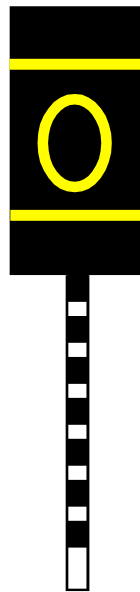


Indian Railways General Information & Safe Working Rules



Electric Loco Training Centre
South-Eastern Railway
Tatanagar.

COURSE CONTENT

- LESSON 1 OVER VIEW OF RAILWAY ORGANIZATION (RNG 1)
- LESSON 2 ASSTT. LOCO PILOT DUTY IN CREW LOBBY (RNG 9)
- LESSON 3 ASSTT. LOCO PILOT DUTY AT SHED/POOLING POINT (RNG 7)
- LESSON 4 GR AND SR SOME DEFINATIONS (RNG 36/77/178)
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- LESSON 10 WHISTLE CODES (RNG 42/83)
- LESSON 11 WORKING OF TRAINS (RNG 43/84)
- LESSON 12 ENGINEERING BOARD AND SIGNALS (RNG 44/85/212)
- LESSON 13 BPC AND GDR (RNG 43/84)
- LESSON 14 ABNORMAL WORKING (RNG 45/86)
- LESSON 15 ACCIDENT (RNG 47/88/183/213)
- LESSON 16 MISCELLENIOUS (RNG 46/87/ 34/35)

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LESSON 1

OVER VIEW OF RAILWAY ORGANISATION

1.1

DEFINITION OF RAILWAY:

“ Railway means a Railway or any portion of a Railway, for the public carriage of passenger, animals or goods and include-

All land within the fences or other boundary marks including the limits of the land occupant by Railway.

1. All lines of Railway, sidings or branches worked over for the purpose of, or in connection with, a Railway.
2. All stations, offices, warehouses, wharves, workshops, manufactories, fixed plant and machinery and other works constructed for the purpose of, or in connection with a Railway.
3. All ferries, ships, boats and crafts which are used on inland, waters for the purpose of the traffic of a Railway and belong to or hired or worked authority administering the Railway.

1.2

INDIAN RAILWAYS- AIM & OBJECTIVES:

The corporate management objectives of Railway undertaking are as under:

1. To provide all transport for both Passenger and goods adequate to meet demand in areas where Railway operation confers optimum benefit to the economy having due regard to the Government's policy of development of backward areas.
2. To provide such rail transport at the lowest cost consistent with-
 - a. Requirement of the Railway users and safety of operation.
 - b. Adequate provision of replacements of assets and some provision for development of business; and
 - c. The least amount of pollution of environment.
3. To work in association with or utilize other modes of transportation, such as pipelines and road transport and so engage in ancillary activities necessary to sub serve the above two objects.
4. To establish corporate image of the Railway as being an up to date business organization with the interests of public and of the nation as its prime objectives; and
5. To develop organizationally effective personnel with pride in their work and faith in the management.

1.3

HISTORY OF INDIAN RAILWAYS:

In India, the Railway system came into being by the then Governor General of British India, Lord Dalhousie, in July 1850. The first Railway line was started being laid down in India from Bombay to Thane for a length of about 21 miles on 16th April 1853. The second line connecting Howrah and Hoogly was opened in 1854. In south India, the first Railway line was opened between Vysarpadi and Arcot in 1856. The Indian Railway Act was enacted on 21st March 1890. After independence in 1947, the process of Nationalization of Railway system was completed in April 1950 and the administrative control of all the state owned Railways was assumed by the Government of India.

1.4

RAILWAY BOARD/ZONE STRUCTURE

President has formed rules for the convenient transaction to the business of the Government

of India, the subjects allocated to the Ministry of Railway (Railway Board) are in charge of the minis-

ter of Railways, who is minister of cabinet rank. He is associated in his work by one or more ministers who are of the status of minister of state or Deputy Minister. These ministers perform such functions as may be assigned to them in relation to the business allocated to ministry.

The Railway Board is the Chief Administrative and Executive Body assisting the Minister of Railways in the discharge of his function. It was constituted by a resolution of Government of India dated 18th February 1905. The Railway Board constituted at present consist of:

1. Chairman, Railway Board,
2. Financial Commissioner Railways; and
3. Five members each of Traffic, Staff, Mechanical Engg, Civil Engg. And Electrical Engg.

The Chairman Railway Board is ex-officio principal secretary to the Government of India in the Ministry of Railways. He is solely responsible under the Minister of Railways for arriving at decision on technical question and advising the Government of India on the matters of Railway policy. The Chairman also functions as member in respect of one or the other subjects as decided and is also responsible for co-ordination.

Financial commissioner for Railways represents the ministry of finance on the Board and also functions as ex-officio secretary to Government of India in the ministry of Railways in financial matters. He has direct contact with the Finance Minister whom he keeps informed of developments in the Ministry of Railways. In case of any disagreement with chairman or Railway Minister or any financial aspect, he has the right to refer it to the Finance Minister.

Each of the members is responsible for dealing with all aspects of the technical subject of which he is in charge. In order to be able to effectively discharge the duties and responsibilities from the in creed tempo of development works, there are additional members in the Railway Board.

Railway Board is assisted by several directorates each under an adviser, such as Adviser Works, Mechanical, Traffic, Commercial and civil engineering. Such advisors are assisted by directors in S.A. grade, Joint Directors, Deputy Directors and Assistant Directors.

The Advisers are responsible for issuing instruction direct to Railway Board and receive and deal with reference from General Public and other ministries of the Government of India with their respective jurisdiction.

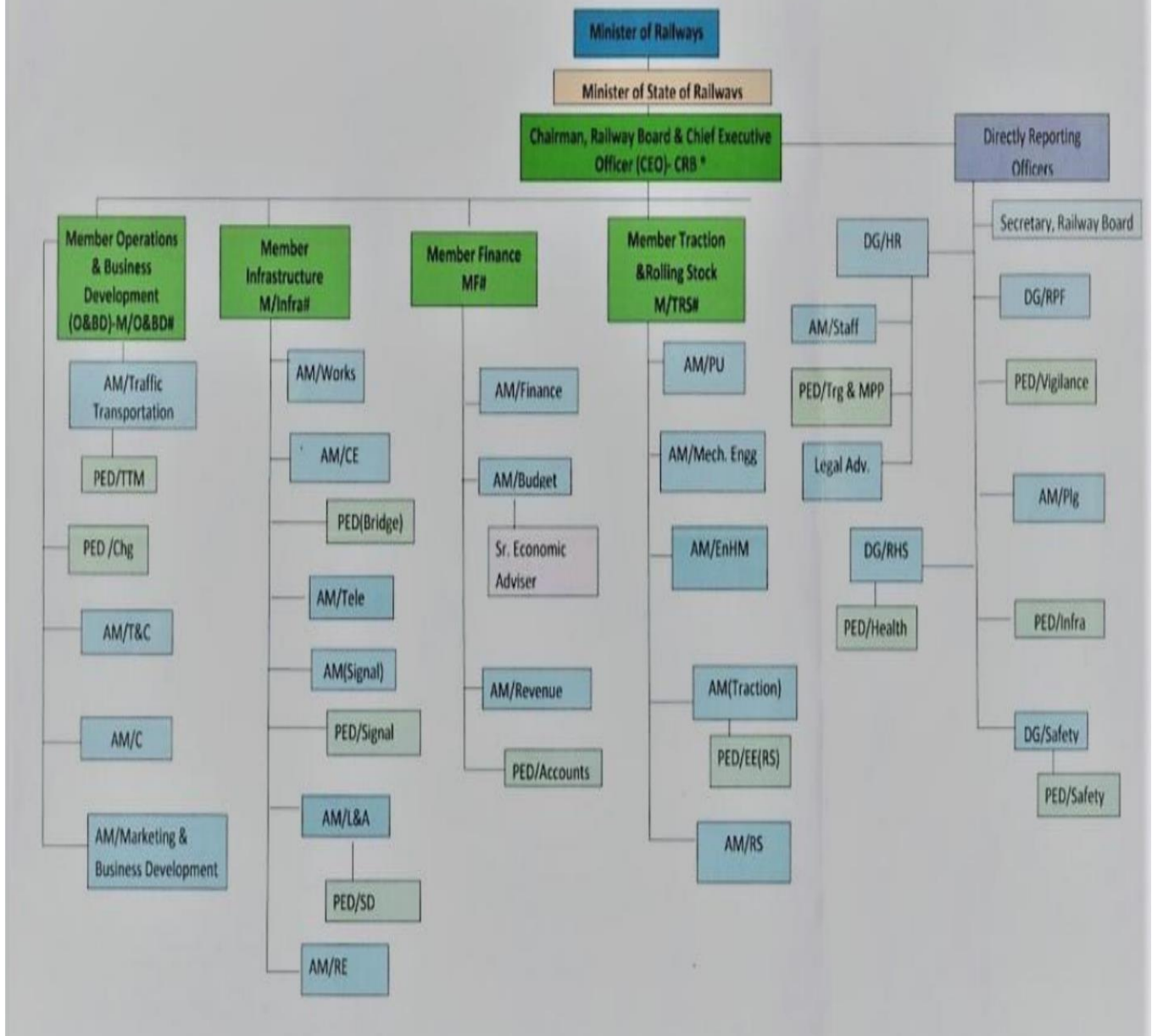
REVISED ORGANIZATIONAL STRUCTURE OF RAILWAY BOARD

As per cabinet decision of dated 24.12.2019, the revised composition of railway board is now as under :-

- i) Chairman Railway Board & Chief Executive Officer (CEO)-CRB
- ii) Member (Infrastructure), Railway Board –M/Infra,
- iii) Member { Traction & Rolling Stock(T&RS) },Railway Board –M/TRS
- iv) Member { Operation & Business Development (O&BD) }, Railway Board – M/O&BD
- v) Member (Finance), Railway Board- MF

Revised organizational structure of Railway Board and broad distribution of work to be handled by the Board Members are given below :-

Organisation Structure of Railway Board



Broad Distribution of work to be handled by the Board Members

- | | |
|--|--|
| Chairman Railway Board &
Chief Executive Officer(CEO)-
CRB | <ul style="list-style-type: none"> • HR • Safety • Security |
|--|--|

	• Health • Planning • Infrastructure • Vigilance • Efficiency & Research • Public Relations • Heritage • Secretary's Branches • Transformation Cell & • Corporate Co-ordination.
Member (Infrastructure), Railway Board- M/Infra.	• Works, • Civil Engineering • Bridges • Signal & Telecom • Land & Amenities • Station Development & • Railway Electrification
Member {Traction & Rolling Stock(TRS)}, Railway Board - M/TRS	• Production Units • Mechanical Workshops • Coaches • Locomotives • Train sets • Environment and House Keeping • Electrical Maintenance of Coaching Stock • Traction Distribution • Power Supply & • Renewable Energy • Materials Management
Member {Operations & Business Development(O&BD)}, Railway Board- M/O&BD	• Traffic Transportation • Coaching • Tourism & Catering • Commercial • Non-Fare Revenue • Marketing & Business Development & • IT.
Member (Finance), Railway Board- MF	• Accounts • Finance • Budget • Revenue, • Stat. & Econ & • Economic Unit.

ATTACHED OFFICES:

The Railway Board has the following attached and subordinate offices:

1) Attached offices:

a. The Research, Design and Standard Organization.

- b. Office of the Railway Liaison Officer with the Directorate General of supplies and disposals.

2) Subordinate offices:

- a. Railway Recruitment Boards
- b. Railway Staff College, Vadodara
- c. Indian Railway Institute of Civil Engineering, Pune
- d. Indian Railway Institute of Signal, Engineering and Telecommunication, Hyderabad.
- e. Indian Railway Institute of Electrical Engineering, Nasik.
- f. Central Organisation for Modernisation of Workshop, Delhi
- g. Centre for Advance Maintenance Technology, Gwalior
- h. Central Organisation for Railway Electrification, Allahabad

The Railway Recruitment Boards are at Mumbai, Kolkata, Chennai, Allahabad, Muzzffarpur, Guahati, Danapur, Bhopal, Chandigarh and Ranchi. RDSO organization is at Lucknow.

RAILWAY ZONES AND MANAGEMENT:

On operational and Management consideration, the Indian Railway has been divided into 16 Zones in order to have smooth and efficient working. These are placed in the charge of General Manager who will be the chief administrative officer answerable to Railway Board for all matters affecting the work-ing of Railways. These zones are as under:

S/No.	Zone	Head quarter
1.	Southern Railway	Chennai
2.	Central Railway	Mumbai
3.	Western Railway	Mumbai
4.	Eastern Railway	Kolkata
5.	Northern Railway	New Delhi
6.	North Eastern Railway	Gorakhpur
7.	North East Frontier Railway	Maligaon (Guwahati)
8.	South Eastern Railway	Kolkata
9.	South Central Railway	Secundarabad
10.	North Central Railway	Allahabad
11.	North Western Railway	Jaipur
12.	South Western Railway	Bangalore
13.	West Central Railway	Jabalpur
14.	East Central Railway	Hajipur
15.	East Coast Railway	Bhubaneswar
16.	South East Central Railway	Bilaspur
17.	South coast railway	Vishakhapatnam
18.	Metro Railway	Kolkata (declared)

Apart from the above 18 Zonal Railways, there are following production units, working directly under Railway Board:

1. Chittaranjan Locomotive Works for manufacturing electric locomotives.
2. Diesel Locomotive Works at Varanasi for manufacturing diesel/electric locomotives.
3. Integral Coach factory at Perambur near Chennai for manufacturing coaches
4. Wheel and axle plant at Bangalore.

5. Diesel component works at Patiala for spares.
6. Rail coach Factory at Kapurthala.
7. Railway Electrification at Allahabad.

1.5

ORGANISATION AND FUNCTION OF DEPARTMENTS:

In order to discharge the administrative functions, each General Manager is assisted by two Additional General Managers, Sr. Deputy General Manager, Deputy General Managers, Chief Public Relation Officer, Chief Planning officer and heads of departments for the following functions:

- | | |
|----------------|--|
| 1. Operating | Chief Operating Manager |
| 2. Engineering | Chief Engineer (Civil) |
| 3. Mechanical | Chief Mechanical Engineer |
| 4. Electrical | Chief Electrical Engineer |
| 5. S & T | Chief Signal and Telecommunication Engineer |
| 6. Accounts | Financial Advisor and Chief Accounts Officer |
| 7. Commercial | Chief Commercial Manager |
| 8. Personnel | Chief Personnel Officer |
| 9. Stores | Controller of Stores |
| 10. Medical | Chief Medical Director |
| | Security Chief Security Commissioner |

The above-mentioned head of the departments are responsible for functioning of their departments efficiently and are directly responsible to the General Managers for all matters concerning to their departments. They have been provided with Deputies, Senior and Junior Scale officers to assist them in discharging their duties efficiently.

LOCO AND TRAIN OPERATION:

Loco and train operation is controlled in a given area of a railway from centralised control office. Generally this is situated in divisional headquarters. The control office is provided with suitable telecommunication system connected with all systems, Stations, yard, loco shed, traction shed, goods shed and officials of various department. 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 report, mid night figures, train ordering etc.

