper accommodate for Flying Squad Fitters and report any defects in the train to them in order to get the defects rectified " while on run.

(d) Following is the list of stations at which Train Examiners (Electrical) and Train lighting staff are posted over this Railway:-

| | |
|---|---|
| Durg | Bilaspur |
| Anuppur | Raipur |
| Shahdol | Nainpur |
| Dongargarh | Chindwara |
| Gondia | Katni |
| Nagpur | |

**18.02. Marshalling of coaches.-**

(i) Rakes should be marshalled in such a manner that equipped coaches and unequipped coaches are distributed evenly over the train so that two unequipped coaches are not marshalled side by side. On a rake not less than 80% of the total number of coaches should be equipped coaches. Non-electrified coaches should not be marshalled inside a block rake. Parcel Vans also should be marshalled outside the passenger coaches.

(ii) If for any reason any coach is marked sick or booked for repairs, the coach after being repaired should go back to the same rake. When for any cause a coach is detached from a Mail, Express or a Passenger train, the Station detaching it should at once send a message to the next station where spare coaching stocks are based, as also the concerned control advising the class and type of vehicle detached, so that steps may be taken to replace the vehicle on the rake at the earliest possible opportunity.

(iii) With the technical developments and the superiority over the conventional 24 Volts system, certain rakes are working on same principle but at different voltage. When any coach working 24 Volts is required to be marshalled, it should be so marshalled that continuity of original system is not disturbed. Further as far as possible all the 24 Volts coaches, on such trains should be marshalled together at one end, to make it easy to connect them together in the case of failure of generating equipments on these coaches.

**18.03. Control of Lights and Fans.-**

(a) With a view to preventing an undue drain on batteries, lights and fans on train service coaches are to be switched on as follows -

(i) *Local or branch line trains* ::- Half an hour before starting time.

(ii) *Mail, Express and Passenger trains* :- As soon as the rake is backed on the platform line or one hour before the departure of the train whichever is later.

(b) On termination of a train, after the passengers alight the Train lighting staff must switch off the fans and lights.

**18.04. Guard's duties.-**

(a) On taking over a train, the Guard must satisfy himself that the lights and fans and the side and tail lamps are in working order.

(b) To avoid wastage of electrical energy, in the morning when there is clear day light, the lights and fans must be switched off and then fans only switched on if required.

**18.05. Failure of Lights and Fans on coaches.-**

If the train lighting staff or Carriage and Wagon staff cannot rectify a defect before the departure of, the train, they will inform the respective Divisional Electrical Engineer and the Train Lighting staff at the station ahead by sending message. The Guard will advise the Section Controller through the Station Master. In case of failure of lights and fans enroute the Guard should take necessary action as far as practicable to rectify the fault. If he fails, he should inform the Train Lighting staff at the station ahead over walkie-talkie set or through ASM on duty on control phone.

**18.06. Duties of Station Masters / Yard Masters / Station Supdt / Chief Yard Master.-**

(i) At Stations where coach/coaches or complete rakes are detached / stabled and if no Train examining staff and no Electrical staff are posted there, it will be the duty of the Yard Masters / Station Masters / Station Supdt./ Chief Yard Masters in order to prevent wastage of current and theft of fittings to see that all lights and fans are switched 'off', the doors and windows are locked and the compartments are not occupied by unauthorised persons. Similar action should be taken in regard to electrically equipped spare stock in station yards. The doors of the compartments are to be padlocked.

(ii) It is extremely important that blocked rackes are not split up or coaches interchanged. Should a coaches in any rake be marked sick, it should be replaced by one of the spare coaches. A coach belonging to a particular block rake should not be used to replace a 'sick' coach of another rake unless absolutely unavoidable.

(iii) When any dynamo and battery fitted vehicle forming part of a block rake is cut off en-route, an advice should be sent immediately to the nearest Train Lighting Examiner, the Divisional Electrical Engineer concerned and the Divisional Operations Manager stating where the vehicle has been detached. At train examining stations this advice will be sent by the JE(C&W) and at other stations by the Station Master.

**18.07. Movement of Equipped coaches, Generator Cars and A. C. Coaches.-**

Coaches provided with costly equipments shall be moved by Passenger trains only. Movement by Goods trains should not be allowed (i) to avoid thefts and pilferage of costly equipments (ii) for putting back these coaches into service after the earliest possible attention to avoid loss of Revenue. Controllers and other operating officials should ensure that such coaches move by passenger trains only. But the coaches with such equipment from and to shops should be moved by “Shop special” or “Goods train” with RPF protections. In unavoidable circumstances when the coaches with costly equipments are despatched by Mixed / Parcel train, they should be provided with escort.

**18.08. Fire on Electrically fitted carriage.-**

(a) In the event of electrical fittings in a coach catching fire, the Guard / Loco Pilot / any other on duty staff on train shall take all possible actions to stop the train and the Guard shall-

(i) remove the battery fuse;

(ii) remove the dynamo belt;

(iii) see that the fire is extinguished;

(iv) remove loosely hanging wires if. any.

(b) If there is any Generator Car marshalled in the rake, the Guard should ask the staff accompanying the Generator Car to shut down the Generator and cut off the supply.

(c) In case of wood work of the coach catching fire, all possible steps with available means shall be taken to prevent it from spreading and to extinguish it. In this connection the stipulation of G. R. 6.10 and S.R. 6.10.01 (a) and 6.10.02 should also be followed.

(d) In case of fire on train in mid-section, the Guard/ Loco Pilot of the train shall give immediate intimation to the controller and other concerned over portable Telephone or other means if the fire cannot be extinguished at the initial stage.

**18.09. Examination of Electrical equipment by SSE/SE(JE (C&W) -**

SSE/SE/SE(C&W) in absence of Electrc Train Lighting staff, should pay attention to the following points:-

(i) A dynamo should not be interfered with except when an obvious defect has developed; the belt should then be removed and the dynamo labelled ‘For repairs’.

(ii) When a missing belt is replaced, care should be taken to ensure that the tention on the belt is adjusted correctly.

(iii) A blown fuse should only be replaced with the correct gauge of wire supplied for the purpose. Care is necessary to be taken owing to risk of fire.

(iv) Lamps burnt out, broken or missing, should be replaced.

(v) No major fan repairs should be attempted. Loose fan guards may be tightened or re- connected and fuses replaced.

(vi) Intimation of any repairs carried out or of any defect requiring attention should be sent by a memo, through the Guard of the train, to the next station at which Electrical Train Lighting staff are available.

**18.10. Special equipment on Pantry Cars, Air conditioned coaches and Inspection Carriages.-**

(a) Pantry cars are provided with special switches by which their own installations are fed from their own equipment not assisting the rest of the equipped coaches on the rake.

(b) All Inspection Carriages are provided with special switches. If the Guard receives a complaint that the lights and fans have failed he should advise the electrical Train Examiner.

(c) Air-conditioned coaches are normally accompanied by attendants who should attend to the defects and failures, if any.

**18.11. Breakage of cells.-**

(a) In the event of any battery fitted coach being subjected to rough shunting or a bump or being derailed the staff present on the spot must see whether any liquid is dropping from the battery box. If any liquid is found dropping this matter must be reported at once to the Yard Master or the Station Master concerned who will arrange to have the electrical equipment examined by the Train Lighting staff and obtain full report. If there is no Train Lighting staff provided at the station, the nearest Train Lighting staff must be informed by the quickest possible
means.

(b) Whenever Air-conditioned Coaches and Inspection Carriages are sent to base station or Workshops for repairs to electrical equipment, the keys of padlocks locking the doors must always be sent with such carriages.

**18.12. Emergency lighting equipment in Brake- van of passenger carrying trains.-**

(a) All trains carrying passengers except EMU shall carry Emergency lighting equipment in portable sealed box in the brakevan.

(b) *The emergency Lighting Equipment consists of the following items:*

(i) Tripod Stand.

(ii) Platform with 2 Automobile Headlights and a 3-pin socket.

(iii) One hand lamp and Kent Coupler socket wired with 2 core TRS cable.

(iv) One kent coupler socket and 3-pin plug with connecting TRS cable.

(c) *Procedure for assembling* :-

(i) Tripod stand is to be fixed in position.

(ii) Automobile Head lights would be installed fixing them in the direction to be focused according to circumstances.

(iii) Plug is to be fixed in the socket provided at the Tripod stand and kent coupler to the kent coupling socket of the coach.

(iv) The emergency light should be coupled up or connected to the coach which has its batteries in good condition. In case there is no coupler or no current in the coupler, the wire may be directly connected to the battery.

(v) The hand lamp may be used for illuminating any place where the projector light does not give adequate illumination or where close inspection is necessary.

(d) *Training to the Guards:-* The Guards are trained at the Zonal Training Centre during their initial and Refresher course of training in the use of emergency lighting equipment in the event of accident to a Passenger carrying train. It is the duty of every Guard to be fully acquainted with the technique and procedure for using these lights and to bring these lights into use when necessary.

(e) The Guard should personally satisfy himself that the equipment is in good working order before taking over from the Train Lighting staff/ Station Masters / Guards at originating or interchanging or Guards changing stations and should sign in the register maintained at the station and make an endorsement in the Guard's ticket. He is personally responsible for loss or damage to the equipment during the period the equipment under his custody. The TAR(Elect) while handing over the E.L.Box to the Guards will test the same in their presence.

(f) *Custody of the emergency lighting equipment:-The* emergency lighting equipment is distributed by the SSE/SE/JE (Electrical) of base stations wherever SSE/SE/JE (Electrical) are posted. At those stations where SSE/SE/JE (Electrical) or TLMs are not posted, it will be in the custody of the Station Master. The JE/SE/SSE(Elect)/Station Master will be responsible for the safe custody of the emergency lighting equipment in his care.

(g) *Handing over the equipment at the originating or interchanging stations:-*

Before a train leaves its originating / interchanging station, the SSE/SE/JE (Electrical)/Station Master will handover the emergency lighting equipment to the Guard of the train and take an acknowledgement of the Guard in a register which must be opened separately for this purpose.

*(h) Handing over of the equipment from the Guard to Guard:-*

When the Guard of the train changes, the emergency lighting equipment should be handed over to the outgoing Guard by the incoming Guard with acknowledgement duly signed.

(i) *Handing over of the equipment at the terminal stations:-*

At the terminal station, the emergency lighting equipment will be taken over from the Guard by the SSE/SE/JE (Electrical) in case of those stations where SSE/SE/JE (Electrical) are posted or by the Station Master in respect of other stations. The SSE/ SE/JE (Electrical) or the Station Master shall hand over the emergency lighting equipment of the Guard on the pairing rake on its return trip duly taking acknowledgement in the register.