FUNCTIONS OF CONTROLS IN TRAIN OPERATION:

This may be described under three needs:

- i) **TRAIN CONTROL:**
 - a) Ensuring the punctual running of mail/express/passenger train.
 - b) Running goods train with least possible detention in route
 - c) Arranging relief for engine crew and guard in time etc.
- ii) **TRAFFIC CONTROL:**
 - a) Allotment and distribution of coaching and goods stock in station,

- b) Securing maximum utilisation of stock.
- c) Maintenance of marshalling yard.

iii) POWER CONTROL

- a) Requisition of locomotive power i.e. engine, direct from locomotive running shed for all operating requirements for example – train working, shunting and banking.
- b) To ensure the most economical use of engine power available.

1.6

RAILWAYS TRANSPORT NETWORK:

Transportation is regarded as the lifeline of a country. The economic, social and commercial progress of a country depends upon transportation system. Railway is a surface transportation network.

The Railway network in India have been classified in to different categories by the Railway Board on the basis of importance of the route and they have been divided mainly into three categories: (1) Trunk Route (2) Main Line (3) Branch Line

- (i) The Trunk Routes: The following 6 routes on the broad gauge and three routes on the meter gauge have been classified as trunk routes:

ON THE BROAD GAUGE:

- a. Delhi-MGS-HWH
- b. Delhi-Kota-Mumbai
- c. Delhi-Jhansi-Nagpur
- d. Howrah-Nagpur-Mumbai
- e. Howrah-Vijaywara-Chennai
- f. Mumbai-Guntakal-Chennai

The following track standards have been specified for trunk

routes: Designed speed for new track	- 160
KMPH Maximum permissible speed	- 120 KMPH
Rail section	- 50 Kg/mtr./ or heavier (60 Kg/mtr)
Sleeper density	- $N + 7$ (N= Length of track)
Ballast cushion	- 25 Cms below the sleeper
Degree of curvature	- 7.5 degree

(ii) Main Line:

All the lines, other than the trunk routes where the maximum permissible speed is 100 KMPH on the broad gauge and 75 KMPH on the meter gauge

(iii) Branch lines:

These lines are classified under the following criterion:

All those broad gauge line which carry less than 10 gross million tones of goods per annum and have a maximum permissible speed of less than 100 KMPH, are termed as branch line.

CLASSIFICATION OF INDIAN RAILWAYS BASED ON SPEED CRITERIA:

- a) Group 'A' lines -Speed 160 KMPH or more
 - i) New Delhi-Mumbai, via Kota
 - ii) New Delhi-Chennai, via G.T. route

- iii) Howrah-Mumbai, via NGP
- b) Group 'B' lines-Maximum sanctioned speed is 130 KMPH. At present 13 routes are under this category.
- c) Group 'C' lines- All sub –urban routes of Mumbai and Kolkata.
- d) Group 'D' lines-All other routes on the Broad gauge and meter gauge of the country where maximum permissible speed is 100 KMPH.
- e) Group 'E' lines-Other routes and branch lines where the maximum permissible speed is less than 100 KMPH.

1.7

RAILWAY ELECTRIFICATION PROGRAMME

Railway electrification organisation under a separate G.M. has been entrusted with electrification of railway network throughout the country. A centralised organisation known as "CENTRAL ORGANISATION FOR RAILWAY ELECTRIFICATION" was set up at Allahabad in 1979.

The I. R. Core at New Delhi has also been placed under the administration of G.M. core at New Delhi w.e.f. July, 1998. In S. E. Railway first electrified route was commissioned between RAJKHARSWAN and DANGOAPOLI a distance of about 75 kms. in the year 1959. It was the first AC traction in I.R.

At present in S. E. Railway electrification of Railway lines has been completed in the following sections and electric trains also are being run in these sections:

HWH	-	Bilaspur
RKSN	-	BARBIL
DPS	-	JRLI
SINI	-	ADRA
ADRA	-	GMO
HATIA	-	BKSC –GMO
BNDM	-	Karampada
Kharagpur	-	Bhadrak
Rourkela	-	Hatia
Chandil	-	Muri-Bokaro-BRKA
Kotshila	-	Purulia
Adra	-	Kharagpur

The electrification program is being adopted all over the country due to

- (i) Pollution free environment
- (ii) Easy and low maintenance cost
- (iii) Saving of precious resources like coal & oil
- (iv) Less starting time
- (v) High starting torque
- (vi) Re-generation of current
- (vii) Comfortable journey

1.8

Electrical Operation Organization:

The electrical operation organization of our Railway is headed by Chief Electrical Loco Engineer and he is assisted by Deputy Chief Electrical Engineer (OP) and Assistant Engineer (OP) at the Zonal Head Quarter, Kolkata. The Senior Divisional Electrical Engineer (OP) of all divisions are under CELE and are liable to report

to him through Dy. CEE(OP) in all the operational matters.

1.9 STRENGTH AND WEAK- NESS OF RAILWAY TRANS- PORT

Indian Railway transport network is the second largest in the world. Being large in size and volume has an advantage in itself, but only when the footage of the mass is strong. The Railway network in India is spread over all parts of the coun-

try and are well connected and well managed. So, if the network can be worked with co-ordination and cohesion it can build into a formidable unit and play an important role in the growth and development of the country.

But being very big in size has its disadvantage also, unless there is cohesion and co-ordination the unity may fall apart and the network may turn into weak one. So for the progress and advancement of the country and also to keep the network connected, we must work cohesively.

1.10 COMPETITION FROM OTHER MODES OF TRANSPORT

Prior to the construction of National highways, Railways was the most reliable and dependable transport system in India and in fact the Railway was reigning in this field. But with the development of roadways and heavy-duty road vehicles, now a day the Railway is facing a hard and tenacious competition from the roadways. So unless the reliability, responsibility and efficiency in Railway transportation system is enhanced, the Railways will keep on losing grounds. For this ac-

cident free and comfortable transportation network in the Railways has to be developed to hold and gain grounds in this field.

“With the development of roadways and heavy-duty road vehicles, now a day the Railway is facing a hard and tenacious competition from the roadways. So unless the reliability, responsibility and efficiency in Railway transportation system is enhanced, the Railways will keep on losing grounds. For this accident free and comfortable transportation network in the Railways has to be developed to hold and gain grounds in this field.”

1.11 FUTURE BUSINESS PROSPECT

With the liberalization of Government business policy and participation of corporate house and multinationals in Indian business arena, a vast avenue has opened in front of the Railways. But no longer Railways can claim to be the whole and sole authority to transportation management of the country. Road transport has turned into a stern competitor of the Railways, so to satisfy the customer Railways has to prove that it can provide better and reliable service to the customers over other means of transportation.

FIRE FIGHTING

INTRODUCTION

Fire causes considerable amount of damage to the railway and its property every year, so every railway servant should be thoroughly conversant with the process of preventing and extinguishing fire on railway property.

At the end of this lesson the trainee should be able to adopt preventing measure and be able to extinguish the fire on railway property, to save passenger's life and take necessary action thereafter.

Let us deal with some common questions about fire hazard and its prevention method :

1. What is fire?

In simple words we can say that the fire is the combination of combustible material, oxygen and heat at proportionate rate.

2. How can you classify the fire?

According to the types of fuel and combustible, fire may be classified in following 4 categories -

- i) **Class 'A' fire (Solid)** –These are fires involving combustible materials of organic nature, such as wood, paper, rubber and plastics etc where the cooling effect of water is essential. Class 'A' fire are the most common and the most effective extinguishing agent is generally water.
- ii) **Class 'B' fire (Liquid)** –These are fires involving liquids or liquefiable solids . Some flammable liquids are miscible with water and others are immiscible with water. Taking into consideration to the fact extinguishing agent like water spray, foam, water, vaporising liquids, carbon dioxide and dry chemical powder may be used.
- iii) **Class 'C' fire (Gas)** – These are fires involving gases or liquefied gases. Foam or dry chemical powder can be used to control these type of fire.
- iv) **Class 'D' fire (Metal)** -These are fires involving metals. Extinguishing agent containing water are ineffective, and even dangerous. Carbon dioxide and carbonate classes of dry chemical powders may also be hazardous if applied to most metal fires. Normally powdered graphite, powdered talc, soda ash, limestone and dry sand are suitable for metal fires.

3. What are the factors are essential to continue combustion?

The following factors are essential to continue the combustion -

- i) The presence of fuel or combustible material.
- ii) The presence of oxygen, usually as air, and-
- iii) The attainment and maintenance of a certain minimum temperature.

4. How can you extinguish the fire?

Fire can be extinguished by the limitation of one or more factors mentioned above in item no.-3, hence methods of extinguishing fire may be described as under-

- i) Physically separating the combustible material from the flame, called Starvation.
- ii) Removing or diluting the oxygen supply, known as Smothering.
- iii) Reducing the temperature of the combustible, called Cooling.

5. What are the precautions to be observed by the staff to prevent from the fire hazardous?

i) Glowing cigarette butts and matches shall not be thrown into waste baskets, oil rag bins, or other places of fire hazard. Burning Cigarettes, Biris etc or Match sticks should not be thrown out without ensuring that they have been completely extinguished.

ii) Smoking and use of open flames shall be prohibited near oil storage , battery and places where combustible material is kept.

iii) High standard of cleanliness shall be maintained. Waste material, oily waste or rags etc. shall be removed from the premises daily and suitably disposed of.

iv) After wedging of any contactor ensure proper tightness of the contacts, so as to avoid chattering between them which may cause sparks and finally ignite other combustible material in the area.

v) Keep a close watch for loose cables, oil splashing, hot axle on loco and wagons and any other abnormally on or near the track or OHE while on run.

vi) Rules for marshalling and shunting of inflammables, explosive and other dangerous goods should be observed strictly. Take extra precaution while shunting with such types of wagons.

vii) In case of dropping of any safety relay check carefully the equipments provided in concerned circuit for any smoke emission, burning smell of fire.

viii) Electrical equipment shall be installed, operated and maintained properly and in such a manner as to eliminate arcs due to poor contacts in switches and fittings, damaged insulation, crossed wires, opening of switches carrying large currents, etc.

ix) Overloading of electric circuit should be avoided and electrical installations should be checked periodically.

x) Electric lamps shall not be surrounded by or laid on combustible material.

xi) Flammable gases and materials shall not be stored near electrical equipment.

- **Note – Loco Pilot, Motormen, Asst. Loco Pilot, should be familiar with the physical location of all fire fighting equipment including fire hydrants in their place of work, the correct method of operating the equipment and precautions to be observed, as well as location of and means of summoning of Railway and Municipal Fire Brigades.**

6. What is electrical fire ?

Although it may be a fire of any class as mentioned above, any fire involving or started by electrical equipment may be called electrical fire. The normal procedure in such circumstances is to cut off the electricity and use extinguishing media appropriate to what is burning. Only when this cannot be done, special extinguishing agents be required which are non conductor of electricity and non damaging to equipment. These include vaporising liquids, dry powder and carbon dioxide, although the latter's cooling and condensation may affect sensitive electronic equipment.

7. What are the most common causes of fires in electrical installations?

The most common causes of fire in electrical installations are –

- i) Short circuits, due to failure of installations.
- ii) Overheating of cables or equipment due to overloading, lack of ventilation or presence of local resistance
- iii) Ignition of flammable gases and vapours by heat or sparks occurring in the operation of electrical equipment.
- iv) Ignition of flammable substances by electro-static discharge.

8. How many types of Fire Extinguishers are there and which type of fire extinguisher commonly used in locomotive?

The types of fire extinguishers are mentioned below against each class of fire are generally most suited. In electric locomotive Dry Chemical Powder Type fire extinguisher is used commonly.

- i) Class A Fires - Water expelling type extinguishers.

- ii) Class B Fires - Foam, dry powder, vaporizing liquid, carbon dioxide extinguishers.
- iii) Class C Fires - Dry powder and carbon dioxide extinguishers.
- v) Class D Fire - Extinguishers designed for expelling special dry chemical powder.

9. How DCPT fire extinguisher works?

The powder generally used in DCPT fire extinguisher is sodium bicarbonate with other additive to provide free flowing characteristics. Sodium bicarbonate dissociate at a temperature little higher than the boiling point of water to yield CO₂ and water vapour. It extinguishes the fire due to- Heat absorption by solid particles, heat absorbed by decomposition and emission of CO₂ and water vapour tends to smother the fire.

10. How will you use Dry Chemical Powder Type fire extinguisher in case of fire?

- i) Front view of DCPT fire extinguisher.



- ii) Break the seal and open the safety clip in the top portion of fire extinguisher.



- iii) Hold the discharge nozzle of hose pipe tightly towards the fire to be extinguished at a safe distance by one hand.



- iv) Press the striker with sufficient power to bring the extinguisher in service.



- v) Direct the jet towards the near edge of the fire. Drive the fire towards the far edge until the flames are extinguished.



CAUTION

- a) **Water not to be used in extinguisher under any circumstances.**
- b) **The person using fire extinguisher to stand in the direction of flame keeping a safe distance , so that the flame can not harm the person.**

11. What are the safety checks to be done in fire extinguisher before using it?

- i). Validity of the fire extinguisher to be checked, which is 3 months from the date of filling.
- ii). Make sure that the extinguisher is in proper condition and is not accidentally discharged. Safety clip in gun metal cap is to be in sealed and locked condition.
- iii). Condition of hose pipe to be good and nozzle outlet vent holes should not be choked.
- iv). The container to be checked for crack-ness or any other type of damage.

12. What are the duties of Running Staff in case of fire?

FIRE ON GOODS TRAIN –

- (i) Stop the train immediately and put on flasher light.
- (ii) Isolate burning vehicle at a safety distance of 45 meters on either side.
- (i) Save the wagon label card and seal card and also the contents of the vehicle.
- (iv) Extinguish the fire by any means, which is available near by.
- (v) Protect the train as per G.R.6.03.
- (iii) Draw the burning vehicle nearest to the water tank if available.
- (iv) If the fire is not controlled advice TPC to switch 'OFF' the OHE power supply and ask for fire brigade if required.

FIRE ON PASSENGER TRAIN –

- (i) Stop the train immediately and put 'ON' the flasher light.
- (ii) De-train the passengers first and attend to their safety first.
- (iii) If there is postal van on the train, every effort shall be made to save the mails.
- (iv) Disconnect the electrical couplers and remove fuse links of the batteries if possible.
- (v) Isolate the burning vehicle at a distance of 45 meters on either side
- (vi) Protect the train as per G.R.6.03
- (vii) Extinguish the fire by the fire extinguishers available in train or by using other means like sand etc.
- (viii) If the fire is out of control ask for fire brigade and inform to TPC/SCR over portable telephone post. If there is a chance of OHE being affects with fire contact TPC and advice him to suppress the tension of OHE.

FIRE ON OHE

Inform the TPC through the nearest emergency telephone tap and also nearest stationmaster about the nature of fire and the amount of damage caused by giving km. Number and between the stations.

FIRE 'ON' ELECTRIC LOCO –

- (i) Open DJ, lower pantograph, open HBA (Battery switch) and stop the train/loco.
- (ii) Try to extinguish the fire with fire extinguisher provided on the loco.
- (iii) If the fire is not controlled inform TPC to switch 'OFF' the power supply of OHE and ask for fire brigade through emergency telephone.
- (iv) Protect the train/Loco as per G.R.6.03 if it is in block section.
- (v) Inform to TLC about the fact.

Availability of fire extinguisher on train in different locations:

DCPT fire extinguisher to be provided in the train in scale given below-

- i) Locomotive - 4 Nos. (2 in each cab)
- ii) Each brakevan (Front 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- 4 Nos.

Note- Fire extinguisher of 5 kg capacity to be kept 4 numbers in a loco, two in each cab, with appropriate place and manners so that its hose pipe remain in unfolded condition. Its expiry date to be mentioned in log book and check the seal of safety clip.

Performance requirement of DCPT fire extinguisher of 5 KG:

Minimum period for throw of jet	- 15 seconds
Maximum period to discharge 90% of contents	- 20 seconds
Range of throw of jet	- 5 to 7.5 m
Requirement	- The whole of the powder to fall beyond 3.0 meter from the nozzle.

LESSON 2

ASSISTANT LOCO PILOT DUTY IN CREW LOBBY

The role or function of an Assistant Loco Pilot is to assist the Loco Pilot to take the train safely from originating station to destination.

He may ever have some greater role to play in the form of driving the engine in case Loco Pilot became incapable by stopping the engine or in case of failure.

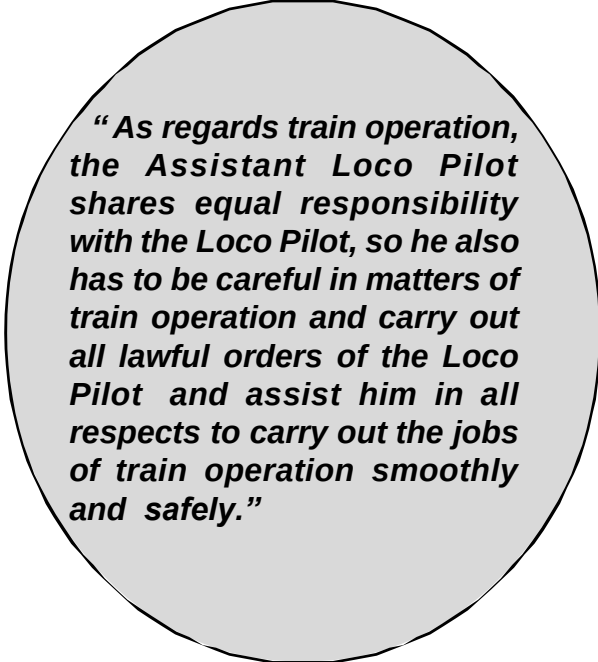
He forms the bridges of communication between Loco Pilot and guard, thus he plays a very important role in the operation of train smoothly and safely.

2.1

CONDUCT RULES(GR-2.10)

A railway servant shall –

- (i) Wear a badge and uniform if prescribed and be neat and tidy in appearance while on duty.
- (ii) Be prompt, civil and courteous.
- (iii) Not solicit or accept illegal gratification.
- (iv) Keep all reasonable assistance and be careful to give correct information to the public.
- (v) When asked, give his name and designation without any hesitation



“As regards train operation, the Assistant Loco Pilot shares equal responsibility with the Loco Pilot, so he also has to be careful in matters of train operation and carry out all lawful orders of the Loco Pilot and assist him in all respects to carry out the jobs of train operation smoothly and safely.”

2.2

RESPONSIBILITY OF AN ASSISTANT LOCO PILOT

As regards train operation, the Assistant Loco Pilot shares equal responsibility with the Loco Pilot, so he also has to be careful in matters of train operation and carry out all lawful orders of the Loco Pilot and assist him in all respects to carry out the jobs of train operation smoothly and safely; because anything going wrong the Assistant Loco Pilot will not be spared, he will be held responsible equally with the Loco Pilot.

At times of necessities and abnormal situation the Assistant Loco Pilot may have to play a role of greater importance and form the bridge of communication between the Loco Pilot and others.

2.3

RULE BOOKS AND AIDS

For the knowledge of rules and regulations, there are general rules (G.R.) and subsidiary Rules (S.R.). Except this, there are Operating Manual Accident Manual, Block-working Manual etc. for reference of rules and working system, circulars and procedure order time to time.

Special instructions and guidelines are also given through “Order Book” and by chief Loco

Inspectors (C.L.I.) or Safety Instructors.

2.4

ALP to switch OFF mobile phone while on duty.

SR 2.10.02:- To all train passing staff, it is instructed to keep their personal mobile phones switched 'off' while doing duty and not to switch 'on' the mobile phones before completion of their duty until and unless any emergency permits to do so. Unauthorized usage of personal mobile phones while on duty may attract D&A rules against the staff concerned for breaching of safety of trains and its operations

2.5

SIGNING-ON DUTIES (GR-2.07)

Every Railway servant shall be in attendance for duty at such time and places and for such periods as may be fixed in this behalf by the Railway administration and shall also attend at any other time and place at which his service may be required.

2.6 CMS

Crew Management system

- Crew Management system form the vital core function of train operation of Indian Railways.
- CMS is designed for unified Paper Less booking of crew.
- Effective Crew Utilization.
- Stop Manipulation in Crew Booking.
- Online Position of Crew to Zonal HQ, Divisional HQ, TLC's for better monitoring.
- SMS facility for Crew to check their status as well as their Mileage & Hrs.
- Monitoring 10 hrs. duty and HOER rules.
- Maintain inventory of all Crews including position of home crew at out stations & out stations crew at home.
- Scheduling and assignment of Crew to trains
- Monitoring road learning, training, RC, etc.
- Scheduling periodic rest.
- Modernization of Calls process
- Crew productivity (hrs worked, km earned).
- A tool for saving OT, Km all.
- Cover working activity of all users.
- Booking of Crew as per rule (FIFO & Prog. Hrs.).

- Booking of coaching crew as per link.
- Booking of Crew for shunting duty.
- Driver monitoring by LI.
- Grading of Crew by LI from kiosk, also LI can monitor personnel details of the crew(like PME, CRC, Loco Competency, Autosignalling, Safety, Alcoholic, Section LR etc.)
- Employees self service.
- Allowance calculation.
- Circulars availability.
- Pre availability of Caution Orders of section in which crew booked.
- Contactless Sign ON & OFF through Chalak Dal Apps
- Integrated BA and Bio for authenticity of crew.
- A tool for monitoring Energy Consumption & generation of locomotive be crew.
- Reports.

CMS Application User

CMS Divisional HQ Users :

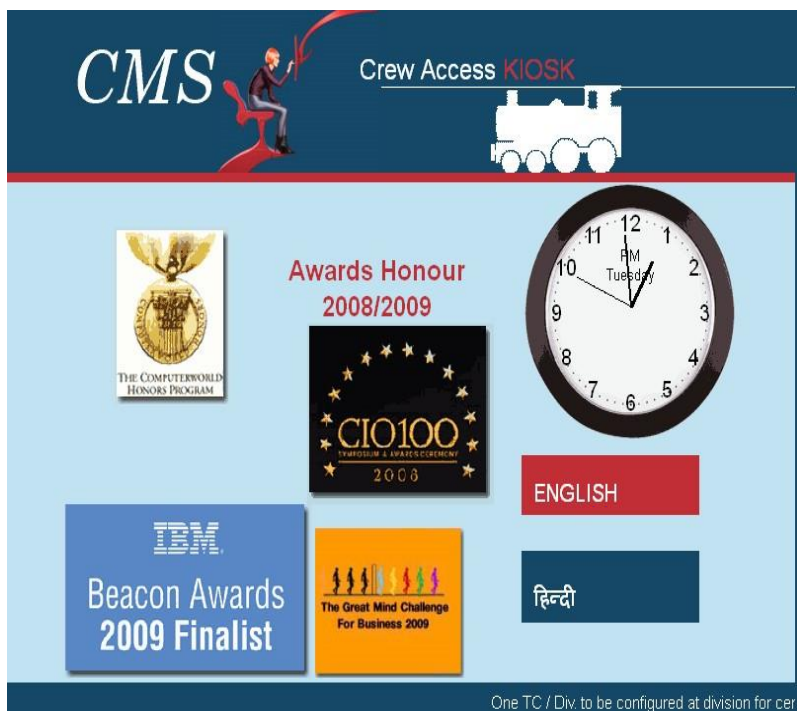
From Loco Side Loco Supervisor	From Traffic Side Guard Supervisor
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CMS Lobby Users :

From Loco Side Loco Supervisor Loco TNC	From Traffic Side Guard Supervisor Guard TNC
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CREW BOOKING PROCEDURE

- The list of all the crew who are suitable for that TA are listed in their order of suitability
- If any other crew is selected other than the most suitable one, the rule violation reason is to be entered.
- Then call is served to the crew by clicking the 'Serve Call' button.
- When the crew is booked on a particular TA, He is **served the call**.
- Loco TNC updates the acknowledged status of the crew along with the time at which call was received.
- Thus the crew becomes ready to sign on.
- Supervisor will approve that the crew has met all the mandatory requirements including the BA test which is done separately into the system. The Supervisor has authority to correct the Sign ON / OFF time.
- The **supervisor approval for sign ON** is essential before the crew sign OFF at the other lobby. Sign OFF approval is essential for making a crew go on it's scheduled rest.



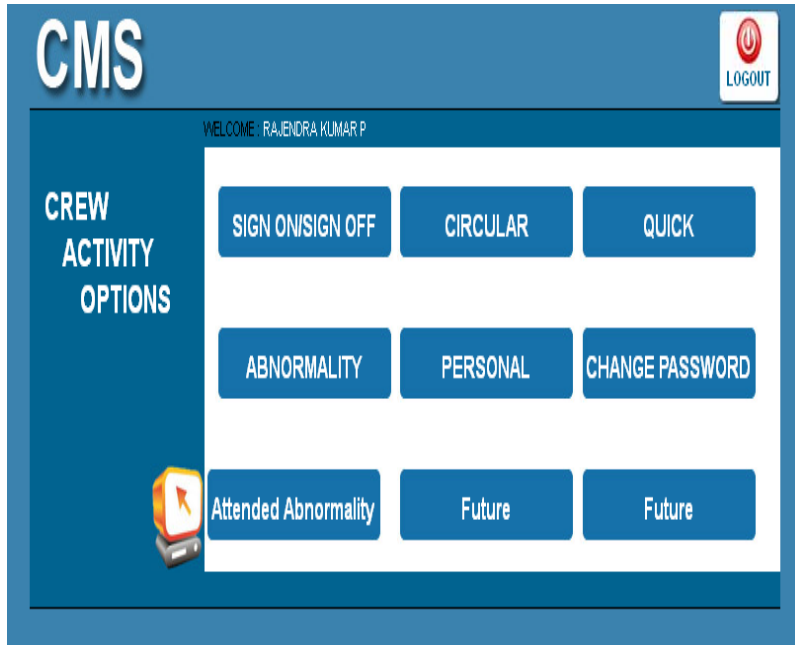
The crew is offered HINDI / ENGLISH option as the first screen on the KIOSK. Next he is asked to enter a valid ID and a password to have access to the CMS system.

To log into CMS system, we need to go to the home page again.

ABR	
Crew Division	All
Crew Lobby	ABR
Crew ID	ABR
Password	
LOGIN	BACKSPACE
LOGOUT	RESET

1	2	3	4	5
6	7	8	9	0

Once the crew has selected the language of his convenience he is next asked to enter a valid ID and a password to have access to the CMS system.



The screenshot shows the CMS (Crew Management System) interface. At the top left is the 'CMS' logo. At the top right is a 'LOGOUT' button with a power icon. Below the logo, a welcome message reads 'WELCOME: RAJENDRA KUMAR P'. On the left side, there is a vertical menu titled 'CREW ACTIVITY OPTIONS'. The main area contains a grid of buttons for various functions: 'SIGN ON/SIGN OFF', 'CIRCULAR', 'QUICK', 'ABNORMALITY', 'PERSONAL', 'CHANGE PASSWORD', 'Attended Abnormality', 'Future', and 'Future'.

The following options can be carried out by the crew normally

Read circulars

Read Caution order (Essential before sign ON)

Play Quick

Record Abnormality (Mandatory while sign OFF)

Change password

Crew self service (Crew personnel Information)



The screenshot shows the 'PERSONAL DETAILS' section of the CMS interface. At the top, there is a header bar with 'WELCOME: RAJENDRA KUMAR P' on the left, 'PERSONAL DETAILS' in the center, and 'Date: 31-05-2011 13:04' on the right. Below the header, there are two input fields: 'Crew ID : ABR1234' and 'Crew Name : RAJENDRA KUMAR P'. The main area is divided into four sections: 'Cumulative', 'Last Duty', 'Rests', and 'Due date of courses'. Each section contains several data fields with values. At the bottom, there is a 'BACK' button.

Cumulative		Last Duty	
Total K.M. for month :	0.00	Last Sign Off :	20-10-2010 10:14
Total hrs. for fortnight :	0:0	Last Duty hrs. :	0:0
Monthly Night Duty :	0:00		

Rests		Due date of courses	
Last Night in Bed :	12-09-2010	PME :	20-12-2010
Last Long Hour Rest :	30 / 12-09-2010	Diesel Refresher :	14-08-2013
GRADE :	Not Available	Electric Loco Refresher :	
Last LI Councillng :	00-00-0000	Transportation Refresher :	06-04-2013
Increment Due Date :	01-11-2008	Automatic Signalling :	
Safety Camp :			

The crew can view his personnel information by selecting this option. His can view

His last Cumulative duty Hrs, Kms earned, Last drive km's earned.

Rest particulars like Last Night in bed, Last Long duty Hrs.

Last Duty date.

Last Sign Off Date and time.

ENG DEFECT --

Time: K.M.:

OHE | ENGG | S&T | C&W | SECURITY | TRAFFIC | COMMERCIAL | LOCO

ABNORMAL	BAD RUNNING
BALLAST	BANNER FLAG
BOARD	BRIDGE
BUCKLING	BURST
CATTLE	CAUTION
COCK	DETONATOR
EMERGENCY CAUTION	EXTINGUISHED
NEXT	

1 2 3 4 5 6 7 8 9 0 /

RESET | SAVE | keyboard

Crew can report abnormality observed while he is signing OFF at a KIOSK. He can report abnormality before sign OFF at the KIOSK or immediately after he has signed OFF into the KIOSK. He can not report abnormally while in BOOKED or CALLED status. The crew can report abnormality for :-

TRACK

SIGNAL

OHE

LOCO-DSL

LOCO-ELECTRICAL
OPERATING

Abnormality Attended					Logout
					..
					View previous attended abnormality.
SNo.	Type	Rep. Time	Abm sttn	Description	
1	TRACK	2008-06-05 15:38:23.675608	RTM	TRACK DEFECT -- ABNORAMLITY BALLAST INFRINGEMENT	
		Closing Time		Remarks	
		2008-06-05 16:04:00.0			
SNo.	Type	Rep. Time	Abm sttn	Description	
2	SIGNAL	2008-06-11 13:06:39.102556	RTM	SIGNAL DEFECT-- SIGNAL NO 16 DANGER ON APPROCH	
		Closing Time		Remarks	
		2008-06-14 16:09:00.0		noted	
SNo.	Type	Rep. Time	Abm sttn	Description	
3	TRACK	2008-08-07 10:19:10.979748	RTM	TRACK DEFECT-- ENGG INDICATOR BOARD IMPROPER	
		Closing Time		Remarks	
		2008-08-13 08:21:00.0			
SNo.	Type	Rep. Time	Abm sttn	Description	
4	TRACK	2009-05-19 14:20:27.462419	RTM	TRACK DEFECT-- CDEFGHIJK	
		Closing Time		Remarks	
		2009-05-21 14:42:00.0			

This screen makes the crew informed of the abnormalities that have been attended

CREW SUMMARY OF CIRCULARS

Back

WELCOME

Date : 31-5-11 13:35

Safety (0)Unread Message	Date	Description	☐ View only read
Tech (Elec) (0)Unread Message			
Tech (Mech) (0)Unread Message			
Others (0)Unread Message			

Circulars are the document for giving various type of information to the Crew primarily aimed at improving the train operation efficiency, safety etc. Crew has to essentially read circulars issued by the controlling authorities at the earliest. The information regarding the circulars is entered by the TNC.