(j) *Handing over the equipment at the junction interchange point with other Railways:-*

In the *case* of rakes which continue their run on other Railways, the emergency lighting equipment will be removed at the junction interchange station and handed back to the Guard of the return train.

For the maintenance and proper watch over the movement of the emergency lighting equipment, a register will be maintained by the SSE/SE/JE (Electrical)/Station Master at the originating/ Terminating/junction inter-change station showing the movement of emergency lighting sets.

(k) *Branch line train:-*

For branch line train service for which the same rake returns after a short halt at the terminal station, the emergency lighting equipment should not be removed at terminal station. The equipment will be in the custody of the Guard till it is returned by the G'uard at the base station.

(I) Breaking of seal:-

The equipment will be handed over to the Guard in sealed condition. In case any necessity arises for breaking the seal, the Guard concerned should make an entry in the journal kept inside the box giving reasons for breaking the seal. The Guard should while handing over such equipment to either originating or interchange or terminal stations, also sign in the register maintained at the station for having handed over the equipment with the seal in broken condition. The SSE/SE/JE(Electrical) should check and test the equipment thoroughly before putting fresh seal on such boxes. At stations where the equipment is handled by the Station Masters, the concerned Station Master should inform the Electrical staff of having received the equipment with the seal broken and the Electrical staff after thoroughly checking and testing the equipment should seal the same.

(m) If for any reason, any train is terminated at an intermediate station, the Station Master shall be responsible to return the equipment to the SSE/SE/ JE (Electrical)/ Station Master of the base station in consultation with the Section Controller and Guard of the train.

(n) If any special train is arranged, the Station Master of the station concerned should make arrangement for providing the emergency lighting equipment for the train, by contacting the concerned officials at the Divisional Head Quarters in advance.

(O) Instructions issued by the Electrical & Operating Departments from time to time should be studied by the Guard thoroughly and he should act accordingly.

(p) In case any E.L. Box is not received back by the pairing train, the SSE/SE/JE (Elect)/Station Master shall take immediate action to trace out the box and restore it to service. In case of loss of E.L. boxes, the matter should be reported and responsibility fixed.

**18.13. Maintenance and testing of the equipment.-**

(a) The equipment whether in the custody of SSE/ SE/JE (Electrical) or the Station Master will be tested periodically at intervals of not exceeding 10 days by the electrical staff nominated for the purpose who should sign the journal kept inside the box and record the proper functioning or otherwise of the equipment. The maintenance of light boxes should normally be carried out by the Electrical staff at the base station.

(b) All Electrical Officers, while on inspection, have instructions to specially spot check the emergency lighting equipment to ensure correct maintenance at all times and to deal severely with irregularities if any.

(c) Divisional Safety and Operating Officers must also carry out similar checks.

**18.14. Wax Heater.-**

All Postal Vans are provided with Wax Heaters. The postal staff should ensure that these Wax Heaters are in working order. The Guard, on being informed of any defect should intimate the Train Lighting staff at the next station provided with train lighting staff to have the same rectified.

**18.15. Engine Head Lights.-**

(a) The Loco Pilot should carry with him, a spare Engine Head Light bulb. In the event of the bulb fusing, the Loco Pilot should replace it. The Loco Pilot should ensure that the train is not detained abnormally on this account.

(b) The Loco Pilot should not tamper with the Engine head light wiring and fittings for temporary lighting in the locomotive since such temporary lighting causes failure.

**18.16. Electric failure in Corridor type first Class coaches.-**

ICF Corridor type 1 st Class coaches are provided with attendants. The attendants are trained in the attention to minor repairs in their coaches like replacement of bulbs, fuses, etc. The attendants should have the full complement of tools and spares for such purposes and they are to attend to such minor repairs.

**18.17. DRS Cards.-**

The deficiencies of electrical fittings in Passenger carrying trains are recorded in these Cards.

Guards should ensure that the train leaves with the DRS Cards. He should return the DRS Cards at the destination station to the Electrical staff. In case DRS Cards are not provided, the Guard should obtain a certificate from the Electrical staff and record the same in his ticket with reasons for not receiving DRS Cards.

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## CHAPTER -XIX

# ELECTRIC TRACTION

## Safety Measures to be observed in A.C. Traction Areas.

**19.01. General and Subsidiary Rules.-**

Rules applicable in electrified sections have been given in Chapter XVII of General Rules and in the Subsidiary Rules made thereunder for Electric Traction. The General Principles governing operation and maintenance of traction overhead equipment, electric locomotives and signal and telecommunication installations have been given in the A.C. Traction Manual. -these Rule books shall be kept in each station and yard office and all the staff responsible for de.aling with the movement and operation of trains shall make themselves thoroughly acquainted with these rules for safe working and shall be held responsible for knowledge and compliance with the same.

Brief references to important rules required to be followed by Loco Pilots, Guards Station/Yard staff etc. in their day-to day work have been given in this Chapter. These are, however, illustrative and not exhaustive, Loco Pilots should ensure that these instructions as well as those contained in Chapter XVII of the General Rules and Subsidiary Rules there to and also those contained in the A.C. Traction Manual are known to their crews as far as they are concerned. Guards should similarly ensure that their Assistant Guards, Train Hamals, etc., are conversant with these rules. Station Masters and Yard Master will similarly make their staff conversant with these rules.

**19.02. General Safety Precautions.-**

(i) All staff are warned that contact with or approach within 2 metres of any live portion of the 25 KV traction overhead equipment, unless protected by screen as per rules, is dangerous and should be strictly avoided(G.R.17.04 and Subsidiary Rules thereto). The zone with 2 metres of any live portion of equivalent is to be treated as dangerous.

(ii) Notwithstanding the above, the Loco Pilot of an electric locomotive is permitted to change the head-light bulb of the locomotives while standing on the buffer beam projection at the floor level of the cab.

**19.03. Movement of Diesel locomotives on electrified sections.-**

(i) Fueling of the loco shall only be carried out in yards outside the electrified zone.

(ii) *Watering of carriages:-* Normally, all passenger carriages to move on the electrified sections, should be fitted with the side filling arrangement so that the water can be filled in the tanks from the ground level only.

In the case of coaches equipped with conventional arrangements for filling of water from the roof only, the filling of water in the coaches shall be resorted to only on the non-electrified lines. However, the watering of such coaches suitable for filling from the top only, may be done at specific places where special sectioning arrangements for overhead equipment are provided and authorised traction staff posted for according ‘Permit to work’,

**19.04. Unwired tracks.-**

No electric locomotives with pantograph raised shall under any circumstances be taken to an unwired section. All levers in cabins giving access to an unwired lines have a yellow point mark warning the Levermen against setting the unwired lines for electric locos.

**19.05. Power block:-**

(i) The detailed procedure for obtaining power blocks has been given in G & SR 17.04 and Subsidiary Rules there to and this must be rigidly followed.

(ii) The sequence of switching operations for granting and cancelling the power block for particular sections is included as an Annexure to the appendix of Station Working Rules under 25 KV A.C. Traction. These should be strictly followed by all staff. Failure to follow the sequence indicated is likely to lead to dangerous consequences. When any isolator switch is changed from its normal position, for staff to work on overhead equipment, a danger Board shall be exhibited on the switch with the caption 'Danger, Men working'. An adequate number of such Danger boards are provided at each station.

**19.06. Section Insulators.-**

In order to isolate Up and Down running lines and also sometimes Main and Loop lines or different grids in the yard, the cross-overs connecting Up and Down lines or cross-overs / turnouts connecting main and loop lines or different grids of the yard are provided with section insulators so that when one line or grid is made electrically dead or there be any fault on the same, the other line / grid is not affected. The speed of the electric locomotive with pantograph raised over such section insulators shall not exceed 30KM per hour subject to any other speed restriction which may be in force.

When one of the two sections separated by a section insulator is dead, the pantograph of the electric locomotive on the live section shall not proceed closer than 10 metres towards the section insulator marking the end of the dead section.

**19.07. Fire.-**

Regarding fire on or adjacent to any electrical equipment, refer to G.& S.R. 6.10.02, 6.10.03, 6.10.04 and 6.10.05.

**19.08. Power supply to Colour Light Signalling.-**

(i) Power supply for colour light signalling on each station on the electrified stations is arranged from two independent sources as under:-

(a) One from Traction Overhead Equipment by means of step down auxiliary transformer for allowing the Voltage from 25000 Volts to 230 Volts other from another traction overhead equipment or from local supply.

(b) Where the station is not electrified and there is no local electric supply available, both the sources (the primary as well as the duplicate) will be from the Traction Overhead Equipment by means of step down transformers. The two sources will, however, be tapped from the traction overhead equipment belonging to two

different independent sections so that the outage of both the sources at the same time is reduced to the minimum.

(c) The Change over from main supply to stand-by may be automatic or manual. In case of manual change over arrangement the SM on duty will operate the change over switch to the stand-by Power supply in the case of interruptions to the main power supply and vice-versa wherever such switch is provided to indicate the availability of both main as well as stand by power supply.

(ii) The Station Master shall be guided by the general procedures embodied in the Station Working Rules in restoring power supply to colour light signals at the respective stations. The Station Master shall ensure that power supply for the colour light signals will be switched over to the duplicate source in the case of power failure of the local supply or power block on their traction overhead equipment.

Power blocks should be imposed after giving due consideration to the effect of the power blocks on power supply to the colour light signals, when the power is tapped from traction overhead equipment.

While permitting Power blocks on either of the OHEs, it is to be ascertained that the alternative power supply is available so that the supply to the colour light signals is not interrupted thereby causing all signal light to go off.

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**CHAPTER -XX**

# STATION WORKING RULES

**20.01. Introductory.-**

The object of issuing Station Working Rules is to regulate safe working of trains at and between stations, taking into consideration local conditions and special features, such as, the layout of the station yard, signalling and interlocking, gradients within the station limit, gradients at the approach of the station, Catch and Slip sidings, arrangements for ensuring that the line nominated for reception is clear and free from obstructions, measures for ensuring correct setting and locking of points, etc. Station Working Rules are also intended to draw the attention of the staff concerned to the rules governing the granting of "Line Clear", taking off signals, reception and despatch of trains, berthing of trains, working of level crossings, shunting, stabling of vehicles, and rules regarding working during failure of points, signals interlocking, block instruments, partial / total interruption of communication and in an emergency etc. The duties of different categories of staff entrusted with safe working and the equipment required for the same are also incorporated in the Station Working Rules. Station Working Rules must, at all time, be in conformity with the General and Subsidiary Rules and Block Working Manual Rules; they are "special instructions" within the meaning of GR 1.02(50). There should be no provision in the Station Working Rules contrary to General and Subsidiary Rules or Block Working Manual Rules.

Wherever any "Approved special instructions" within the meaning of GR 1.02(4) are incorporated in the Station Working Rules reference to the relevant letter of CRS should be quoted therein.

Note : Special Working Rules have been provided at stations on electrified sections giving special instructions in connection with overhead electric traction, issued under the joint signatures of Division Electrical Engineer (Traction) and Divisional Operations manager/Divisional Safety Officer. These are given as an Appendix to Station Working Rules

**20.02 Preparation, issue maintenance and revision of Station Working Rules.-**

(a) All Station Working Rules and their amendments will be prepared in the Divisions and issued under joint signatures of the Divisional Operations Manager and Divisional Signal & Telecom Engineer at interlocked stations and by Divisional Operations Manager and Divisional Engineer at non-interlocked stations on each page. In case of new S & T construction work, the DSTE (Con)/Dy. CSTE (Con) or DSTE(RE)/Dy. CSTE (RE) may sign the SWR in place of CSTE. " Each copy of the Working Rules must be signed in ink by the officers issuing them the Working Rules must be scrutinised carefully before issue, to ensure that they are correct in every respect and conform to the conditions of working at the station prevailing at the time of issue. Each page of the station working rules should be initialled by the Sr. DOM/DOM before issue.

**Note** : The station Working Rules or any portion thereof, shall not be brought into effect in anticipation of any works to be brought into use at a date subsequent to that on which the Station Working Rules concerned are brought into force.

(b) Copies of Station Working Rules shall be distributed as follows :-

(i) Station and each cabin — One copy each, (one more copy to be kept in SM's Confidential file).

**Note :-** Each Block/Non-Block Cabin concerned to reception/despatch/other movement of trains shall be supplied with the Station Working Rules or copy of the working rules pertaining to the Cabin concerned.

| | | |
|---|---|---|
| (ii) Guard's Hd. Qrs. Station | 1. | (one extra copy for Guard's Reference file) |
| (iii) Loco Shed | 2. | (one for Loco Pilot's Reference file and one for SSE/SE (Loco)/SSE/ SE (Traction) |
| (iv) Divi. Transport. Inspector | 1. | Copy for each station in his jurisdiction. |
| (v) SSE/SE (Signal) | 1 | ---do--- |
| (vi) SSE/SE(P. Way) | 1 | ---do--- |
| (vii) SSE/SE (Loco) | 1 | ---do--- |
| (viii) Divisional Office | 1 | Copy for DOM |
| | 1 | Copy for DEN |
| | 1 | Copy for DSTE |
| | 1 | Copy of DME |
| | 1 | Copy for Chief Controller |
| | 1 | Copy for Safety Section |
| | 1 | Copy for Sr. DEE (Op) or Sr. DEE (Tr.D). |
| (ix) COM's Office | 1 | Copy |
| (x) Principal, Zonal Railway Training Institute | 1 | Copy |
| (xi) Commissioner of Rly Safety | 1 | Copy |
| (xii) CSTE's Office | 1 | Copy |
| (xiii) CME's Office | 1 | Copy |
| (xiv) CSO's Office | 1 | Copy |

(c) The SWR should be issued afresh after every five years or after issue of three amendment slips and reviewed as and when required

(d) All Class III staff concerned with the movement of trains in and out of the station neamely, Station Superintendents, Station Masters, Assistant Station Masters, Chief Yard Master, Yard Masters, Assistant Yard Masters, Shunting Jamadar, Yard Master, and Switchmen including Relieving and Rest Giver staff of these categories as also any other category of staff who may be temporarily put to work in any of the above categories must read and understand the Station Working Rules, and they must not be allowed to take charge unless they sign on form "A" attached at the end of the Station Working Rules to certify that they have read and throughly understood the Working Rules. The Station Manager/Station Master/Yard Master/Chief Yard master in charge shall examine his staff to satisfy himself that the rules have been throughly understood by them, and he shall certify to that effect by affixing his signature and date.

(e) In regard to Class. IV staff concerned with the movement of trains in and out of the station namely, Cabinmen, Pointsmen, Levermen, Shuntmen, Engine pilotmen, Token Porters, Points Lockers and Badge Runners etc. including Relieving and Rest Giver staff of these categories, the Station Manager/Chief Yard Master/Station Master/Yard Master in charge must read out and throughly explain the Working Rules to the staff concerned and must ensure that they have understood the same before they are permitted to take independent charge of work at any station and the Station Master/Yard Master/CYM/SS must certify in form "B" of the Station Working Rules to this

effect. He shall also obtain the thumb impression or signature of the staff concerned, in form “B” attached at the end of the Station Working Rules in acknowledgement of such staff having under stood the Station Working Rules.

(f) The duplicate copies of the Assurance Register on form “A” & “B” attached to the Station Working Rules bearing the signature or thumb impression of the staff shall be kept under the personal custody of the Station Master/Yard Master/ Station Superintendent/Chief Yard Master.

(g) When any correction or amendment to the Station Working Rules is issued, the Station Superintendent/Chief Yard master/Station Master/yard Master will be responsible to see that Station Working Rules are promptly corrected accordingly and are read and understood by each staff mentioned in sub-clause (d) and will obtain their acknowledgement in the Assurance Form ‘A’ in token of their having read and understood the corrections or amendments to the Rules. In regard to Class IV staff having been mentioned in sub-clause (e), he (Station Master/Yardn Master / Station Superintendent/Chief Yard Master) will explain the corrections/amendments to them and certify accordingly in the Assurance Register and also obtain the signature or thumb impression of the staff concerned in the Assurance Form “B”.

(h)Corrections to the Station Working Rules should be made personally by the SS/CYM/Station Master/Yard Master who will enter correction/amendament in a register of “Correction slips” to be appended at the end of the Station Working Rules. This appendix to the Station Working Rules should indicate the para of the Station Workinig Rules which has been corrected or amended, the number ofi correction slip, the reference number of the Divisional Office and the authority issuing the correction slip.

**20.03. Principles to be observed in the framing of Station Working Rules .-**

(a) The SWRs should be self contained, brief, to the point and in an unambiguous, intelligible and simple language both in Engilish and Hindi. They must be prepared preferably on a computer and printed on good quality of A-4 size paper. All the data should also be stored in CD and kept in safe custody. The SWR must be page numbered with the station name code written on each page.

(b) General and Subsidiary rules and Block Working Manual rules should not be extracted in the Working rules. Relevant General Rules/Subsidiary Rules/Block Working rules numbers, however, may be mentioned against each page.

**20.04 Framing of Station Working Rules.-**

The Station Working Rules shall be framed as per the following proforma and contain all information in the given sequence.

No. ..... .....Railway

.....Division

**STATION WORKING RULES OF.....**
**(Name of the station )**

..... (BG/MG/NG)
Date of Issue : .....
Date brought in force .....

**NOTE :**

The Station Working Rules (SWR) must be read in conjunction with General and Subsidiary Rules and Block Working Manual. These rules do not in any way supersede any rule in the above books.

**1. Station Working Rule - Diagram :**

SWR Diagram No. ..... based on CSTE/..... Railway and signal Int er locking Plan No. ..... should show the complete layout of the yard, Points, Signals, gradients and interlocking arrangements of the station including the non-interlocked sidings, exact and actual holding capacity of all the individual lines in meters, actual inter signal (demercation point) distance, names of adjacent stations and IBH signals, where provided, on either side of the station with their respective distances from the centre lines information necessary in the day to day operation of trains. The particulars of date up to which it is corrected should also be mentioned. SWR diagram should show actual distances and not the minimum prescribed. It should be signed by the Divisional Operations Manager, Divisional Signal & Telecom Engineer and Divisional Engineer. The detection table, laver Collar Chart and Pull Sheet may be provided in Appendix 'B' Pull Sheet should be reproduced on a board brightly painted in the cabins to be placed above the Lever Frames.

2.0 **DESCRIPTION OF STATION**

2.1 **GENERAL (LOCATION)**

---------- (Name of the station) is a -------- class station on the ---------- (name of the section) double/single line Electrified/non-electrified (BG/MG/NG) section of ---------- Railway on ---------- route. It is situated at KM ---------- from ---------- (a nominated point on the Railway). The number of cabins should be furnished.

**2.2 BLOCK STATIONS, IBH, IBS ON EITHER SIDE AND THEIR DISTANCE AND OUTLYING SIDINGS**

---------- Station is situated between --------- (Name of adjacent station on one side) in the ---------- (North/South/East/West) side at a distance of ---------- km and ---------- (Name of adjacent station on the other side) in the ---------- (North/South/East/West) at a distance of ------- km.

In case of IBS signal being provided in the adjacent section the mention of the same need to be made as follows. the section between ---------- (name of the section on which the IBS is proviced) has been split into two Block sections by providing Track Circuit/Axle Counters and Intermediate Block Stop Signasl at Km. ------- and Km. ---------- on Up and Dn lines respectively, which are controlled by Track Circuit/Electronic Axle Counter and Double Line Block Instrument.

In case the adjacent section is provided with the automatic signals, necessary mention of the same need to be made in the SWR literature.

In case of outlying sidings/DK station taking off from the section its name and Km in Up/Dn direction should be mentioned. Their detailed working instructions should be given in Appendix 'F'

2.3 **BLOCK SECTION LIMITS ON EITHER SIDE OF THE STATION ON DIFFERENT DIRECTIONS**

Points up to which block section in rear terminatesd and the point from which the block section in advance starts should be indicated in the following tabular format :

| Between Stations | The point from which the 'Block Section' commences | The point at Which the 'Block Section' ends |
|---|---|---|

**2.4 GRADIENTS IF ANY**

The gradients in the yard and the adjacent block sections should be mentioned with their locations. Any gradient which are steep enough to warrant special precaution in train operation should be mentioned.

**2.5 LAYOUT**

Under this head, inforamtion pertaining to the number of running lines in the main yard (namely UP Loop, Up Main, DN main and Common Loop etc.) Goods shieds/ siding, Hot Axle siding, passing sidings, engineering sidings, sidings taking off from the yard with the details whether electrified/ non-electrified etc. and how they are isolated from the running lines shouldbe mentioned. The information in relation to provision of low/high level plateforms on the running lines/goods sidings should be given.