CREW SIGN ON

Logout

WELCOME : VIJAY KUMAR .HS

Welcome In Crew Management System

Crew ID :UMB1212 - Head Quarter: UMB

You are boarding the train with following particulars :

Loco No		DutyType	WR
TrainNo		ServiceType	FGHT
ToStation	TKD	SignOnTime	27-05-2011 11:01

☐ I am carrying 2 set of Spectacles

☒ I agree with the personal detail displayed

signon

CANCEL

The crew signs ON a crew console or the KIOSK. For Crew sign ON the crew must have been given a call and he must have acknowledged the call. He shall be essentially required to see the caution order of the section, confirm that he is carrying specs in case he has to wear one, confirm that he has done the BA test. In case the crew has not read more than 15 circulars he shall be required to read them before he is allowed to sign ON.

Application Flow

CREW SIGN OFF
[Logout](#)

WELCOME: ARUN KUMAR
Crew ID: UMB7008 Head Quarter: UMB

Route : BTI-UMB-DUI

YOUR JOURNEY PARTICULARS SHALL BE

From BTI	To UMB
Loco No 	DutyType WR
TrainNo 2 UB PASS	ServiceType COCH
SignOffTime 30-05-2011 13:22	← →

I WILL TAKE REST

☒ NORMAL REST

☐ 22 HOUR

☐ 30 HOUR

If you have done any Shunting Enroute click here [Shunting Details](#)

☒ I agree with the personal detail displayed

☐ I'm entitled to get accident allowance.

Manual Normal CANCEL

The crew who signs Signs OFF on a crew console must have signed on into the CMS system on a KIOSK and his sign ON should have been approved by the sign ON station supervisor.



ENGG DEFECT --

Time KM

OHE	ENGG	S&T	C&W	SECURITY	TRAFFIC	COMMERCIAL	LOCO.	Logout
ABNORMAL				BAD RUNNING				
BALLAST				BANNER FLAG				
BOARD				BRIDGE				
BUCKLING				BURST				
CATTLE				CAUTION				
COCK				DETONATOR				
EMERGENCY CAUTION				EXTINGUISHED				
								NEXT

1 2 3 4 5 6 7 8 9 0 /

RESET SAVE keyboard

Crew can report abnormality observed while he is signing OFF at a KIOSK. He can report abnormality before sign OFF at the KIOSK or immediately after he has signed OFF into the KIOSK. He can not report abnormally while in BOOKED or CALLED status. The crew can report abnormality for :-

- TRACK
- SIGNAL
- OHE
- LOCO-DSL
- LOCO-ELECTRICAL
- OPERATING

SIGN OFF



This is the sign off screen.

After signing off, the Kiosk page is automatically diverted to home page.

2.

Sign-ON & Sign-OFF through Mobile App (CHALAK DAL)

1. Sign-ON & Sign-OFF through Mobile App (CHALAK DAL) can be done for the Lobbies to be enabled for Mobile App Sign On/Off by CRIS Console.
1. CMS application has also been modified by providing two additional module viz. Permit Sign-On (App) & Permit Sign-Off (App) under Supervisor Console from where supervisor can grant permission to crew for Sign ON and Sign OFF through Mobile App.
2. Geofencing of lobby locations have been enabled in mobile App based on Geo-fencing of station in FOIS.
3. On getting approval from the concerned lobby supervisor, **Crew can sign on and sign off through Mobile App only when he is within the geo-fencing range.**
4. Further flow of sign on and sign off process will be the same as that of CMS Kiosk.

CMS photos to be included

2.8

CHECKS OF VARIOUS REGISTERS

After turning up on duty the Assistant Loco Pilot shall before taking over charge of the loco/train shall go through the different registers like Appearance Register, Spectacle Register (if pass with glass), General Order Book, Safety & Technical Circular Book, Learning Road Register, etc. and sign them.

LESSON 3

ASSISTANT LOCO PILOT'S DUTIES AT SHED/POOLING POINT

3.1.

DUTIES WHILE TAKING OVER CHARGE

Before taking over charge the Assistant Loco Pilot should check his Loco Pilot's name, train number, loco number, whether the loco is to be taken out from shed or it is yard pulling.

After this he must ensure that the loco, which is to be taken over charge, is standing under catenary and all wheels are on the rails. Check the intactness of all visible mechanical parts, sand boxes to be filled up with sand, all the drain cocks are closed and cut out cocks open, check oil levels of gear cases, suspension bearings, compressors, transformer and GR. Check the intactness of spare fuses, position of earthing switches, rotating switches, relay cover etc. and assist his Loco Pilot in preparation of the locomotive. He should also go through the locomotive logbook for attention of previous bookings, check the battery voltage.

“The loco logbook provides the Loco Pilot with guidelines, which helps him in a great deal in taking corrective measures. Only after going through the loco log book the Loco Pilot can get idea about the status of the locomotive and may take action likewise.”

He should drain out moisture from the main reservoir, clean the loco driving cab and look out glasses. He should check the availability of the Safety items like portable telephone, fire extinguisher, detonators, spare head light bulb etc.

3.2

READING THE LOCO LOG BOOK

The loco logbook provides the Loco Pilot with guidelines, which helps him in a great deal in taking corrective measures. Only after going through the loco log book the Loco Pilot can get idea about the status of the locomotive and may take action likewise. So on taking over charge, before energising the loco, the Loco Pilot must go through the logbook booking first.

3.3

CHECKS TO BE DONE BEFORE TURNING OUT FROM SHED

While to take out a locomotive from shed, the Assistant Loco Pilot shall turn up on duty at specified time, sign the signing on and other registers, order books and circulars, read the loco logbook, and go through the breathalyzer test .

Then he shall go through the log book, checking of braking system, mechanical equipments, panel board, switch position etc. and help the driver in getting the locomotive prepared for handing over to the traffic for train service.

3.4

PROCEDURE FOR TAKING OUT A LOCO FROM SHED

After the complete preparation of the locomotive the loco is required to be handed over to the traffic for train services by giving ready report of the locomotive. Ready report is required to be given by exchanging private number. After the ready report is given, the Loco Pilot has to wait for the signal (where provided) to be given or a 'Traffic Pilot Man' to come. When the signal is taken 'OFF' or the Pilot Man turns up on the engine before starting, the Loco Pilot must ensure that everything is ready for the engine to start, all points have been correctly set and locked and correct departure signal/ shunt signal is taken 'OFF' or the traffic Pilot Man show proceed hand signals. On getting the signal to start the Loco Pilot shall start his engine and proceed cautiously for making EOT (Engine on train).

3.5

CHECKS ON LOCOMOTIVE AT YARD/POOLING POINT

The Assistant Loco Pilot shall check the following at yard/pooling point: . -
The loco is under the OHE and all wheels are on rail. Temperature of axle boxes to be normal. Intactness of bogie frame, equalizing beam, suspension spring suspension bearing, helical spring etc.

Intactness of speedometer transmitter, sand brackets with nozzles, working of sanders, intactness of both sides CBCs, TSCs, locking pins, position of B.C. isolating cocks, working of blowers, oil levels of equipment's, working of sanders, head light, marker light, flasher light etc.

In addition to the above he shall check the working of cab horns and wipers and intactness of spare fuse, relay cover n seal, fire extinguishers, wooden wedges etc.

3.6

DUTIES WHILE ON RUN

While on run the Assistant Loco Pilot shall call out the aspect and name of the signals to the Loco Pilot loudly pointing out the signals, call out the approaches of speed restriction imposed on the permanent way. Repeat different electrical warning boards, engineering signals and boards. He shall

sound the engine whistle from 'W' , "W/L" and R/W/L boards till the affected place or level crossing is passed. The Assistant Loco Pilot shall note down the intersection timings in the Loco Pilot's note book,

look forward on the line he is running and also on the adjacent line and OHE for any obstruction or abnormality. He shall look back frequently in curvature to check for any abnormality on train. While passing a manned level crossing he must be vigilant and notice whether any danger signal being shown until the full train crosses the

gate. He shall exchange signal with station master, cabin man when they are in front of each other and he shall exchange signal with the guard at the time of starting from a station, while starting after stopping outside the station limit and also when the last vehicle is passing over the outer most trailing point or quitting the yard.

3.7

COUPLING OF LOCO, SCREW COUPLING AND CBC

Electric locomotives are provided with two kinds of coupling one in the same assemblies. CBC i.e. centre buffer coupling is provided for coupling with CBC trailing stock and TSC i.e. Transition Screw coupling for TSC trailing stock. While taking over charge of the loco, it is to be ensured that CBC and TSC with all its accessories are intact, specially the locking device and locking key of the CBC.

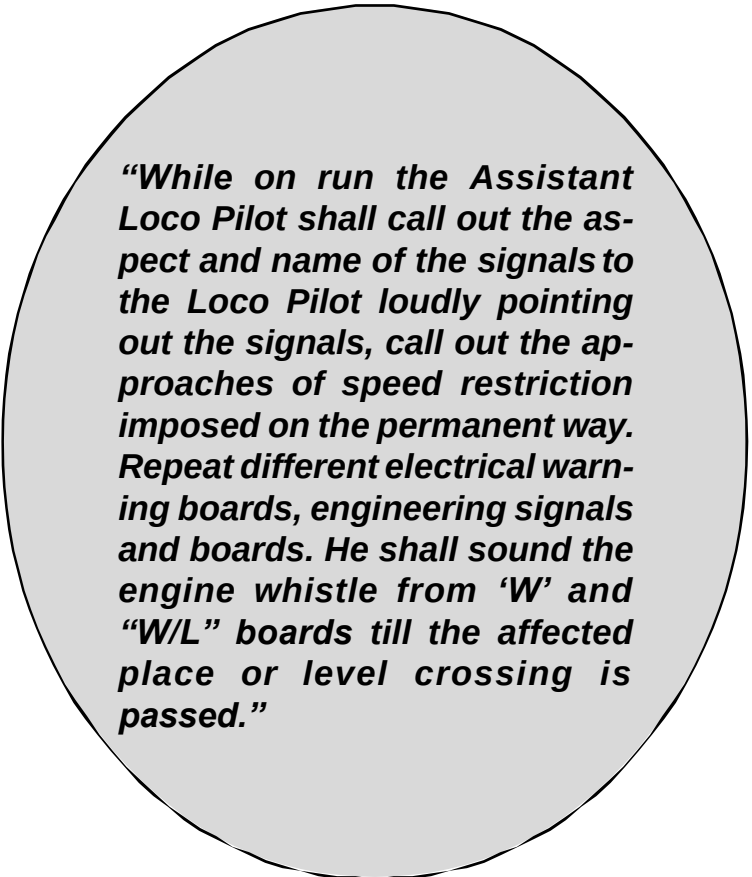
3.8

DUTIES ON HANDING OVER CHARGE

a) HANDING OVER CHARGE ON LINE

When handing over charge to the out going Loco Pilot, the in coming Loco Pilot shall apprise the out going Loco Pilot about the condition of brake power and nature and behavior of the train, amount of BP pressure on the engine gauge, nature of any defect with the engine or the train, book loco repairs if any in the loco logbook. He shall also hand over the train BPC and caution order (if required) to the out going Loco Pilot.

b) STABLING A LOCO IN YARD



"While on run the Assistant Loco Pilot shall call out the aspect and name of the signals to the Loco Pilot loudly pointing out the signals, call out the approaches of speed restriction imposed on the permanent way. Repeat different electrical warning boards, engineering signals and boards. He shall sound the engine whistle from 'W' and "W/L" boards till the affected place or level crossing is passed."

When the loco is required to be stabled in yard, the Loco Pilot shall take the following actions:

He shall stop the loco by clearing the fouling mark applying the loco brake, then open DJ. Lower panto and put HBA on "0" (OFF). He shall then book the loco repair in the loco logbook, close all the doors, shut the windows, keep the loco keys and loco logbook on the Loco Pilot's desk, apply loco hand brakes and then lock the door. He shall then place skid/wooden wedge or sprag on the wheel to prevent rolling down.

Follow SR 5.23.01 A&C 87.

When the engine (s) of a train which has arrived at a station is/are detached or continue to remain on load in shutdown condition, following precautionary measures shall be taken so as to prevent rolling down.

i) Station Masters shall ensure that hand brakes of least six vehicles at each end of the rakes and of all the wagons, if the number is less than 12, are firmly pinned down by the incoming ALP at the engine end and the incoming Guard at the Brake van/ Match Truck end of the train. In addition, the train brake (A-9) and the hand brake of the engine (if Attached) shall be applied and the wooden wedges available in the engine shall be put under the wheel of the engine by the LP/ALP and also the hand brake of the brake van shall be pinned down by the Guard. In case of coaching vehicles in similar circumstances, it shall be ensured that the air/vacuum brakes are applied and holding effectively, failing which Guard's hand brake shall be applied. The train crew and the Guard shall personally ensure this and certify jointly in a written memo for having complied the same before they leave the train.

LESSON 4

GR & SR SOME DEFINITIONS

4.1

INTRODUCTION TO SAFE WORKING RULES

Safe working rules means the rules, which are required to be observed for working safely. Railway system is a transportation network and a very large transportation network, so unless some rules are formulated, the system can not function safely. The rules that have been formulated for the safe operation and management of Railway transportation network are called Railways safe working rules.

These rules have been contained in a book called the "INDIAN RAILWAYS (OPEN LINE) GENERAL (AMMENDMENT) RULES-2011". These rules are of two kinds- General rules or GR and

4.2

BASIC DEFINITION AND CONCEPTS

Adequate Distance- GR 1.02

Means the distance sufficient to ensure safety.

Authority to Proceed - GR 1.02(6)

Means the authority given to the Loco Pilot of a train, under the system of working, to enter the block section with his train.

Block Station - GR 1.03(2)

Block station are those at which the Loco Pilot must obtain an authority to proceed under the system of working to enter the block section with his train.

Block Section -GR 1.02(10)

Means that portion of running line between two block stations on to which no running train enter until line clear has been received from the block station at the other end of the block section.

Competent Railway Servant - GR 1.02(14)

Means a railway servant duly qualified to undertake and perform the duties entrusted to him.

Centralised Traffic Controls -GR 1.02(11)

Means a system by which the working of trains over a route, to which the system applies, is governed by fixed signals remotely controlled from a designated place.

Controller- GR 1.02(16)

Means a railway servant on duty who may for the time being be responsible for regulating the working of traffic on a section of a railway provided with the system of speech communication.

Day -GR 1.02(17)

Means from Sunrise to sunset

Loco Pilot -GR 1.02(19)

Means the engine loco pilot or any competent railway servant who may for the time being in charge of driving a train

Direction of traffic: -GR 1.02(18)

Means on a double line, the direction for which the line is signalled. On a single line, the direction for the time being established under the System of working to allow trains to move in that direction.

Facing and Trailing Point -GR 1.02(21)

Points are facing or trailing in accordance with the direction a train or vehicles moves over them. Points are said to be facing points when by their operation a train approaching them can be directly diverted from the line upon which it is running.

Fixed Signal -GR 1.02(22)

Means a signal of fixed location indicating a condition affecting the movement of a train and includes a semaphore arm or disc or fixed light for use by day and for use by night.

Fouling Mark-GR 1.02(23)

Means the mark at which the infringement of fixed standard dimensions occurs, where two or more lines cross or join one another.

Gateman -GR 1.02(26)

Means a competent railway servant posted at a level crossing for working the gate.

Gangman -GR 1.02(24)

Means a railway servant employed on permanent way or work connected there with.

Guard -GR 1.02(28)

Means the railway servant in charge of a train and includes a Asst. guard or any other railway servant who may for the time being be performing the duties of a Guard.

Goods Train - GR 1.02(27)

Means a train (other than a material train) intended solely or mainly for the carriage of animals or goods.

Intermediate Block Post - GR 1.02(31)

Means a class "C" station on a single line or double line or multiple line remotely controlled from the block station in rear.

Intermediate Block Signaling:- GR 1.02(32)

Means an arrangement of signaling on a single line or double line or multiple line in which a long block section is split into two portions each constituting a separate block section by providing an Intermediate Block post.

Last Stop Signal-GR 1.02(34)

Means the fixed stop signal of a station controlling the entry of trains into the next block section.

Line Clear- GR 1.02(37)

Means the permission given from a block station to a block station in rear for a train to leave the later and approach the former or the permission obtained by a block station from a block station in advance for a train to leave the former and proceed towards the later.

Material Train -GR 1.02(39)

Means a departmental train intended solely or mainly for carriage of railway materials when picked up or put down or for execution of works either between stations or within station limits.

Mixed Train -GR 1.02(40)

Means a train intended for carriage of passenger and goods or of passengers, animals and goods.

Multi Aspect Signaling -GR 1.02(41)

Means a signaling arrangement in which signal display at any one time, any one of the three or more aspects and in which the aspect of every signal is pre-warned by the aspect of previous signal or signals.

Night -GR 1.02(42)

Means from Sunset to sunrise

Obstruction -GR 1.02(43)

It cognate expressions included a train, vehicle or obstacle on or fouling of line, or any condition, which is dangerous to trains.

Passenger Train - GR 1.02(45)

Means a train intended solely or mainly for the carriage of passengers and other coaching traffic and includes a troop train.

Point and Trap Indicators -GR 1.02

These are not signals but are appliances fitted to and working with points to indicate by day or by night the position in which the points are set.

Running Train -GR 1.02(48)

Means a train that has started under an authority to proceed and has not completed its journey.

Running Line -GR 1.02(47)

Means the line governed by one or more signals and include connections, if any used by a train when entering or leaving a station or when passing through a station or between stations.

Station -GR 1.02(51)

Means any place on a line of railway at which traffic is dealt with or at which an authority to proceed is given under the system of working.

Shunting -GR 1.02(49)

Means the movement of a vehicle or vehicles with or without an engine or of any engine or any other self-propelled vehicle for the purpose of attaching, detaching or transfer or for any other purpose.

System of Working -GR 1.02(56)

Means the system adopted for the time being for working of trains of any portion of a railway.

Special Instruction -GR 1.02(50)

Means instructions issued from time to time by the authorised officer in respect to particular case or special circumstances.

Train Examiner -GR 1.02(59)(JE/SE/SSE of C&W)

Means a railway servant duly qualified to examine trains and certify their fitness for safe running and includes any other railway servant who may for the time being performing the duties of a train examiner.

Two Aspect signaling -GR 1.02(60)

Means a signaling arrangement in which each signal display at any one time either of the two aspects.

4.3

Difference between GR & SR

	GR	SR
1	Formed by railway board on behalf of Govt. of India.	Formed by authorised officer of individual zone on behalf of G.M.
2	Applied to all I.R.	Applied to that railway who forms them.
3	Revised by railway board only.	Revised by authorised officer.
4	The object of this rule is to regulate working and management of I.R.	The object of this rules is to supplement , clarify and simplify the G.R.
5	Being applicable to all railways they lay down basic principle of safety and do not deals with details.	Being applicable to individual railway they are framed to suit the local condition of particular railway as such to ensure greater safety.
6	Serially numbered and printed in bigger letter.	Printed below the G.R. and are in smaller letters.

4.4

DIFFERENCE BETWEEN “TRANSPORTATION AND OPERATION”

The word transport has its roots in the Latin word “Transportare” which actually is a combination of two words and means to carry across or from one place to another. So, in other words transportation means to carry men, live stock and material from one place to another to help achieve optimal utilisation of country’s resources.

‘Transport’ can be regarded as consisting of 3 elements-1)Track over which movement can take place 2) Means of loco, motion and carriage and; 3) Arrangements to be made for beginning and ending of journey, collection and distribution, loading and unloading of Tariffs be it freight or passenger in a safe or economic way.

But the operation means the process or method of working to achieve the above, in which different departments may involve but under the single control of a particular department called operating department or traffic dept. This department is involves in working of station and various trains with freight operation (FIOS), passenger train operation (ICMS), control organization, operating statistics and many more, which consists OPERATION.

4.5

OVERVIEW OF INDIAN RAILWAY ACT’ 1989 AND AMENDED 2005

Under section 101(b) of the Indian Railways Act (ix of 1989) all Railway servants on the Railway are bound by the General (Amendment) Rules as well as the Subsidiary Rules, Manuals and special instruction. They must make themselves fully acquainted with all these rules and instruction and any revisions made from time to time.

LESSON 5

SIGNALS

5.1

INTRODUCTION

The first train of the world did not have the benefit of signal. Two policeman on horses were sent ahead to clear the way, later on police man's arms was used as signal and the semaphore arm signal is obtained its shape from the function of arm of the traffic signal man

OBJECT OF SIGNALING

- i) To prevent a running train to come into contact with another train or obstruction and thus to provide safety to passenger, the staff and the rolling stock.
- ii) To facilitate the flow of traffic and to increase the carrying capacity of the track.

GENERAL USE OF SIGNAL (GR 3.01)

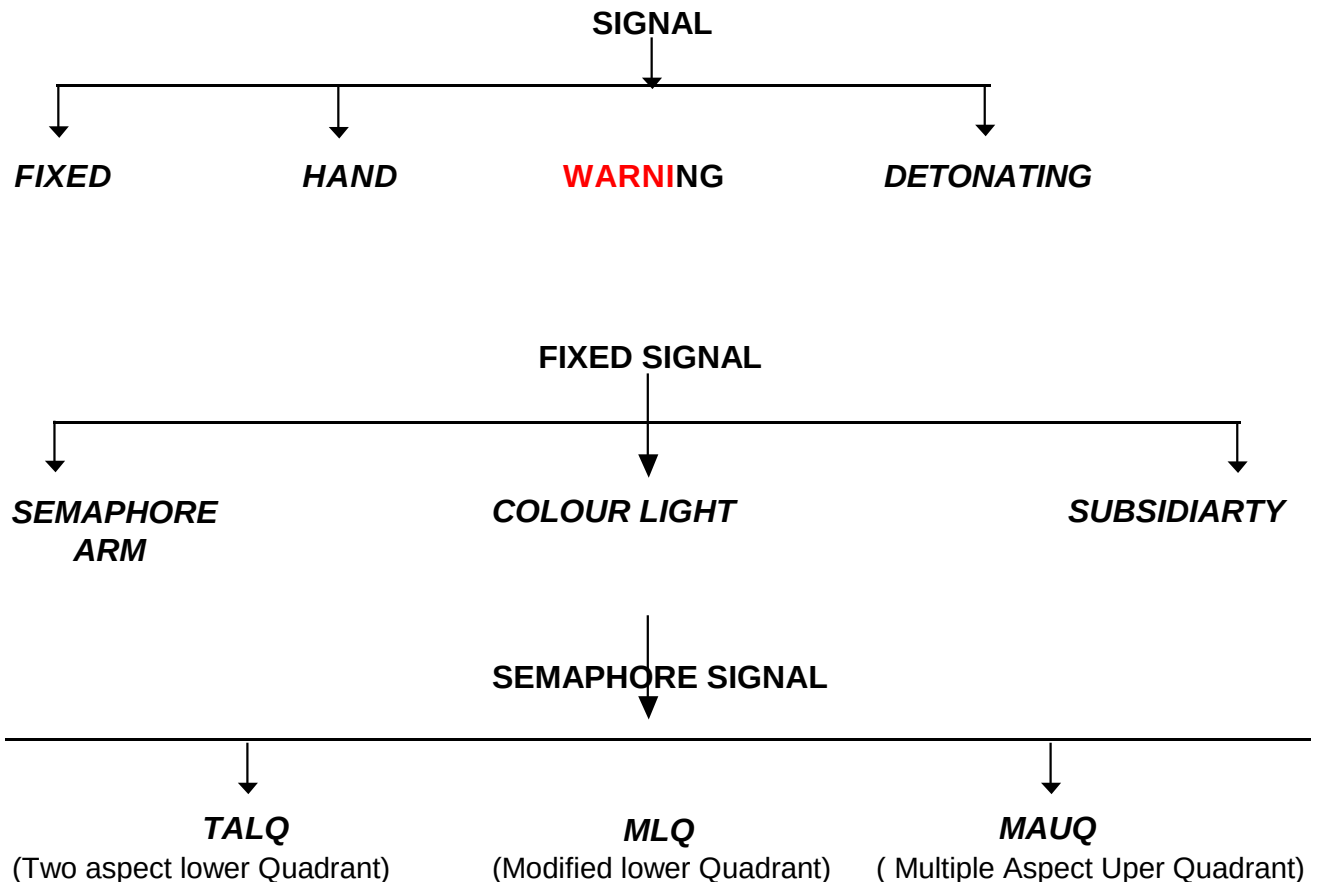
The signals prescribed in these rules shall be used for controlling the movement of trains in all cases in which exceptions are not allowed by approved special instruction.

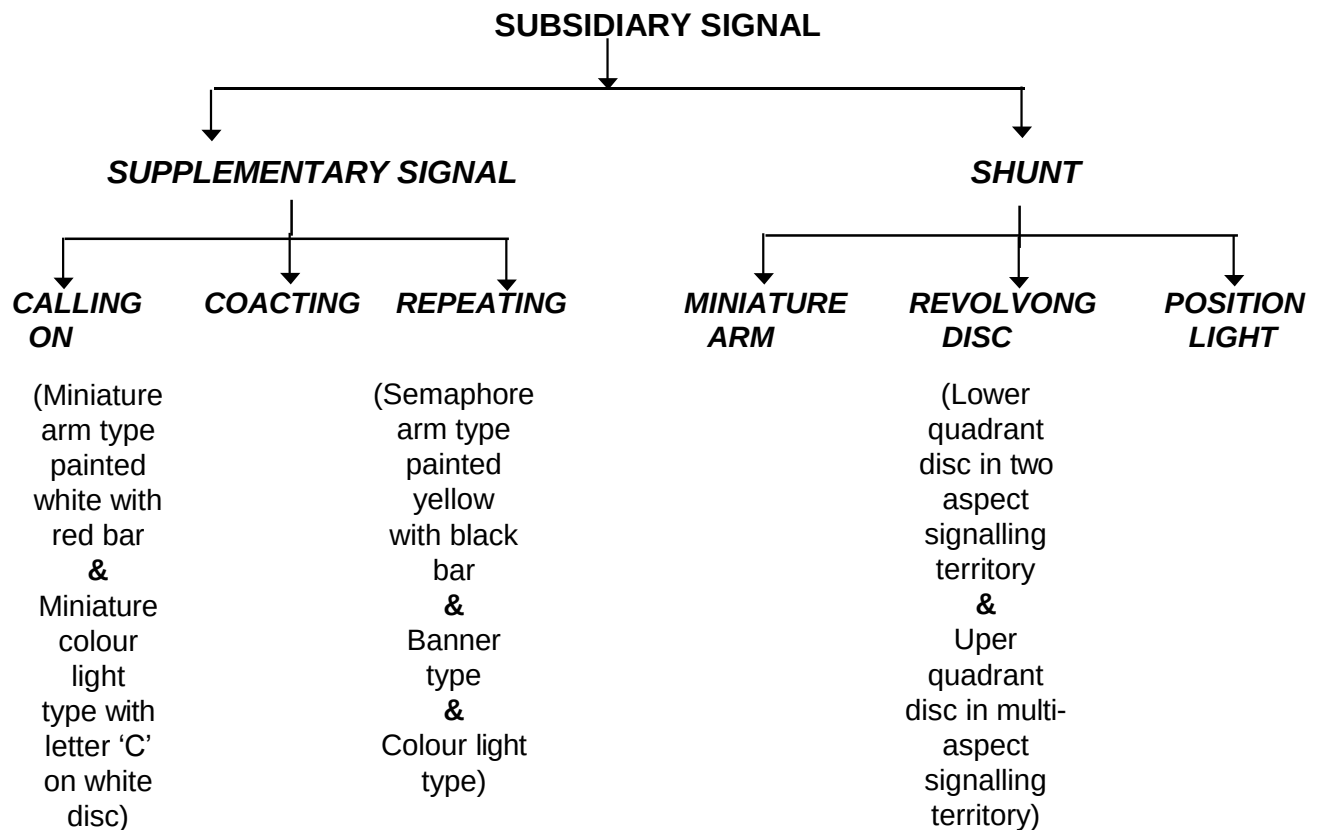
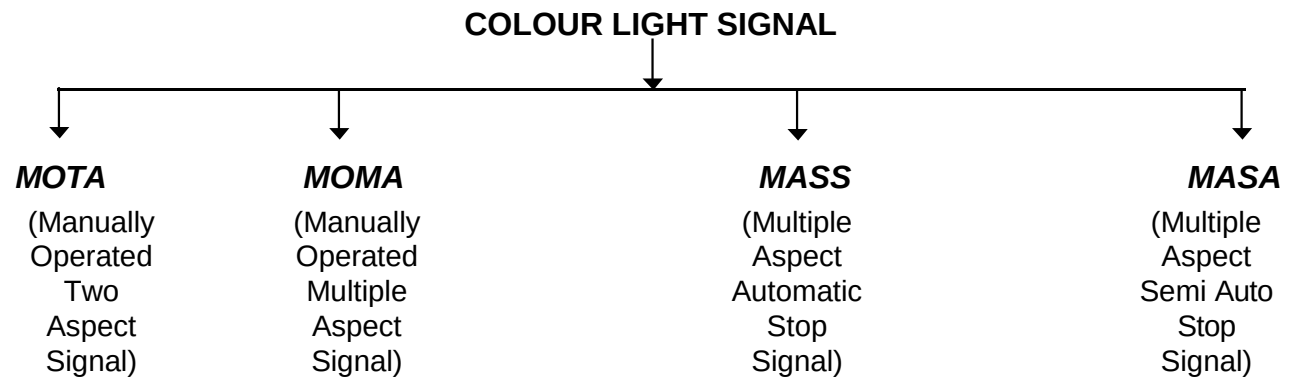
5.2

KINDS OF SIGNALS (GR 3.02)

The signals to be used for controlling the movement of trains shall be

- i) Fixed signals
- ii) Hand Signals
- iii) Detonating signals
- iv) Warning signal





5.3

ASPECTS AND INDICATION OF SIGNALS

The “OFF” position of a semaphore signal shall be displayed by day by the inclined position of arms from 45° or 60° below the horizontal position in case of two aspect lower quadrant (TALQ) signal and 45° to 90° above the horizontal position in case of multi aspect upper quadrant (MAUQ) signal. The aspect of colour light signals shall be displayed by the light or lights by the day and by the night.