2.5.1 **RUNNING LINES, DIRECTION OF MOVEMENT & HOLDING CAPACITY IN CSR.**

The direction of movements on all the lines and Clear Standing Room of running lines in terms of meters need to be specified.

2.5.2 **NON RUNNING LINES AND THEIR CAPACITY IN CSR.**

2.5.3 **ANY SPECIAL FEATURE IN THE LAYOUT**

Any special feature of the yard such as catch siding, slip siding, non-standard turnouts, curves, spring points etc. having bearing on the operation of trains need to be mentioned.

2.6 **LEVEL CROSSINGS :**

Detailed working of the gate along with the particulars regarding LC gate No., location class, normal position, whether interlocked or non-interlocked, whether commnunication provided or not anid whether Train Actuated Warning Device (TAWD) provided or not, how the gate is operated etc, need to be mentioned in Appendix 'A'.

3. **SYSTEM AND MEANS OF WORKING**

System of workinig in force-Absolute/Automatic by using Double line/Single line Token/Tokenless Block

## CHAPTER -XXI

# FIRE FIGHTING

**21.01 Introductory.-**

Safety against fire hazards of passengers and goods entrusted to the Railway is of the utmost importance and Railway staff should ensure that all precautions are taken to avoid losses caused by fire.

**21.02** (A) Civil Fire stations :- Civil fire services are available at :- Raigarh, Champa, Bilaspur, Raipur, Nagpur. Chhindwara, Katni.

(B) Fire fighting appliances such as chemical fire extinguishers, fire hydrants, hydrant equipments and fire buckets are provided at certain stations.

(C) At other stations only fire buckets are provided. A chart showing the respective Railway and P& T telephone numbers, fire appliances and the sources of water supply available for fighting fires should be exhibited conspicuously at all stations, yards, sheds offices etc.

In the event of a fire, information shall be sent to the nearest civil fire station expeditiously. Railway staff should take the help of all available fire fighting equipment to extinguish the fire. They should also render full assistance to the civil fire brigade for extinguishing the fire.

**21.03. Fire Fighting equipments.-**

(a) DCPT fire extinguisher. This is dry chemical owder type fire extinguisher, 5kgs weight, ISO:2171/1985 dry chemical powder to IS: 4308/1982, Gas catridge for fire extinguisher to IS: 4947/1982. The fire extinguisher should be completed with dry chemical powder, catridge and fitted with high pressure discharge hose with brass nozzle and gun metal cap.

(b)(i)Fire fighting appliances should be kept in places easily accessible and the the staff must know the location where the fire appliances like hydrant hose-pipe,. extinguishers, buckets, etc are installed.

(ii) All Station Masters and Supervisors concerned shall maintain a list of the fire fighting equipment available at their station / sheds offices and all the staff working under them must be conversant with the use of the same.

(iii) The Station Master and Supervisors concerned shall see that the Water buckets and sand buckets are properly kept filled with water and sand respectively. They should give prompt information to the official in charge of the (Fire station) of the jurisdiction whenever the fire extinguisher is used or in case of any defect or dificiency in fire fighting appliances.

**21.04. Fire Prevention.-**

(a) Most fires are caused primarily due to negligence in one form or the other. If not detected and extinguished in their initial stage, these may result in heavy loss of life and property. It shall therefore, be the responsibility of all Railway employee to observe such precautions against fire as may be necessary and to take immediate action to extinguish

it in its early stage by making proper use of first aid fire fighting appliances provided on the premises or available nearby.

(b) Some important precautions against fires which should be kept in mind and observed, are given below :-

(i) Smoking or lighting a flame at places where it is prohibited should be strictly avoided.

(ii) Ash trays should be provided and use at places where smoking is not prohibited.

(iii) Burning Cigarettes, Biris etc. or Match sticks should not be thrown out without ensuring that they have been completely extinguished.

(iv) Places of work should be kept clean and free from waste paper, cuttings, scrap, Rubbish etc.

(v) Dust bins must be provided for throwing scraps and combustible waste materials and these should be kept at a safe distance from the building.

(vi) Overloading of electric circuit should be avoided and electrical installations should be checked periodically.

(vii) Petrol, paints, explosive materials and gases should not be kept in stores and godown which do not conform to the standard specification for such storage as specified in IRCA Red Tariff.

(viii)Adequate number of fire buckets and fire extinguishers for offices, stores, workshops and shed etc, should be provided.

(ix) Fire fighting appliances should be periodically checked and all staff trained in their proper use.

(x) Rules for marshalling and shunting of inflammables, explosives and other dangerous goods as laid down in the IRCA Red Tariff and Chapter VI of the Operating Manual should be strictly observed.

(xi) Supervisory staff should ensure that the staff working under them are conscious of fire hazards. Posters issued from time to time for prevention of fire should be exhibited conspicuously. Circulars and standing orders issued from time to time on this subject are to be read, noted and strictly followed by the railway staff.

(xii) Supervisory staff must ensure that while dealing with wagons containing explosives, petroleum, kerosene and other dangerous or inflammable goods, the rules in this regard contained in the IRCA Red Traiff are stricly adhered to.

**21.05. Fire extinguishers in Coaching trains.-**

(a) Fire extinguishers are provided in each brakevan of all coaching trains, RMS Vans, Dining Cars, A.C. Coaches and Inspection Carriages.

**(b) *In brake van of coaching trains:-***

(i) The SSE/SE/JE(C&W) at originating station shall be responsible for the maintenance of required stock in good condition and supply of fire extinguishers in brakevan of passenger carrying trains. Each brakevan (SLR) shall be provided with 2 numbers DCPT type Fire extinguishers.

(ii) A serial number with the depot station code should be painted on each fire extinguisher.

(iii) A register for the fire extinguisters of the brakevan should be maintained at the respective base station. The particulars of movement of fire extinguishers and servicing. should be entered in this register.

(iv) The SSE/SE/JE(C&W) will take signature of the Guard in a register maintained at the originating station while handing over the fire extinguishers in the brakevan. Similarly, the Guard will also take the signature of SSE/ SE/JE(C&W) while returning them.

(v) Guards working coaching trains must verify before starting their trains from the originating station that the fire extinguishers are supplied and seems to be in working order. In case of any defect or deficiency, the Guard must bring it to the notice of SS/SM/ GASM/Train Inspector who will arrange for immediate replacement If a passenger carrying train leaves the originating station without fire extinguishers the SM/SMR should send a report to Sr. DOM/DOM for immediate further action.

(vi) When the Guard of the train changes, the fire extinguishers should be handed over to the out going Guard by the incoming Guard with acknowledgement duly signed. But at interchange point with other Railway, the fire: extinguishers should be taken over by the SSE/SE/JE(C&W) from the incoming Guard and handed over to the Guard of the pairing train. To keep such particulars of taking over and handing over, a register should be maintained and Guard's signature obtained therein.

(vii) A spare stock of fire extinguishers should be maintained by the SM/SS of all base stations so that in case of any fire extinguisher found defective or deficient it may be replaced readily.

(viii) The sectional DTI, Safety Counsellor, Fire Inspector and other officials will frequently conduct check in regard to provision of fire extinguishers in Brakevan.

(ix) In case a coaching train terminates at an intermediate station for any reason, the SSE/ SE/JE(C&W) will arrange to take over the fire extinguishers from the Guard and send them to the base statior in consultation with, the Sectional Controller.

(x) The case of non-receipt of fire extinguishers at the Terminal/originating station or at junction / interchange Point, though supplied to the brakevan should be reported by the SS/SM of Terminal/originating station to all concerned officials for necessary action.

**(c) In RMS Van, A. C. Coach, Inspection Carriage and Dining Car.**

(i) Train Examiners at the originating stations are responsible for the maintenance of required stock in good condition and supply of the fire extinguisher in RMS Van, A.C. Coach, Inspection Carriage and Dining Car.

(ii) The Train Examiner at the originating station shall make an entry in the DRS card regarding the supply of fire extinguisher in above mentioned coaches.

(iii) At interchange points with other Zonal Railways, the SE/JE(C&W) should see that the fire extinguishers are removed from the RMS Van & despatched by the pairing train. The fire extinguishers in A.C. Coaches, Inspection carriages and Dining Cars will continue to be pooled through in the custody of Caretakers, Saloon attendents, Dining Car Manager etc.

(iv) If the Postal vans are vacated by the postal staff at an intermadiate station for any reason the SE/JE(C&W) on duty will check up the fire extinguisher, take it over and send it to the base station. In case such intermediate station is not provided with SE/JE(C&W) this responsibility will devolve on the Station Master.

(v) Procedure indicated in item b(ii), b(iii) and b (iv) of this rule should be followed for these extinguishers. But SE/JE(C&W) will be responsible for such maintenance job.

(vi) So long the fire extinguishers are in the RMS Van, A.C. Coach, Inspection Carriage and Dining Car, the official-in-charge of these coaches will be the custodiun of the extinguishers. They will be responsible to see that the extinguishers are kept carefully and ready for use. If any defect is noticed, the matter must be reported promptly to the official concerned for early action.

(viii) The SE/JE(C&W) in-charge while taking over the fire extinguishers from RMS Van, A.C. Coach, Inspection Carriage and Dining Car must examine the proper condition of the same and take immediate action in case. any defect is noticed.

(ix) Provision of Fire Extinguishers **in** different locations :-

(A) DCPT fire Extinguishers to be provided in the trains in scale given below :-

(i) Each Elec./Diesel Loco: 4 Nos., (2 in each Cabin Elec.)

(ii) Each brakevan (Fornt and rear) : 2 Nos. each.

(iii) In AC Coaches: 2 Nos.

(iv) Each Pantry Car: 4 Nos.

(v) Each Generator Car: 4 Nos.

(vi) Each Motorman Cabin of EMU Coaches & MEMU coaches: 2 Nos.