ASPECT AND INDICATION OF COLOUR LIGHT SIGNALS

LIGHT	ASPECT	INDICATION
Red	STOP	Stop dead
Single Yellow	CAUTION	Be prepared to stop at next stop signal
Double Yellow	ATTENTION	Proceed and be prepared to pass next signal at such restricted speed as may be prescribed by special instructions.
Green	PROCEED	Proceed with maximum permissible speed.

WARNER SIGNAL (GR. 3.06)

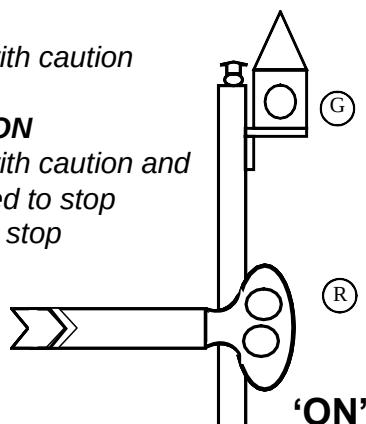
- i) A semaphore Warner signal has a fish tailed arm painted red with white bar
- ii) A Warner signal is intended to warn a Loco Pilot
 - a) About the condition of block section ahead
 - b) He is approaching a stop signal
- iii) When a Warner signal placed below a stop signal, it cannot be taken OFF while the stop signal above it is in ON position.
- iv) A Warner signal on a post by itself shall be located at an adequate distance in the rear of stop signal, the aspect of which it pre-warned provided that when such a Warner signal applies to a gate stop signal, it shall not be display “proceed” aspect, unless there is adequate distance between gate stop signal and the first stop signal of the station ahead and this adequate distance shall not be less than 1200 meter

ASPECT

Proceed with caution

INDICATION

Proceed with caution and be prepared to stop at the next stop signal.

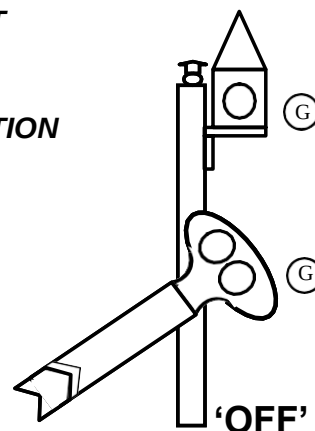


ASPECT

Proceed

INDICATION

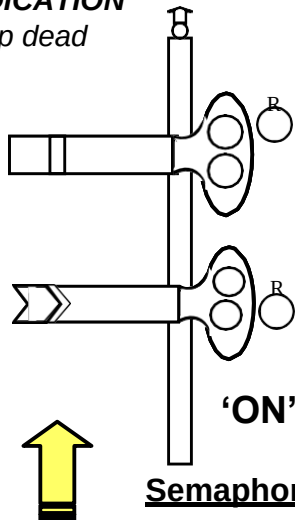
Proceed



Semaphore Warner signal in TAST - on a post by itself

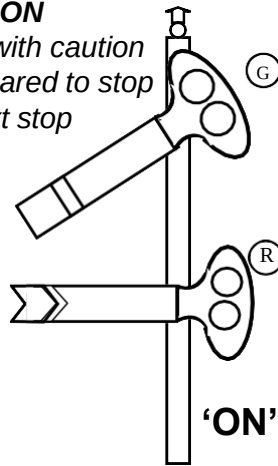
ASPECT
Stop

INDICATION
Stop dead



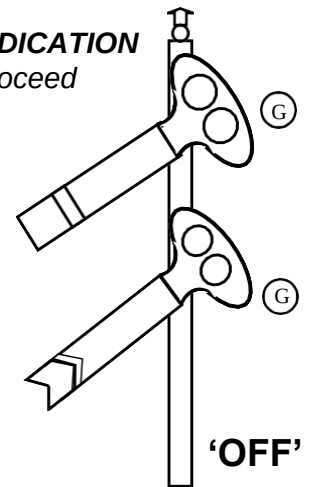
ASPECT
Proceed with caution

INDICATION
Proceed with caution
& be prepared to stop
at the next stop
signal

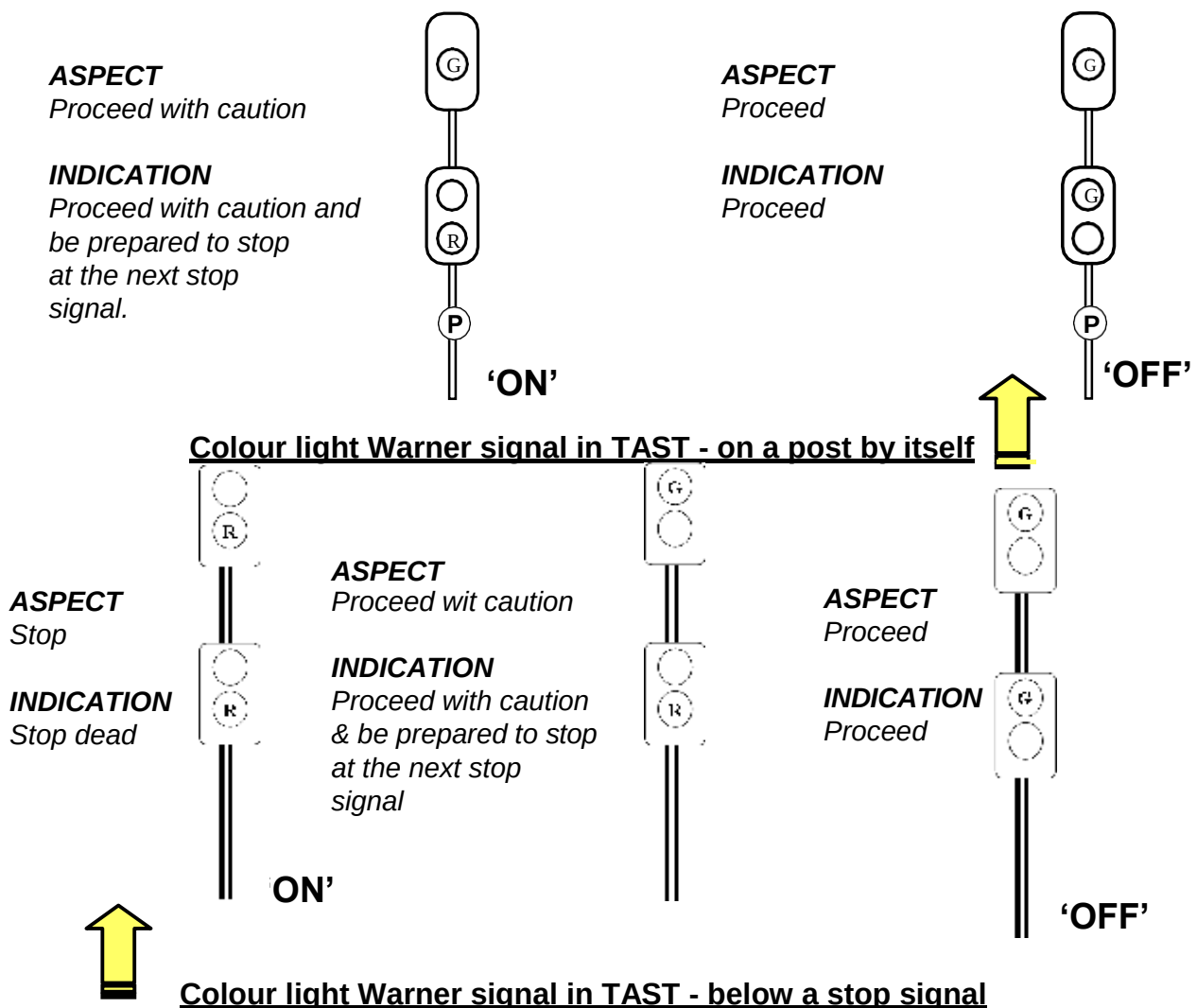


ASPECT
Proceed

INDICATION
Proceed



Semaphore Warner signal in TAST - below a stop signal



NOTE:

- On a double line "B" class station in TAST, a Warner signal shall be provided below the outer signal. If train runs through stations at 50 kmph without stopping.
- A colour light Warner signal when placed on a post by itself a letter "P" on white circular disc is provided. Letter "P" will be in black colour.
- A Warner signal may be placed either:
 - On a post by itself with a fixed green light 1.5 meters to 2.0 meters above it by night
 - On the same post below the first stop signal or the last stop signal.

DISTANT SIGNAL (G.R. 3.07)

- A distant signal is a permissive signal, which shall be placed at an adequate distance in the rear of stop signal, the aspect of which is pre-warned.
- A distant signal indicates the Loco Pilot
 - The condition of signalling section ahead
 - That he is approaching a stop signal
- The distant signal may be
 - A semaphore arm type is provided in multiple upper quadrants signalling territory
 - Multi-aspect colour light type provided with a letter 'P' in black on white circular disc.
- Where necessary two distant signals may be provided. The outermost signal will be called as distant signal and shall be placed at 2 KMs. from the first stop signal and the second signal shall be called inner distant and shall be placed at a distance of 1 km from the first stop signal.

- v) A colour light distant signal may be combined with last stop signal or with the gate stop signal. In such case the "P" marker shall be dispensed with.
In case of combination of signals, the indication shall be as under :-

Gate cum Distant signal:-

- ▷ When the LC gate is open to road traffic – **RED**
- ▷ When the LC gate is closed to road traffic and train is required to stop at the home signal – **YELLOW**
- ▷ stop at the main line starter or Loop line starter or is required to pass through via loop line – **DOUBLE YELLOW**
- ▷ When the LC gate is closed to road traffic and train is required to pass run through via main line - **GREEN**

IB signal cum Distant signal:-

- ▷ When the block section ahead not clear – **RED**
- ▷ When the train is required to stop at the home signal of station ahead – **YELLOW**
- ▷ When the train is required to stop main line starter or Loop line starter or is required to pass through via loop line – **DOUBLE YELLOW**
- ▷ When the block section ahead is clear and train is required to pass run through via main line - **GREEN**

Last stop signal cum Distant signal of LC Gate:-

- ▷ When the line clear has not been obtained from the station in advance – **RED**
- ▷ When the line clear has been obtained and the LC gate is open to road traffic – **YELLOW**
- ▷ When the line clear has been obtained and the LC gate is closed to road traffic – **GREEN**

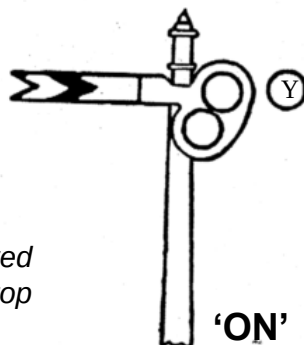
Last stop signal cum Distant signal of IB signal:-

- ▷ When the block section ahead not clear for an adequate distance beyond intermediate block signal (IBS)– **RED**
- ▷ When the block section ahead clear for an adequate distance beyond intermediate block signal (IBS) and train is required to stop at IB signal – **YELLOW**
- ▷ When the train is required to pass run through IB signal – **GREEN**

Semaphore Distant signal in TAST

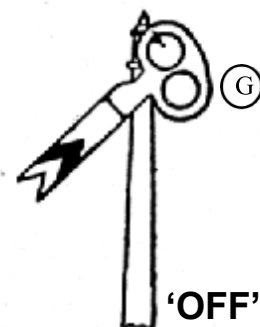
ASPECT
Caution

INDICATION
Proceed & be prepared
to stop at the next stop
signal



ASPECT
Proceed

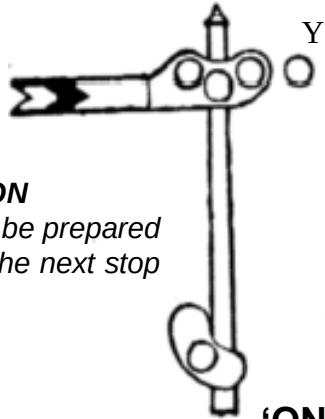
INDICATION
Proceed



Semaphore Distant signal in MAST

ASPECT
Caution

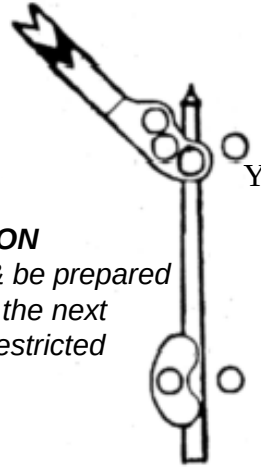
INDICATION
Proceed & be prepared
to stop at the next stop
signal



'ON'

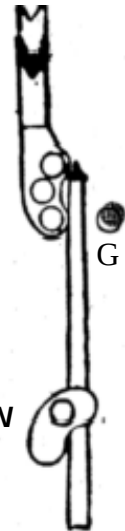
ASPECT
Attention

INDICATION
Proceed & be prepared
to **pass** at the next
signal at restricted
speed



ASPECT
Proceed

INDICATION
Proceed

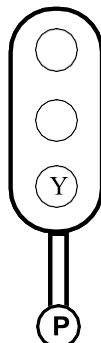


'OFF'

Colour Distant signal in MAST

ASPECT
Caution

INDICATION
Proceed & be prepared
to stop at the next stop
signal



'ON'

ASPECT
Attention

INDICATION
Proceed & be prepared
to pass the next signal
at restricted speed



ASPECT
Proceed

INDICATION
Proceed



'OFF'

A&C no. 86.

Distant signal aspects have been changed in single distant section only as ---

1) Aspect of attention = Indication = Proceed and be prepared to pass next signal at such restricted speed as may be prescribed by special instructions. Train is being admitted on main line and may be stopped at starter signal or admitted on loop line and may be stopped at starter or pass through via loop line.

2) Aspect of proceed = Indication = Proceed, Block section ahead is clear. Train is to run through via main line.

NB:

1) The change in aspect and indications of distance signal shall be applicable for single distance territory in absolute block system only

2) The aspect and indication of distant and inner distance signal in double distant territory shall remain unchanged.

3) There will be no change in aspect and indication of distant signals provided before the gate stop signal and IB signals in both single as well as double distant territory.

STOP SIGNAL (GR 3.08)

- i) Semaphore arm type stop signal shall be square ended arm and is painted in red with white bar.
- ii) Semaphore arm type stop signal shall be provided in TAST & MAST
- iii) Colour light type stop signal shall be provided in TAST and MAST. Multi-aspect colour light stop signal may be in three or four aspect. (See description with illustration in next page)

KINDS OF FIXED STOP SIGNALS FOR APPROACHING TRAIN (GR 3.09)

The stop signal, which controls movement of trains, approaching a station, are of three kinds

- (a) Outer signal (b) Home signal & (c) Routing signal

OUTER SIGNAL

The outer signal where provided is the first stop signal of a station and is located at an adequate distance outside the point up to which line may be obstructed after line clear has been granted to or obtained by the Station in rear.

HOME SIGNAL:

The home signal is the first stop signal of a station at which an outer signal is not provided and the second stop signal of a station at which an outer stop signal is provided. It shall be located outside all connections on the line to which it refers. (Placement/Adequate distance).

ROUTING SIGNAL:

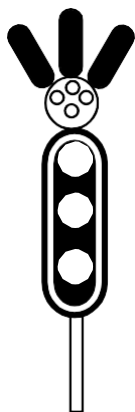
The routing signal is a signal used to indicate to a Loco Pilot which of two or more diverging route is set for him. When the home signal, is in consequence of its position, inconvenient for this purpose.

ROUTE INDICATORS:

Route indicators are of three types:

- (a) Junction type (b) Multiple Lamp type (c) Stencil type

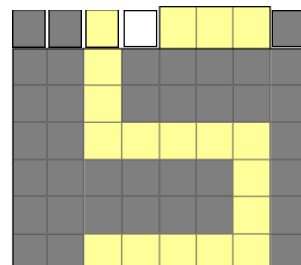
JUNCTION TYPE:



These are provided in colour light signal only. There will be row of five white bulbs, which refer to the line. The row of white bulb will be equal to the number of loop lines (any deviation of the above state ment may please refer station working rule of particular station) when the signal is taken OFF, for loop line then particular row of lunar will glow with caution aspect i.e. Yellow. Minimum three bulbs out of five should glow; otherwise that signal shall be treated as defective.

MULTIPLE LAMP TYPE:

It can be provided in both semaphore arm and colour light signal. Horizontal and vertical rows of bulbs are arranged in a box. When a route is set for a particular line and signal is taken OFF, the bulbs will glow to form a number to indicate line.



STENCIL TYPE:

It may be provided in both semaphore and colour light. It is a box in which various stencils are set for Alphabet letters with lights when the route is set for any line and the signal is taken "OFF", the particular letter will glow.



KINDS OF STOP SIGNALS FOR DEPARTURE OF A TRAIN (GR 3.10)

The stop signal, which controls the movement of a train leaving a station, are called departure stop signal. They are of two kinds:

- (i) STARTER
&
- (II) ADVANCE STARTER

STARTER:

When a train leaving a station is guided by only one starting signal, which is called the last stop signal of the station is known as starter.

ADVANCE STARTER:

When a train leaving a station is guided by more than one starter signal, the outermost starting signal is the last stop signal of the station, and is called the advance starter.

LAST STOP SIGNAL (S.R. 3.10.01)

Where there is no advance starter, the starter is the last stop signal of a station. At "C" class stations, in the absence of a starter, the home signal is the last stop signal.

KINDS OF STOP SIGNAL IN AUTOMATIC BLOCK TERRITORY (GR 3.12)

i) AUTOMATIC STOP SIGNAL

It is the signal, which is not dependent upon manual operation but is controlled automatically by the passage of a train into through and out of the automatic block signaling section.

ii) SEMI-AUTOMATIC STOP SIGNAL

A semi automatic stop signal which is capable of being operated either as an automatic stop signal or as a manually stop signal, as required.

iii) Modified semi automatic stop signal

by converting one of the automatic stop signal in mid section under spl. instructions. (A&C 81).

iv) A manual stop signal

Operated manually, which cannot work as an automatic or semi automatic stop signal.

NOTE:

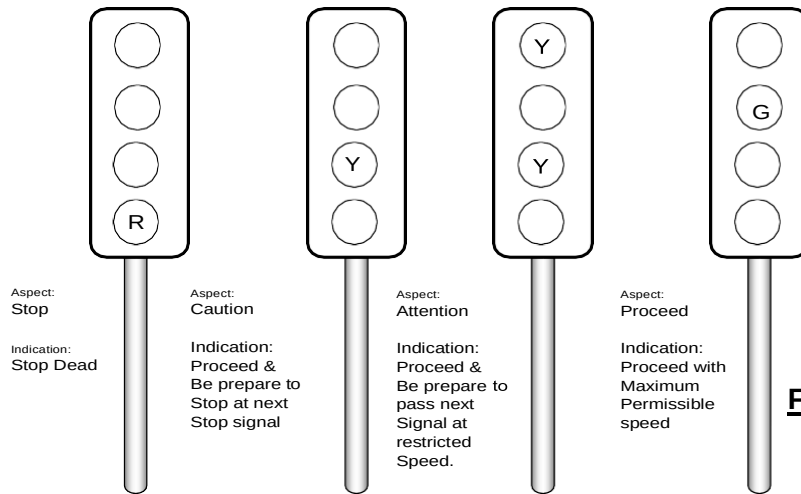
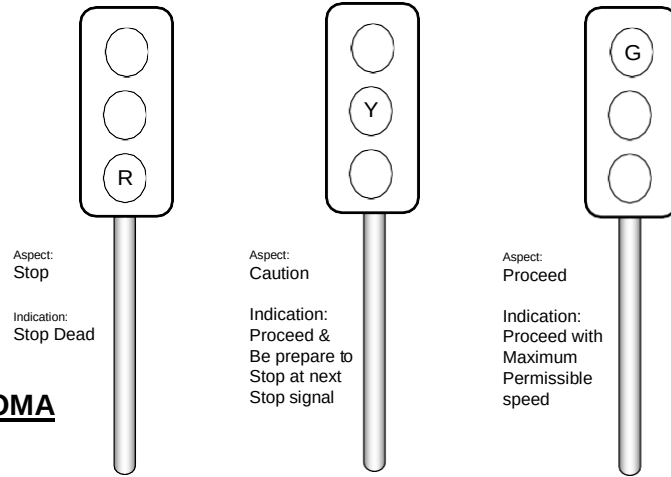
- a) Automatic stop signal shall be provided with a letter "A" in black on white circular disc.
- b) Semi-automatic stop signal shall be provided with illuminated "A" on the black background. When "A" marker is illuminated, it works as an automatic signal, when "A" marker is extinguished; it works as manual stop signal.
- c) When a semi-automatic signal works as an automatic stop signal, it assumes "ON" and OFF" aspects automatically according to the condition of the automatic block signalling section ahead.
- d) When semi-automatic signal works as a manual stop signal, it assumes "ON" aspect

automatically on the occupation of automatic block signalling section ahead but assumes “OFF” aspect when operated manually, provided the relevant automatic block signalling section ahead are clear.

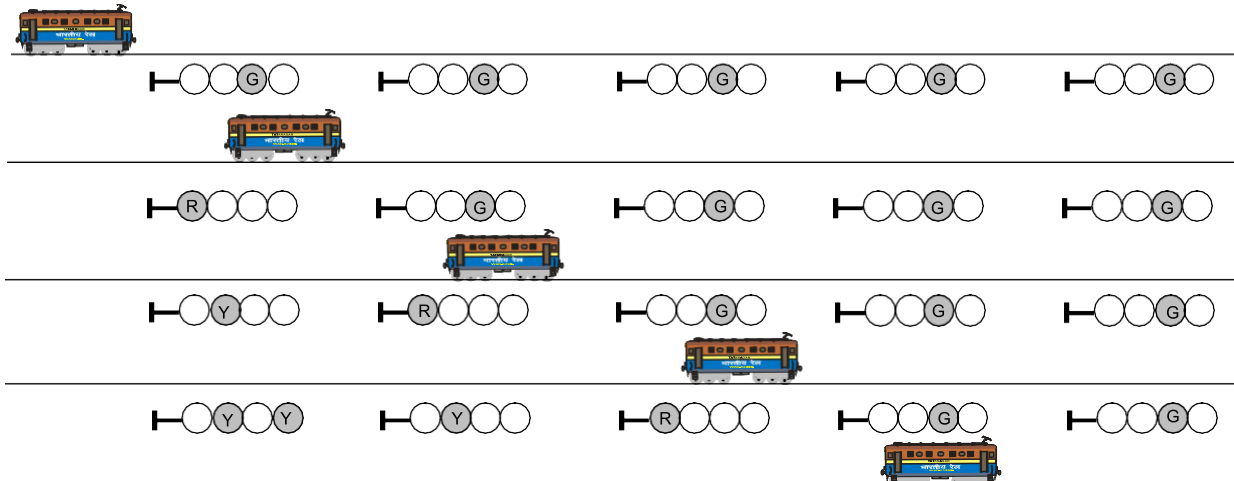
- e) It is provided only in MAST, in colour light signal.

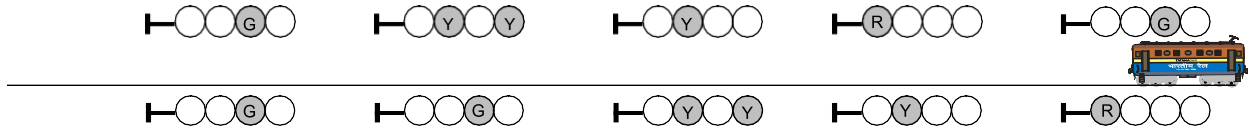
Aspect of Colour light type stop signal in MAST & AUTO signalling arrangement

Three Aspect in MOMA



Four Aspect in MOMA



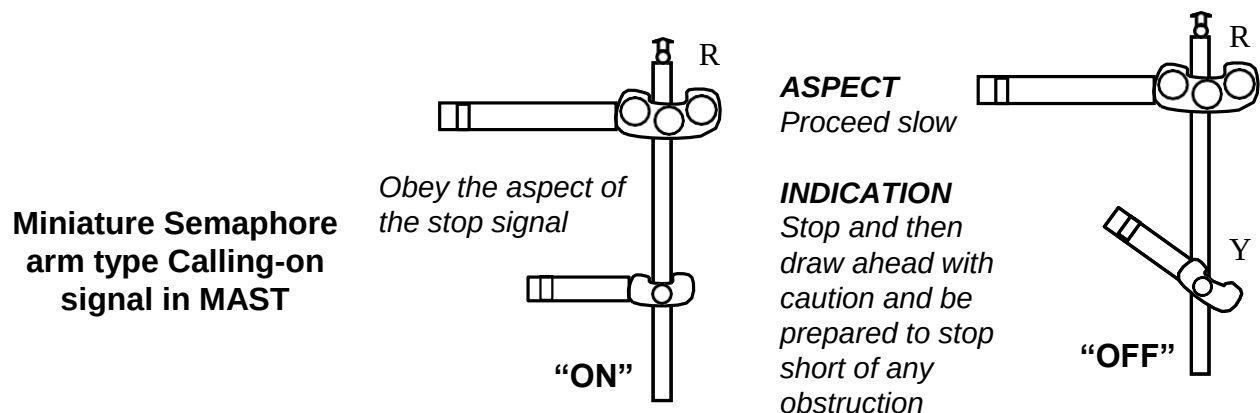
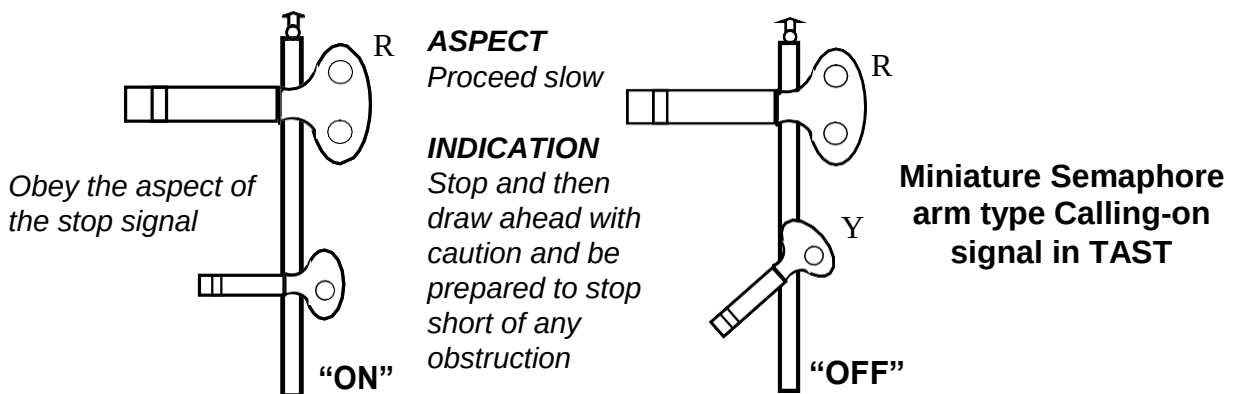


FOUR aspect in AUTO

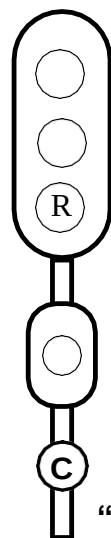
SUBSIDIARY SIGNALS

CALLING ON SIGNAL (GR 3.13)

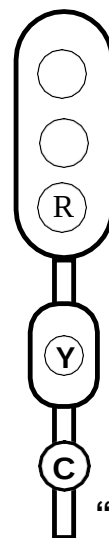
- i) A Calling ON signal is subsidiary signal, which has no independent aspect in the ON position.
- ii) It shall be –
 - a) A short square ended semaphore arm painted white with red bar.
 - b) A miniature colour light provided with letter “C” in black on a white circular disc
 - c) It shall be fixed below a stop signal governing the approach of a train. Under approved special instructions, it may be provided below any other stop signal except the last stop signal.
 - d) A calling signal when taken “OFF,” calls the Loco Pilot of a train to draw ahead with caution, after the train has been brought to a stop even though the stop signal above it is at “ON” and indicates to the LP that he should be prepared to stop short of any obstruction.
- iii) A Calling ON signal shall show no light in the “ON” position.
- iv) A Calling ON signal shall not be taken “OFF” until the train has been brought to a stand at stop signal below which calling “ON” signal is provided.
- v) The Loco Pilot shall stop his train at the stop signal, if it is at “ON” and if he finds Calling ON signal is taken “OFF,” after bringing his train to stop, then draw ahead with caution and be prepared to stop short of any obstruction.



**Colour Light type
Calling-on
signal in MAST**



*Obey the aspect of
the stop signal*



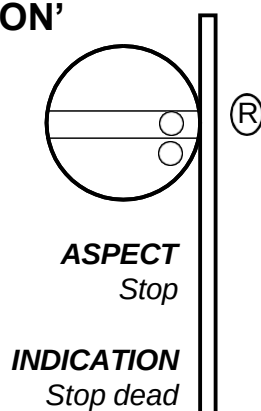
ASPECT
Proceed slow

INDICATION
*Stop and then
draw ahead with
caution and be
prepared to stop
short of any
obstruction*

SHUNT SIGNAL (GR 3.14)

- i) A shunt signal is a subsidiary signal and shall be either –
 - a. A white disc with a read mark across it
 - b. A position light type signal
 - c. Under special instructions, a shunt signal may be a miniature semaphore arm type
- ii) A shunt signal controls the shunting movement
- iii) A shunt signal may be placed on a post by itself or below a stop signal, other than the first stop signal of a station.
- iv) More than one shunt signal may be placed on the same post and in such cases the top most signal shall apply to the extreme left hand line and the second shunt signal from the top shall apply to the next line from the left and so on.
- v) When a shunt signal is taken OFF, it authorizes the Loco Pilot to draw ahead with caution for shunting purpose although stop signal, if any, above it is at ON
- vi) When a shunt signal is placed below a stop signal, it shall show no light at ON position.
- vii) In case shunt signals are not provided hand signals may be used for shunting

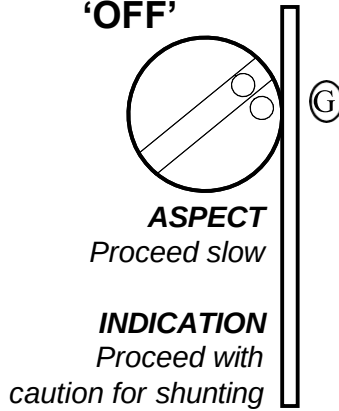
'ON'



ASPECT
Stop

INDICATION
Stop dead

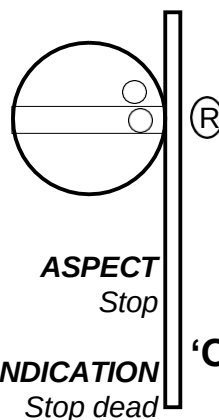
'OFF'