(B) The provision of Fire Extinguishers at static locations :-

Nature of occupancies have been classified into LH-Low Hazard, HH-High Hazard and SH-Spl. Hazard and OH-ordinary Hazard categories and fire risk have been classified into A, B, C and D categories. As per these classifications the recommended scale of equipment to be installed at different locations is as follows:-

| Class of fire risk | Nature of occupancies | Typical examples | Scale of equipment to be installed |
|---|---|---|---|
| A | LH | (i) Loading Houses, Private Dwellings, Dermitories, Apartment Houses, Flats, Hotels, etc.<br>(ii) Vocationsl Training Institutes, Commercial Institutes.<br>(iii) Small printing presses.<br>(iv) Exhibition Halls, Club rooms, Restaurants, Assembly Halls, having accomodation of less than 300 persons. | One 5 kg capacity DCPT extinguisher for every 600 sq. meter of floor area or part there of with minimum of 2 extinguisher per compartment or floor of the building. These should be so located as to be available within 25 meters radius. |
| | OH | (i) Multistoried Buildings, High Risk Buildings, etc.<br>(ii) Schools and Colleges.<br>(iii) Hospitals<br>(iv) Theatres, Assembly Halls, Exhibition | Two 5 kg capacity DCPT extinguisher for every 600 sq. meter of floor area or part there of with minimum of 4extinguisher per compartment or floor of the building these should be so located |

| Class of fire risk | Nature of occupancies | Typical examples | Scale of equipment to be installed |
|---|---|---|---|
| A | | Halls, Museums, Resturants, Places of Worship, Club Room, Dance Halls, etc. having seating capacity of less than 1000 persons. | as to be available within 15 meters radius. |
| B | | (i) Theatres, Assemply Halls, exhibition Halls Museums, Restuarants, Places of Worship, Club Rooms, Dance Halls, etc. having seating capacity of over 100 persons.<br>(ii) Large Timber Yards, Godowns, Ware Houses storing combustible materials, Freight Depots, etc. | Provision as per OH occupancy, plus one 10-kg capacity DCPT extinguisher for every100 sq. meter of floor area or part thereof. |
| C | SH | Office, Record Rooms, Archives, Libraries, DTP Centres, Computer Installations, Museums, etc. | One 5 kg capacity DCPT type extinguisher for every 100 sq. meter for floor area or part there of with minimum of 2 extinguishers |

| Class of fire risk | Nature of occupancies | Typical examples | Scale of equipment to be installed |
|---|---|---|---|
| | | | per compartment or floor of the building. These should be so located as to be available within 10 meters radius. |
| D | OH | Not concerned with railway locations. | |
| | HH | Storage and handling of gas cyulinders in bulk. | Two 10 kg capacity DCPT extinguishers for every 100 sq. meter of floor area or part there of with minimum of 3 extinguishers of the same type for every room/ compartment. These should be available within 10 meters radius. |
| | SH | Not concerned with railway locations. | |

Note : In case the area is more than specified, higher capacity extinguishers can be used on these minimum requirements, i.e. proportionately higher capacity can be used. In case of dry powder type, equivalent lower capacity can also be used.

**21.06. Custody and maintenance of fire fighting appliances :-**

(i) Official-in-charge of offices, yards, sheds etc. where these appliances are provided will be responsible for the upkeep and safe custody of the fire appliances supplied to them. A proper account should be maintained in the "Dead stock register".

(ii) Cases of loss or theft of the fire appliances should promptly be reported to the RPF / Inspector, Officer Incharge/ RPF and GRP including the controlling authority of the respective department and the incharge will, arrange to replace the same from his on hand stock or place indents to COS/BSP for replacement.

(iii) In case of any defect in fire fighting appliances is noticed the inspecting official and the controlling officer of the department to be informed and the incharge should arrange repairing or replacement of the same.

(iv)Painting and numbering of the Fire fighting appliances shall be done by the in-charge of the department / shed / station / Yard and / or the custodian of the appliance. However, the procedure mentioned in rule 21.05 above should be followed as regards custody and maintenance of the Extinguishers for brakevans, RMS vans, Dining Cars, AC Coaches and Inspection Carriages except item(iii) which is to be replaced as follows:-

A register for the fire extinguishers should be maintained at the respective base stations/Sheds. The particulars of movement of fire extinguishers and servicing made should be entered in the register.

(v) Annual Maintenance Contract- Up keep and maintenance of fire extinguishers may either be entrusted to Outside Agencies or Civil Defence Organisation of the respective divisions by the user department.

Chief Civil Defence Instructor of the division/ outside agencies should be entrusted with the job of inspection, checking and replacement of the extinguishers for each division as per schedule (Quarterly).

**21.07. Arrangements necessary for effective fire fighting :-**

(i) Sketch plan showing the arrangement of water supply should be exhibited at administrative buildings, stations, yards, sheds and offices.

(ii) Water supply arrangements should be made promptly as required by the fire service.

(iii) Water reserved for fire fighting must not be used for any other purposes.

(iv) The approach road to the water supply point must be kept clear.

(v) The water supply points should be inspected twice in a month by the SSE/SE/JE(Works) or his assistant. The hydrants inside the workshops should be inspected similarly by the foreman or his assistant.

**21.08. Training in Fire Fighting:-**

Staff attending Zonal Railway Training Institute/ System Training Centre/ and Electric Loco Centre should be imparted training on fire fighting though lectures and practical demonstrations. Principal/ZRTI/STC/ELTC shall co-ordinate with the Sr. DSO/DSO or Sr. DSC / DSC of division to requisition Civil Defence Instructors or qualified RPF staff, from the division to impart such training as per requirement. They should also nominate instructors to undergo training on fire fighting in nominated Training Centres, in co-rodination with Personal Department. These trained instructors shall conduct fire-fighting training for trainees. Necessary fire fighting equipment, for the purpose of practical demonstrations, shall be collected by Principal ZRTI / STC/ELTC from the stores.

For the staff, who do not attend the Training Centres /Schools necessary training programme may be chalked out by concerned departmental officers of the division in co-ordination with Sr. DSO / DSO/Sr.bSC/DSC from time to time.

**21.09. Fire drill :-**

(i) Fire drills will be held every Saturday in order to make the staff more disciplined, conversant with fire fighting technique and to infuse consciousness about fire hazards.

(ii) Station Masters and respective supervisors, will be responsible for holding fire drills.

(iii) The R.P. F: personnel must join the drill and assist with their technical advice to make the drill a success.

(iv) A record of each fire drill conducted is to be maintained in a register/diary by the Station Masters/Supervisors. .-

**21.10. Fire alarms.-**

A proper fire alarm is the quickest means to warn staff about the out break of fire. On noticing a fire, the alarm is to be rung or sounded at once. As soon as a fire breaks out, any of the following fire alarm as provided shall be used immediately:-

| | | |
|---|---|---|
| (i) Electric Siren | Should be sounded continuously for 5 minutes. | |
| (ii) Shed Hooter | -do- | -do- |
| (iii) Engine Whistle | -do- | -do- |
| (iv) Hand Bell (made of B.G. Rail piece) | -do- | -do- |
| (v) Electric Fire Bell | Button should be pressed to 'ON' to ring the fire alarm bell continuously for 3 minutes. | |

**21.11. Action to be taken in case of fire:-**

(a) *Any staff whether on or off duty noticing fire shall:-*

(i) Raise the fire alarm immediately.

(ii) Take all possible action to extinguish the fire without any loss of time, .

(iii) Use the available fire extinguishing appliances properly and promptly.

(iv) Inform the nearest "Civil Fire Station" by the quickest means about the exact location and type of property involved.

(b) Immediate information should also be given to police Station, RPF post, SSE / SE(Works) and concerned Railway officials of the department whose property is involved in the fire.

(c) The seniormost Railway official present at the site of fire, shall see that every action is being taken to extinguish the fire also to prevent theft and other miscreant activities. RPF /Police official present at the site of fire will be responsible to guard the property during the occurrence and after. The seniormost fire fighting official present at the site of fire, will ensure proper utilisation of the Fire fighting facilities.

(d) As far as practicable, the documents and all moveable property adjacent to the fire, should be removed to a safer place under the direction of the responsible staff of the department concerned. A list of the property/documents so removed should be prepared in duplicate.

(e) In case of fire in a sealed wagon, the seals, locks / rivets should be immediately broken (in absence of key of the lock) and the door opened in presence of Station Master / Yard Master/ Goods Supervisor/ Goods Clerk as the case may be or in presence of Guard when fire on a wagon is in mid-section.

(f) As soon as fire breaks out in the yard, all shunting operation in the vicinity of the affected area should be stopped except *for* removal of all coaches and wagons *from* either side of the affected wagon(s)/ Coaches(s). Wherever possible, the affected wagon(s)/ Coach(s) should be immediately drawn out and placed under the water column or nearest to the hydrant.

(g) In case of fire on train or on sleeper, the train staff and Station Master on duty shall also take the action as mentioned in GR 6.10, SR 6.10.01 or SR 6.10.02 as the case may be.

(h) In the event of fire on any part of traction electrical equipment or electrical engine, action as indicated in GR 6.10, SR 6.10.03, 6.10.04, 6.10.05 shall be taken.

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## CHAPTER - XXII

## DUTIES AND RESPONSIBILITIES OF STAFF

**22.01. Introductory .-**

In addition to such duties and responsibilities as may be entrusted to individual Railway staff under G & S R, Block Working Manual and such other Rule Books and instructions as may be in force from time to time, the Railway staff will also be responsible for observing the instructions contained in this Chapter.

**22.02. Wearing of Uniform.-**

(a) Every Railway servant who is provided with uniform, must appear in full uniform when on duty and attending any enquiry or Training School or appearing before selection Board. Those who have not been supplied with uniform, must come on duty properly and clearly dressed.

(b) Guards of all trains before coming on the platform/yard for taking charge of trains shall wear their uniforms as prescribed by the administration.

(c) Station and other staff must be neatly and cleanly dressed in full uniform particularly at the time of passing trains of any kind.

(d) It is the duty and responsibility of each railway servant to get their uniform properly cleaned and ironed before use.

**22.03. Attendance of Guards.-**

(a) It must be distinctly understood that Guards are liable to be called upon for duty at any time.

(b) The plotting of the names of Guards in the Station Roster will be considered suffcient intimation that their services are required at short notice.

(c) Guards, though they may be scheduled to work a certain train, should not absent themselves from Railway Quarters or their fixed residence on the strength of such schedule without giving the Station Master/Chief Controller/Yard Master (who may be controlling the Guards) notice of where they may be found if required in any emergency. The Guard booked for any train should be prepared to work any other train,should it be necessary.

(d) When unable to go out with a train for which they may be in turn owing to sickness,they must give timely notice( at least four hours before the scheduled departure of their train or the expected time of Call Book), of the fact to the Station Master/ Yard Master/ Chief Controller in order that arrangements may be made to fill their places. Reporting sick on the Call Book when sent to warn them for duty will not be considered timely notice.

(e) Guards absent from duty without leave or medical certificate from a Railway Medical Officer, will render themselves liable to punishment.

**22.04. Guard's responsibility regarding equipment.-**

(a) Every Guard before taking over a train shall ensure that his equipment and brakevan equipment (in case of train carrying Passengers) are complete and in good condition. The loss, damage or deficiency of any item as mentioned in G.R. 4.19 and S.R. thereto must be promptly reported by the Guard to the Chief Controller / Station Master/Chief Yard Master/ Yard Master concerned.

(b) It will be the personal responsibility of the Guard to keep his Rule books corrected upto date.

(b) Following are the complement of Brake Van equipment for Coaching trains :-

| No. | Item | No. | Item |
|---|---|---|---|
| 1. | Portable Control Telephone | 2 | Jr. Eng. (Tele) |
| 2. | Portable trains lighting equipment | 1 | Jr. Eng. (Elec. G) |
| 3. | Portable fire extinguisher | 2 | Jr. Eng. (C&W) |
| 4. | Wooden wedges/skids | 2 | Jr. Eng. (C&W) |
| 5. | Stretcher | 1 | SS/SM |

Equipment would be loaded and run on end to end basis and wil be kept in the Cup Board provided in the Brake Van in locked condition by universal key.

No Coaching train shall start without full complement of Brake Van equipment .

Proper arrangement in the form of closed Cup Board would be provided in the SLR by Mechanical Deptt. for keeping the Brake Van equipment in locked condition.

In case of non-availability of Guard in the front Guard Van it would be pad locked and the key should be kept with the Guard of the train to avoide application of Brakes by outsiders.

**22.05. Duties of Guards when taking over charge of a train.-**

All Guards while taking over charge of trains in addition to the stipulation in G.R.4.34 and S.R. thereto shall ensure that-

(a) The vehicle guidance/Wagon Way bill of the train is collected and personally satisfy by actual check that the vehicles/wagons as per vehicle guidance/wagon way bill are correct on train and lablels of wagons, seals and rivets of sealed wagons ‘are intact.

(b) The doors of all goods wagons are properly closed / secured and fastened.

(c) All the screw couplings on train are tightened properly without slackness.

(d) The brakevan is fitted with vacuum gauge/ air pressure indicator and Pressure available as mentioned in Para 17.02 or 17.24 of this Manual.

(e) The train is provided with prescribed brake power as indicated in Para 17.04/17.26.

(f) The train is not wrongly marshalled. In case of any defect or deficiency with the train or wagon/ vehicle, it must atonce be brought to the notice of the Station Master or Yard Master as the case may be and the defect/ deficiency made good. If the defect or deficiency is such as would interfere with the safe running/working of the train, the train shall not be allowed to leave the Station/Yard until the defect/ deficiency has been removed or the wagon/vehicle concerned has been detached. Refer G.R. 4.35 and S.R. thereto.

**22.06. Guard’s duties in regard to lost articles.-**

(a) On arrival of a Passenger train at its destination, the incoming Guard or Assistant Guard shall, in company with the RPF examine all carriages to see if any property has been left behind by passengers, and, if so, hand it over to the Station Master, who must give the Guard a receipt for the same, which will be attached to his Train Report. In the case of Goods vehicles all locks, seals and rivets must be carefully examined and necessary seal memo obtained from the RPF staff .

(b) Whenever any lost property is found in a carriage on a train at a road-side station, it is the duty of the Guard incharge of the train to report the matter to the Station Master in writing, and then take the article in his van to the next Guard-changing or terminal station -where it should be handed over to the Station Master who will enter it in the Station Lost property Register, and get the signature of the Guard against the entry.

(c) Guards working sidings in the colliery or industrial areas and on other sections of the line must pick up and make over to the nearest Station Master and articles of Railway material that may be found lying around the sidings and all such materials must promptly be forwarded to the nearest “ Train Examiner. The train should not, however, be stopped out of course for the purpose except in the case of materials of great value. Information, in other cases, may be given to the Station Master of the next station for advising the Permanent Way gang.

**22.07. Guard’s duties in respect of vehicles/ wagons attached / detached.-**

Guards in charge of trains shall enter the number, owning Railway and description of all vehicles/wagons attached to their trains and the names of the stations to and from which booked, in their Rough Journal and on the reverse of their Train Report in the

space for remarks. Those particulars must be taken by Guards direct from the labels affixed to the vehicles/ wagons on their trains and not merely copied from the Wagon Way bills prepared by the Trains Clerk. Guards shall further carefully check the entries in the Wagons Way bills with the particulars shown in the labels and see that the labels contain necessary particulars and that there is a label on each side,and that the door seals and rivets on both sides of sealed wagons are intact. Should any mistake or dificiency be discovered the Station Master or the Trains Clerk shall be asked to rectify the same and until this is done the train must not be started. Similarly, the Guard must record in the Wagon Way bills the particulars of wagons detached and also record the same on the reverse of the Train Report.

**22.08. Guards, responsibility in respect of train papers.-**

(a) The Guard in charge of the train will be responsible to maintain the Guard's Rough Journal book and keep it up-to date during the journey of the train. At guard-changing station, the Wagon Way Bill/ Vehicle consists, DRS cards, Way-bills, Summaries etc, must be carefully examined by the Guards when handing over and taking over charge, and any discrepancy or remarks recorded should be jointly signed by the relieving and the relieved Guard. The Guards should make out their traln reports on the journey and complete immediately on arrival of their train at destination. Three copies of Train report (T:34 HF) must be handed over by the Guard to the Loco Pilot / Assistant Loco Pilot of the train at Guard or crew changing station or at terminal station as the case may be. The Loco Pilot should ensure to depute his Assistant Loco Pilot to collect the train report from the Guard. In case of no assistant to the Loco Pilot, the Guard will be responsible to hand over the train report personally to the Loco Pilot. Under no circumances must such handing over be delayed involving detention to trains.

(b) *Reports at destination*-

(i) Guards shall prepare and hand over at the end of their journey(before they go off duty) to the Control office, Station Master a- Trains Clerk, Roster Clerk according to the local orders in force, the following train paper and obtain signature in their Rough Journal books :-

For Goods Trains ... Wagon Way Bill/ Vehicle guidance consist, Train report.

For Transhlp Trains ..Wagon Way Bill/ Vehicle guidance consists, road van summaries and Transhlp Guard's journal.

For Coaching Trains

(viz, Mail, Express,

Passengers, Mixed

and Local Trains) ... Wagon Way Bill/ Vehicle guidance coonsist, Train report.

(ii) In addition the Guards of coaching trains shall hand over the Summaries of Parcels and Luggage etc, to the Station Master/ Parcel Clerk/Booking Clerk at the destination station.

(iii) In case of local trains, such as those running between Raipur and Durg, Bilaspur and Korba or Raigarh or any intermediate station or any other trains tuned to make short trips, the train reports may be made out for each round trip.

(iv) While preparing the train report the Guard must also indicate if any special load on train, such as live stock, perishable or oversize, Inspection Carriage or reserved carriage etc. or any unusual occurrence or any deficiency in rolling stock, weather, condition, shunting by train engine etc.

(v) The train report of material train should be prepared after a day's work is finished and handed over to the Station Master / Train Clerk / Roster Clerk as the case may be at stabling station.

(vi) At the close of each day these documents must be submitted duly entered in transmit memo to the official concerned. All concerned must take special care in preparing and subm~ssion of these documents.

**22.09. Travelling on foot-boards of trains in motion.-**

(a) Under no circumstances is anyone to ride on,or walk along the foot-board of any Passenger train when the same is in motion. The Train Guard and the TTEs on the trains and the Station Masters on duty at starting and stopping stations must ensure this.

(b) Staff and licensed coolies are forbidden to jump on to the foot-boards of carriages or to run along side trains entering stations; they must take up their proper position on the platform and wait there until the train comes to a stand. The Station Master on duty at the station will ensure this.

**22.10. Attendance of Crew at Sheds.-**

(a) It must be distinctly understood that engine crew are liable to be called up at any time for duty.

(b) The booking of engine crew in the "Shed duty list" exhibited in the running shed, will be considered sufficient intimation that their services are required. In the case of illiterate staff, the SSE/ SE(Loco) or the Shedman must personally explain .to him his position for duty as shown in the "Shed duty list".

(c) Engine crew, though scheduled to work a certain train, should not absent themselves from Railway premises or their fixed residence on the strength of such schedule without giving the SSE/ SE(Loco) or the Crew Controller or SSE/SE(Elect.) notice of where they may be found if required in an emergency. The Loco crew booked by a certain train should be prepared to work any other train, when called upon to do so by the SSE/SE(Loco)/SSE/SE(Elect.), Crew Controller or the Power Controller on duty.

(d) When unable to go out with a train for which he may be in turn owing to sickness, etc., they must give timely notice (at least four hours) of the fact to the Foreman, in order that arrangements may be made to fill their places.Signing sick on the Call Book when sent to warn them for duty will not be considered timely notice.

(e) Engine crew absent from duty, without leave or medical certificate from a Railway Medical Officer, will render themselves liable to punishment.

**22.11. Time allowed to Loco Pilots for examining / making over engines.-**

Loco Pilots must examine their engines before le'aving the Shed. The time allowed to outgoing Loco Pilots for examining the engines before departure from the "Bahar" line and to incoming Loco Pilots to make over their engines after return to the Loco limits will

be prescribed for each Shed by the Divisional Railway Manager. The Loco Pilots must ensure that the time is not exceeded. Refer S.R.4.04.03 in this connection.

**22.12. Time allowed for the engines between Shed and yard.-**

(a) Each Divisional Railway Manager will prescribe the time allowed for outgoing engine to travel, from "Bahar"line to the train and the incoming engine to travel from the train to the "Bahar" line. The Loco Pilots must ensure that the time is not exceeded.

(b) It will be the responsibility of the Station Master/Yard Master on duty responsible for movement of engine to ensure that an outgoing engine is taken out of the "Bahar" line immediately it comes and the incoming train engine due to go to Shed is released for Shed and reach the "Bahar" line without undue delay.

(c) Arrangements for recording. the time of arrival at the "Bahar" line or the time of returning to Loco limits have been made at the junction of Traffic and Loco limits. The Loco Pilots must record thereon the time of arrival and also detention, if any, for being taken out of "Bahar" line or release for Shed.

(d) The time ahead of the scheduled departure of trains by which the outgoing engine is to be placed on "Bahar" line is prescribed for each Shed. The Loco Pilots must ensure that the outgoing engines are placed in the "Bahar" line within the time prescribed. Any failure to turn up at the 'Bahar" line with the engine in time must be recorded in the "Bahar" line Register with the reasons therefor.

(e) The movement of engines in big yards- will be controlled by Shunt signals and other signals. The Loco Pilots must make themselves conversant with the same and move their engines accordingly.

Note : Further details about the duties and responsibilities of Loco Pilots have been given in Loco Pilots' Rule Book.

**22.13. Attaching engine on train.-**

Whenever any engine with or without vehicle / vehicles is to be attached on to a train enroute or during shunting at road-side station,care must be taken to come on to the train/vehicle with great caution and to aviod bump. Refer S.R.4.32.01 and S.R.5.13.04.

**22.14. Warning bell and instructions to staff:-**

(a) *Incoming train:-* As soon as "Line clear" has been given for an incoming stopping passenger carrying train, the Station Master on duty must get ~ Warning Bell rung, and arrange for the description of the train (Mail, Passenger or Mixed) and the name of the station from which it has left to be called out loudly for the information of the public and the station staff. Warning Bell as per schedule codes should also be given when the train leaves the station in rear.

(b) Continuous Warning Bell will be sounded for the guidance of the public as soon as the incoming train is in sight.

(c) *Outgoing train:-In* the case of outgoing trains having halts of less than 10 mts. the Starting Bell shall be rung just before the departure to warn the passengers. At originating stations or at stations having halt of 10 mts.or more, Warning Bell (quick continuous beats for 2 seconds) will be sounded five minutes before the departure, and starting Bell shall be rung just before the departure of the train.

Note: (i) No bell required for non-stopping passenger carrying trains or special trains.

(ii) At stations having public announcement arrangements, particulars of trains leaving the station in rear, the time at which they left and the departure of outgoing trains shall also be announced through Loud speaker.

**22.15. Station bell signal for incoming and outgoing trains :-**

The following signals are to be given on the station bell for trains carrying passengers :-

| | Line clear given for a train to the Station in rear. | Warning, train left last station in rear. | Train approach-ing | Before Starting |
|---|---|---|---|---|
| Main and Branch line stations not being junction | | | Sharp continuous beats for a second or two for all trains. | |
| Up trains | Sharp continuous beats for 3 seconds followed by :- **(Two strokes). | ** ** (Two pause, two strokes) | | ** ** (Two pause two pause, two strokes ) |
| Down trains | Sharp continuous beats for 3 seconds followed by :- (one strokes). | *** (Three strokes) | | *** *** *** (Three pause Three pause, Three strokes) |
| Down Main line | Sharp continuous beats for 3 seconds followed by :- *(One strokes). | *** (Three strokes) | Sharp continuous beats for a second or two for all trains. | *** *** *** (Three pause Three pause, Three strokes) |
| Up Branch line | *(One stroke) & Sharp continuous beats for 3 seconds followed by :- ** (Two stroke) | * ** *** (One pause, two pause, two strokes) | | *** *** *** (One pause two pause, two pause, two strokes) |
| Down Branch line | *(One stroke) & Sharp continuous beats for 3 seconds followed by :- * (One stroke) | * *** (One pause, Three strokes) | | * *** *** *** (One pause, three pause, three pause, three strokes) |

**22.16 Points not to be altered under moving vehicles.-**

Station Master/Yard Master must carefully train their staff like Pointsmen, Points Lockers, Token Porters, Cabinman and switchman etc. and impress upon them that they must not alter the points, even if they have set the points wrongly, while vehicles or

engines are moving over them, but must show a danger signal to warn the Loco Pilot and the Guard so as to bring the engine/Trains to a halt.

**22.17. Inspection of Guards'/Loco Pilots' equipment by SS/SM/CYM/ YM/SSE/SE(Loco).-**

(a) The articles of personal equipment in the possession of Guards must be carefully inspected at least once in three months by the SS/CYM/Station Master / Yard Master of their headquarters station and a report submitted to the Sr. Divinl. Operations Manager / Divisional Operations Manager / Divisional Safety Officers by the 10th of the following month. Similarly the equipment of the Loco Pilots must be inspected once in three months by the SSE/ SE(Loco)/Crew Controller, SSE/SE(Elect.) and a report submitted to the Divisional Mechanical. Engineer/DEE (RS). Any deficiency must be made good immediately, raising debit against the staff at fault in case of loss or damage.

(b) Inspectors and Officers must check up the equipment of Guards/ Loco Pilots as frequently as possible and take up cases of deficiencies.

**22. 18. Care of passenger carriages.-**

(a) Station Master must see that carriages cut off at stations are swept and cleaned at once and the doors and windows are closed and locked immediately after they are vacated. The coaches detached or attached at a station shall not be allowed to be occupied by the passengers beyond the periods prescribed in local orders to be issued by the Divisional Railway Manager.

(b) The cleaning of all coaching vehicles at stations where Train Examining staff are posted must be done by the Train Examiner's staff,but the Station Master must see that the work has been duly and efficiently performed, and must bring any case of neglect to the notice of the Divisional Mechanical Engineer and the Divisional Commercial Manager.

All refuse cotton, jute, hay etc. should be swept out of coaching stock properly before they are attached to train or before allowing the rake for outward movement.

(c) Carriage cleaners and fitters are deputed to travel by a few important trains. It is the duty of the Guard, Conductors and Station Master to ensure that they attend to the cleaning of carriages and minor repairs to carriages and electric fittings in coaches on the run and at stopping stations, as required. .

(d) The C&W staff will be responsible for switching off the electric lights and fans, also for closing and locking of the doors and windows of empty/ coaching stock stable at stations or before allowing the empty stock to run. In case the passenger coach is detached or rake is stabled at a station not provided with TXR staff, the Station Master is responsible to ensure this. No person shall be allowed to stay in empty coaching stock or travel therein.

(e) Whenever any upper class carriage is not occupied the conductor and Traveirg Ticket Examiner shall arrange to close the doors and windows and switch off the electric fans, and shall also see that no unauthorised person travels therein.

(f) RPF staff have been specially deputed on certain sections to guard the coaches and fittings on run and in stations yards.

**22.19. Closing and securing of doors of goods stock.-**

The main responsibility to ensure the closing and securing of doors of goods stock before any wagon is attached to train or shunted lies with the Station Master or Yard Master as the case may be. At a station or in a siding where goods Clerk or Goods Supervisor is posted, he will be responsible for ensuring that the doors of wagons are properly closed and secured immediately on completion of loading/ unloading. The Train Examiner will also be responsible to see before issuing the certificate at the examination point of the train that the doors are properly closed and secured. Guards before starting the train from the originating station must ensure that the doors of all the wagons are properly closed and secured. Guards of all pilots, work trains etc, before drawing out wagons from the siding shall also ensure that the doors are closed and secured. If any wagon(s) is/ are observed by the Guard in door-open condition after starting from a Station/Yard/Siding and likely to cause unsafe condition, the train should be stopped immediately and door(s) closed/secured. In case, closing/securing of door(s) is/are not possible, the train may be taken carefully with such restricted speed as considered necessary by the Loco Pilot and Guard to the next station where steps should be taken to have the door(s) closed/secured properly.

**22.20. Obstruction on running line.-**

(a) Station Masters will not allow any packages or material to be so unloaded as to interfere with any signal rodding or wires or running line. Any consignment unloaded should be well away from the platform copying, running line and signal rodding or wire so that there is no chance of its infringing the moving dimensions either where unloaded or by shifting due to vibration. They will make the staff under-stand the importance of this precaution and ensure it. In Goods sheds and Parcels sidings the Goods Cleark/Parcel Clerk will be responsible for ensuring this.

(b) In a Private siding where the Goods Clerk/ Goods Supervisor is provided, he will be responsible to see all the packages / materials are kept well away from the line so that there is no chance of infringement of moving dimensions. The siding authority will be responsible to ensure this aspect where no railway staff is posted.

**22.21. Responsibility of Station Masters and others for Railway property (Carriage and wagon materials).-**

(a) Station Masters of stations where there is no Train Examining staff rnust assist in collecting all wagon materials that may be lying about their yards and forwarding the same with the least possible delay to the nearest Train Examiner.

(b) Wagon fittings or other Railway materials must on no account be sent to the Lost Property Office.

(c) In order to avoid loss in transit, Carriage and wagon materials picked up in yards or received from SSE/SE/JE(P.Way) or Guards are to be despatched to SSE/SE/JE(C&W) under Free Service Way Bill.

(d) All inspectorial staff when visiting stations will make it a special item ofr check to see that any rolling stock material or couplings which may be lying about on the platform or in the yard are sent to the nearest SSE/SE/JE(C&W) without delay.

(e) The Permanent Way staff and trolly holders will specially look for wagon fittings like brake blocks, dynamo, belts, etc. falling off on the run, while working / trollying,collect the same and make them over to the nearest Station Master to be disposed of as per sub-clause (c) above.

(f) All Railway staff must do all in their power to stop theft of fittings of vehicles/wagons/Track/and to prevent trespassers from entering yards and station limits. The assistance of the RPF / Police should be taken whenever required.

**22.22. Safety of passengers.-**

(a) The Station Master must impress upon their subordinate staff as far as possible, the urgency of advising the passengers not to entrain or detrain when the train is in motion.

(b) Passengers must be prohibited from crossing the line in the face of an approaching train. At stations having over-bridges / subways, crossing the lines must not be allowed. At stations not having over- bridges / sub~ways, only the “authorised crossing place” at the end of the platform ramps where sleeper- paths are provided shall be used.

(c) Announcement through Loud Speaker for the purpose of item (a) and (b) above should be done whenever such facility is available.

(d) A Railway employee must not, under any circumstances, assist in or connive at, any infringement. But all Railway employees must exercise discretion in interference is with persons who may appear to be about to place themselves in danger by breaking the rules laid down for the public safety. When any interfering likely to increase the risk to which they have exposed themselves, the action on behalf of the Railway servant must be confined to such precautions as will minimise the risk. But after the danger is over, steps should be taken, as far as possible, for the punishment of the offender.

For example, if a passenger about to enter a vehicle in motion has approached so near to it that interference with him seems to be dangerous, he must be left alone, but if he succeeds in entering the train unhurt, such particulars must be sent forward as will facilitate his detention and punishment.

It is noticed that a passenger, while attempting to enter the train, misses his footing or is otherwise in imminent peril, the train must be stopped immediately, and the passengeer assisted, if possible, to a position of safety; but nothing must be done to confuse him or in any other way add to his risk.

Similarly, when prompt action will stop a passenger alighting from a vehicle in motion, without adding to the danger of his position, such action may be taken; otherwise he must not be”jnterfered with till he has alighted, after which steps must be taken for his prosecution.

(e) Whenever platforms, buildings, approach roads, etc. are under repairs, and there is any possibility of passengers or others failling into openings or against temporary

obstructions, red lamps should be placed around those parts by the staff employed on the work. The openings should be fenced around. The area should be adequately lighted. Under no circumstances should trolleys, ladders or other things likely to interfere with or injure the passengers moving on the platforms be kept collected at a corner away from the place where the passengers entrain or detrain. The Station Master will remove the parcels/goods unloaded from trains promptly to the shed or else keep them stacked in one corner away from the portions of the platforms. used by passengers for entraining or detraining.

(f) The Conductor and Travelling Ticket Examiners of the trains must keep a vigilant look-out at all halting station on upper class carriages, especially at night, and any suspicious characters found loitering on the platform or off the platform should be tactfully and politely questioned, their tickets checked, etc. to find out their bonafide. In addition, the Conductor should also occasionally peep out on the side opposite to the platform through any of the compartments of the train and satisfy himself that there is no doubtful character loitering about.

(g) The Station Staff, Assistant Station Masters, Trains Examining Staff and other staff of the station should also be on the look out and defect doubtful characters loitering either on or off the platforms. No persons other than the Railway staff on duty should be permitted at night time to be on the off side of the train.

(h) The Guard, Loco Pilot, Fireman and other Railway staff working the train should also keep a vigilant look out in this respect as far as possible and without any detriment to their normal duties.

(i) At stations having GRP out posts, it is the duty of the GRP in-charge to post constables to guard the off-side of stopping Passenger trains. The Station Master should follow up with the officer-in- charge if this is not being done.

(j) Attendants have been provided in Air- conditioned and corridor coaches. The Conductor, Guard, Station Master and other supervisory staff, Inspectors and Officers must ensure by frequent checks that they are vigilant and do not allow any unauthorised person to travel in the compartments.

(k) All supervisors should emphasise upon the station staff at stations and upon the running staff of the trains concerned that it is the duty of every Railway staff to do everything possible to ensure the safe journey of the passengers.

**22.23. Safety of Female Passengers.-**

(a) Gurads of Passenger carrying trains will examine fastenings of windows and doors of ‘LADIES’ compartments when taking over their trains and will ensure that any defects observed are brought to the notice of the Carriage Staff, and put right or secured in a manner to ensure safety before the train starts.

(b) Guards of trains are required to pay special attention, whenever time permits, to all ‘LADIES’ compartments, and at the request of the occupants, to lock the doors of such compartments at night, and be on the alert to open the same when required. The Conductors by Mail and Express trains must pay particular attention to the ladies compartments at stopping stations.

(C) Guards shall inform the Travelling Beat Constable if any, in the train by making an entry in his beat book,about the train number, date and the number or numbers of carriages in which accommodation is reserved for ladies,and initial the entry so that the constable can keep special watch over the same. The Guard must similarly advise the RPF staff, if any, escorting the train of the ladies compartments on the train and advise them to keep a special watch. The Guard should also advise the constable or RPF staff to keep particular watch on the ladies' compartments if any safety fitting of any such compartment is defective or not woking properly.

(d) The Travelling Ticket Examining staff will be particularly vigilant to ensure that no male person entres or travels in the ladies' compartment.

**22.24. Passengers to be courteously treated.-**

(a) All passengers shall be treated with utmost courtesy and every assistance and protection afforded to them while on Railway premises. Every supervisory staff must impress upon his subordinates the importance of this and take stern action against any staff failing to comply with the same.

(b) Public complaint books have been provided at stations and also with the Conductor Guards. The same should be made available to the public as required. The complaints recorded should be attended to at once and causes of complaints removed. It must be the endeavour of every Railway employee to avoid public complaint, but should an occasion arise for any passenger to record a complaint, he must be given all facilities to record the same and the complaints recorded dealt with as per extent, orders issued by the Chief Commercial Manager.

(c) Railway employees shall give their names and designation when asked to do so. The staff scheduled to wear badges or scrolls must have them on without fail when on duty. The staff dealing with the public must be in prescribed uniform.

(d) Station Masters shall see that each member of the staff under their control having dealings with passengers is acquainted with the times of arrival at and departure from their stations of all Passenger trains and also stoppages enroute and instruct them that they should answer any query on the subject by the public in a prompt and courtious manner. The Passenger Guides posted at the station must specially look to the difficulties of lower class passengers confused in the maze of multiple trains by moving up and down at busy stations. All supervisory staff, Inspectors and Officers must pay perticular attention to ensure that the staff perform the duties enumerated above creditably.

(e) The Station Masters shall ensure that the Railway staff vendors or licensed porters do not make any unnecessary noise on platforms, particularly at night.

(f) The Station Master on duty and the Guards of the Passenger carrying trains shall see that specified stopping time is allowed at the stations to enable Passengers to alight and entrain safety. In case the specified time is considered insufficient, they should submit a special report in this regard to the seniormost Divisional Operations Manager of the Division.

**22.25. Supply of drinking water to passengers.-**

(a) The necessity for the prompt supply of clean drinking water to passengers cannot be over emphasised. Every station must keep adequate store of clean drinking water before a Passenger train arrives. Watermen have been provided at important stations; taps are provided at frequent intervals on the platform and tubewells are available on the platform at some stations. At many stations water trollies filled with clean drinking water are kept on the platform. At other small stations not provided with these facilities, the Station Master must keep pots of clean drinking water in front of his office or in the water shelter provided for the purpose.

(b) Whenever a Passenger train is expected at a station, the Station Master shall personally see that the Watermen at the station are present and that they have a plentiful supply of fresh drinking water and are relieved from any work they may be engaged on, so that on arrival of the train they may attend to the same. The Watermen must move with their trollies along-side the train. At other stations, the Station Masters must ensure that clean drinking water is kept in the water trollies/ earthen pots. He will be personally responsible to ensure that the tubewells and the water taps at the station are in good working order.

(c) At stations without Watermen or adequate-taps/water trollies, the station staff should be vigilant to supply drinking water should any passenger be in urgent need of the same.

**22.26. Refreshments for passengers.-**

(a) CondlJctors of trains, where available, will enquire from passengers and despatch messages for meals in accordance with orders issued from time to time. For trains by which no Conductor is booked, this duty devolves on the train Guard. The attendants of A.C. Coaches and corridor coaches shall be responsible to ascertain the requirements of meals from the passengers in their coaches and advise the Conductor/Guard.

(b) Conductors/Guards must be very particular about ascertaining the exact requirements of meals and sending forward for the same in time. Such message should be addressed to the Refreshment Room Manager of the station at which meals are required. The Station Master, who may be advised by the Conductor / Guard to trasmit the message, must make immediate arrangements for transmitting the same. In case of any diffculty, the messages may be repeated to the Controller on duty by a Diary entry and the latter will be responsible to advise the Station concerned immediately by an Order Number. The Roster Clerk on duty or the Station Master on duty where there is no Roster Clerk, at the receiving station must see that the meal messages are sent to the Refreshment Room Manager at once and his signature obtained.

(c) Conductors, and in their absence, the Guards, will order all refreshments required by passengers travelling by Mail, Express, Passenger and Mixed trains. The staff shall note that to avoid confusion, message for meals is to be issued only . by Conductor/Guard. The latter must ensure at the meal station that the meals ordered are correctly supplied.

(d) Messages addressed to Managers of Refreshment Rooms intimating the meals required by Passenger in trains must be coded “XXR”. The code initials for the Refreshment Room Manager are “MRR” and those of a Dining Car Manager are “DCM”

and all messages for meals should be addressed correctly according to these code initials.

(e) At the meal stations, the General Asstt. Station Master where provided or the staff nominated for this purpose by the Divisional Commercial Manager shall go into the Restaurant/Refreshment Room, five minutes before the train is due to leave and advise all passengers, in a voice loud enough for every passenger in the room to hear, that the train will start in five minutes. This warning will also be repeated two minutes before the departure of the train. If there is more than one train in the station he should say exactly to which train he refers. If the restaurant / Refreshment Room is provided with Loud Speaker, this work may be done through the Loud Speaker announcement.

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## CHAPTER -XXII

# QUOTA OF INSPECTIONS

### 23.01 Monthly Quota of Inspections for Supervisors at the Zonal Headquarters .-

| Type of | Departments | | | | | |
|---|---|---|---|---|---|---|
| Inspections | Optg | Mech. | Elec. | S&T | Safety | Engg. |
| Detailed | 2 | 2 | 2 | 2 | 4 | 2 |
| Surprise | 4 | 4 | 4 | 4 | 7 | 2 |
| Night | 4 | 3 | 3 | 4 | 4 | 4 |
| Foot plate | 3 | 4 | 4 | 4 | 5 | 3 |

### 23.02 Quota of Inspections for operating officers at the Zonal headquarters .-

| Grade | Monthly Quota | Areas of Inspections |
|---|---|---|
| PHOD | 2 | 1 Major Station + 1 Major Terminal/ Section/Train. |
| CHOD | 3 | 1 Station + 1 Terminal + 1 Train. |
| SG/JAG | 4 | 1 Station + 2 Terminals + 1 Train. |
| SS/JS | 5 | 1 Station + 2 Terminals + 2 Train. |

### 23.02 Monthly Quota of Inspections for operating officers and supervisors of the Divisions :-

**23.03 Monthly Quota of Inspections for operating officers and supervisors of the Divisions :-**

| Sl | Type of Inspection | SG/ JAG officers | SS officers | JS officers | Super visors |
|---|---|---|---|---|---|
| 1 | Station | 1 | 1 | 2 | 4 |
| 2 | Station Night Inspection | 1 | 1 | 1 | 3 |
| 3 | Cabin Inspection | 1 | 1 | 2 | 4 |
| 4 | Foot Plate | 1 | 1 | 2 | 4 |
| 5 | Inspection of Crew booking points/Lobbies | 1* | 1* | 1 | 2 |
| 6 | Running Room Inspection | 1* | 1* | 1* | 1 |
| 7 | Inspection of Personal equipment of Guard & brakevan equipement | 1 | 1 | 1 | 4 |
| 8 | Inspection of manned LC gates | 1 | 1 | 2 | 2 |

* Once in three months.

Note :- The Inspection of Officers must include one surprise Night Inspection per month, i.e. the inspection should be conducted between 00.00 hrs and 04.00 hrs.

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## OPERATING MANUAL

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**(C)**

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OPERATING MANUAL

## REGISTER OF ADDENDUM AND CORRIGENDUM

| A & C No. | Date of Issue | Date of receipt | Date of Posting | Reference to rule /para and page | | Signature of the inspecting official. |
|---|---|---|---|---|---|---|
| | | | | Rule/ Para No. | Page No. | |
| | | | | | | |