ASPECT
Proceed slow

INDICATION
*Proceed with
caution for shunting*

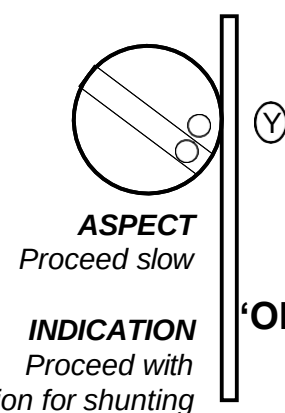
**Disc type shunt
signal in TAST**



ASPECT
Stop

INDICATION
Stop dead

'ON'

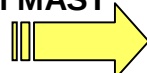


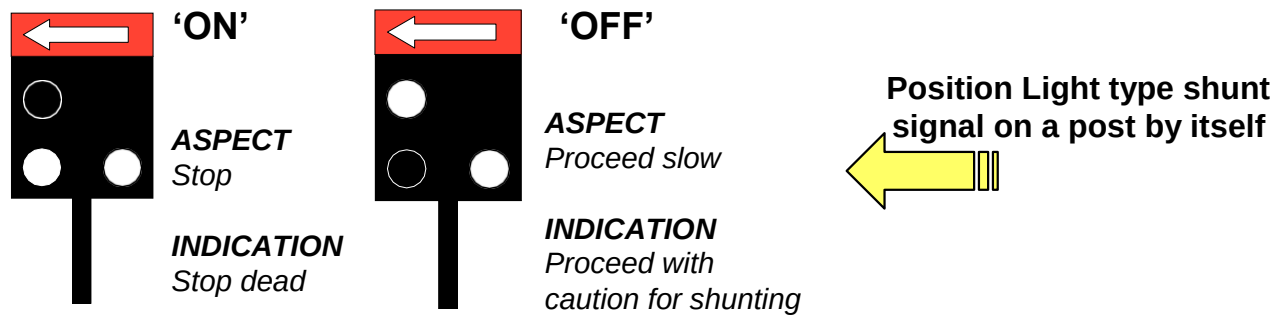
ASPECT
Proceed slow

INDICATION
*Proceed with
caution for shunting*

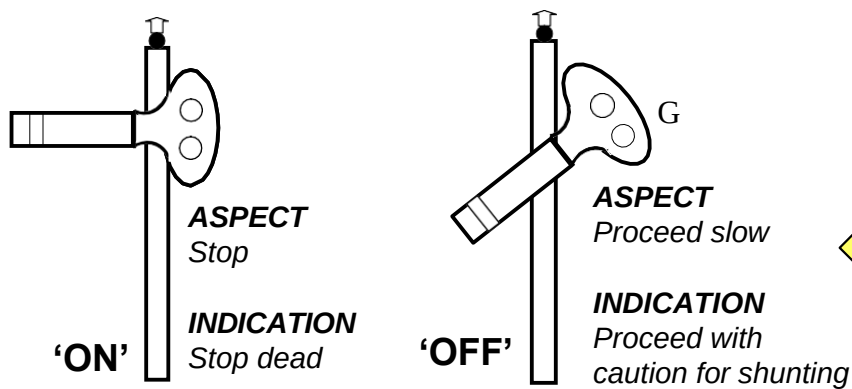
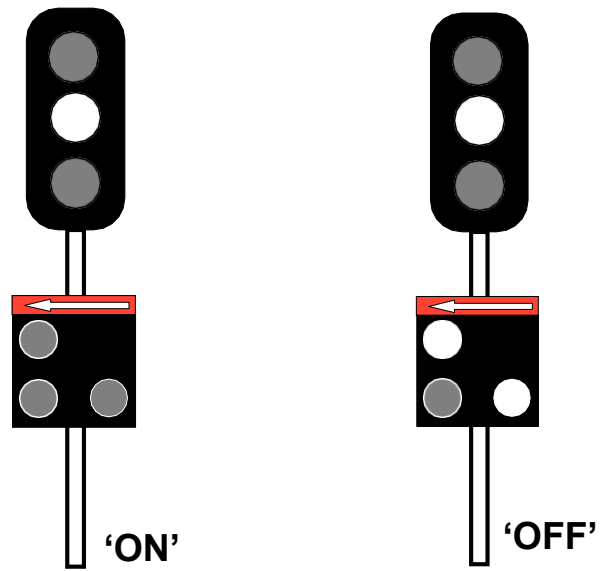
'OFF'

**Disc type shunt
signal in MAST**

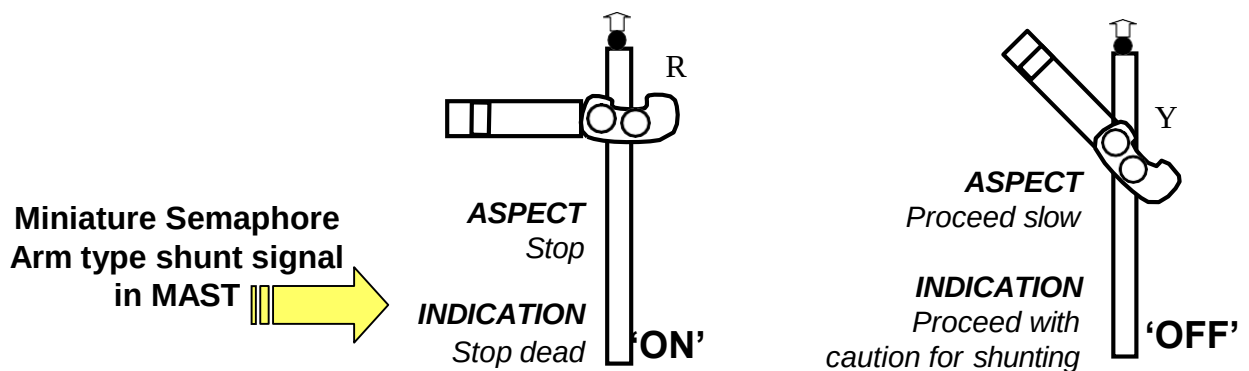




Position Light type shunt signal below a stop signal

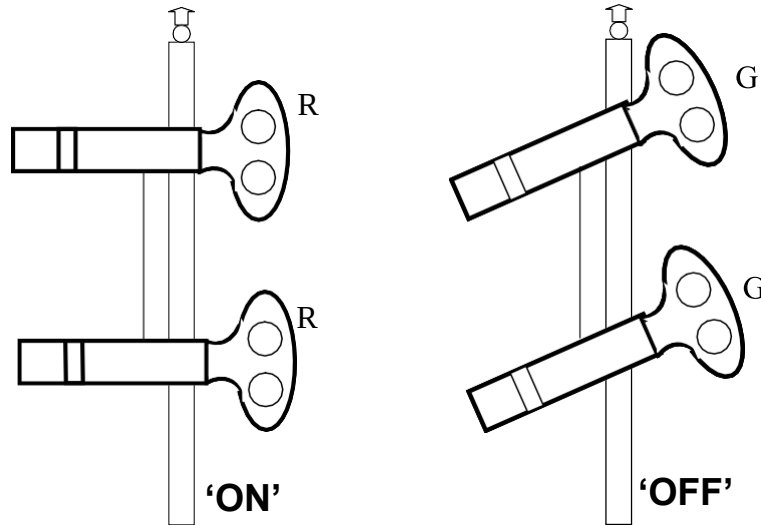


Miniature Semaphore Arm type shunt signal in TAST



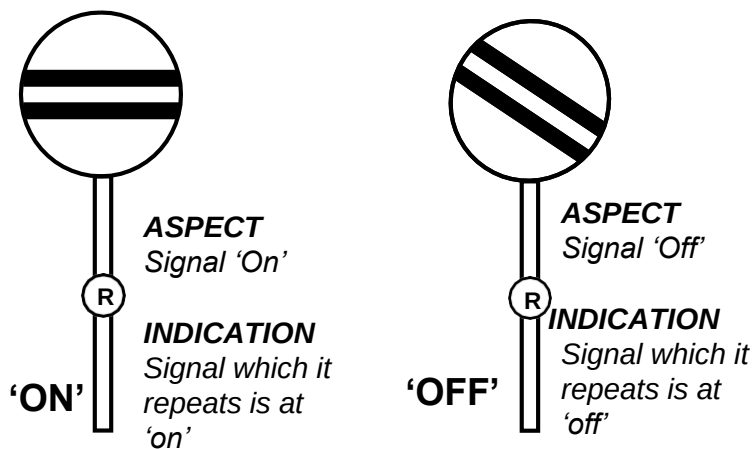
CO-ACTING SIGNAL (GR 3.15)

- i) Co-acting signals are duplicate signals fixed below ordinary signals and are provided where in consequence of height of signal post or of there being an over bridge or any other obstruction, the main arm or light is not in view of the Loco Pilot during the whole time that he is approaching it.
- ii) Co-acting signals shall be fitted at such height either the main arm or light or the co-acting arm or light, is always visible.



REPEATING SIGNAL (GR 3.16)

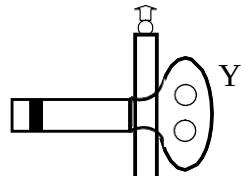
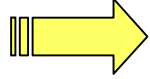
- i) A signal placed in rear of a fixed signal for the purpose of repeating to the Loco Pilot of an approaching train, the aspect of the fixed signal in advance is called repeating signal.
- ii) A repeating signal shall be provided with an "R" marker and shall be of –
 - a. Banner type provided with letter "R" in black on a white circular disc.
 - b. Square ended semaphore arm type with a letter "R" in black on a white circular disc.
 - c. Colour light type provided with white illuminated "R" against the black background.
- iii) A normal aspect of repeating signal is yellow.



Banner type Repeating signal in TAST



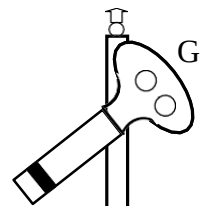
Semaphore Arm type
Repeating signal in TAST



ASPECT
 Signal 'On'

INDICATION
 Signal which it
 repeats is at
 'on'

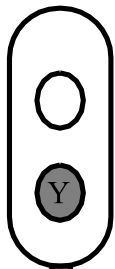
'ON'



ASPECT
 Signal 'Off'

INDICATION
 Signal which it
 repeats is at
 'off'

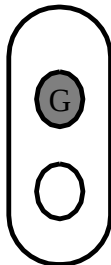
'OFF'



ASPECT
 Signal 'On'

INDICATION
 Signal which it
 repeats is at
 'on'

'ON'



ASPECT
 Signal 'Off'

INDICATION
 Signal which it
 repeats is at
 'off'

'OFF'

Colour Light type
Repeating signal



MINIMUM EQUIPMENT OF FIXED SIGNAL (GR 3.27, 28, 29)

- i) Minimum equipments of fixed signals at a station provided with manually operated multiple aspect signalling (MOMA) -
 - a. At “B” class station – Distant, Home & Starter
 - b. At “C” class station – Distant and Home
- ii) Minimum equipments of fixed signals at stations provided with modified lower Quadrant (MLQ) signalling
 - a. At “B” class station – Distant, Home, A Warner below main home and a starter.
 - b. At “C” class station – Distant and Home
- iii) Minimum equipments of fixed signals at a station provided with two aspect signalling territory (TAST)
 - a. At “A” class station – Warner, Home and a starter
 - b. At “B” class station –
 - i. On single line – Outer and Home
 - ii. On double line – Outer, Home and Starter
 - c. At “C” class station – Warner and Home

VISIBILITY OF SIGNAL (SR 3.16.01)

- i) In two aspect signals including modified lower quadrant (MLQ) signals, the minimum visibility distance for various signals shall be as follows:
 - a. Home signal 400 Metres.
 - b. Main starter signal 400 Metres.
 - c. Loop starter signal 200 Metres
 - d. Outer/Warner signal (in TALQ) 1200 Metres.
- e. In multi-aspect signals, all signals shall be visible for a minimum period of 5 seconds for maximum permissible speed allowed on the section.

SIGNALS OUT OF USE (GR 3.18)

- i) When a fixed signal is not in use, it shall be distinguished by two cross bars, each bar being not less than 1 Meter long and 10 cm wide.
- ii) A semaphore or disc signal when not in use shall be kept fixed in ON position.
- iii) Signals (Light signals) not in use shall not be lit.

5.4

STARTER INDICATOR (SR 3.23.02) A & C 82

- a) A Starter indicator may be provided to repeat the aspect of the starter signal to enable the Guard of a train to know the aspect of starter signal, when due to typical yard layout, he is not able to see it from the Guard’s compartment. This shall exhibit ‘No Light’ when the starter it refers is at “ON” and ‘yellow light’ when it is “OFF” and shall be provided at a convenient place so that it shall be clearly visible from Guard’s compartment. This is an aid for Guard and shall never be considered as a signal. No marker shall be provided on it and this shall not be shown on the SI Plan of the station. The details of the starter indicators, where provided shall be mentioned in Appendix-B of the SWR of the concerned station.

- b) Where starter indicator is provided, its “Yellow” aspect indicates to the Guard of a Train starting on the line to which it refers, that the starter is taken “Off” for his train.
- c) Indication of a starter indicator shall be provided on SM’s panel. On becoming aware of the failure of the Starter Indicator, the SM shall advise the S&T staff for rectification. The Guard of all trains expected to run over the line provided with ‘Starter Indicator’ shall be advised about its failure either through a caution order issued from previous notice station/last stopping station or through any available means by the SM of the station where the ‘Starter Indicator’ has been provided.

5.5 Shunting permitted Indicator (SPI) SR 5.13.06 A&C 89

- i) it is a device/ contraption that works in conjunction with a stop signal and may be provided in the non-interlocked area of yard where the interlocked area is isolated, to indicate uninterrupted shunting movement past the indicator in one or both directions. It is only an indicator and shall not be considered as a fixed signal. SPIP may be of the disc type or the light type.
- ii) Shunting permitted indicator may be placed on a post by itself or along with a stop/shunt signal.
- iii) Normally the shunting Permitted indicator is operated by a ground lever or EKT provided for this purpose and the person operating the ground lever/EKT shall personally ensure that the fouling marks of the points, the movement over which is controlled by the shunting Permitted indicator, are clear before returning the ground lever/ EDT to normal position.
- iv) it shall work in such a way that either the shunting Permitted indicator or the associated stop signal can be taken off at a time.
- v) In case of failure of the Shunting Permitted Indicator, a shunting order in the prescribed form (T-806) shall be issued.
- vi) Detailed instructions regarding the working of Shunting Permitted Indicator shall be incorporated in the SWR of the concerned station where it is provided.
- viii) Indications : Day and night indications of the SPO Shall be as follows:-

Type	Indication when shunting is permitted in the direction to which it refers		Indication when shunting is NOT permitted in the direction to which it refers.	
	Day Indication	Night Indication	Day Indication	Night Indication
Disc Type	Black disc with a yellow cross-painted on it.	Yellow cross light	Edge of disc	No Light
Light Type	Yellow Cross Light.	Yellow cross light	No Light	No Light

5.6

Fixed aspect single red signal in terminal yard (SR 3.40.04) A & C 99

SR 3.40.04 :- Under special instructions, certain Coaching and goods yards are declared as “Terminal Yards” for the purpose of reception/dispatch of Coaching/Goods Trains and regulation yard shunting.

“Terminal Yard/Station means yard/part of the yard/station, specially declared so by the authorized officer, where normally no train runs through and passenger trains/goods trains

originate or terminate or continue its onward journey after change of crew and/ or locomotive and/or issue of Caution order and/or shunting etc. Such station/yard/part of yard shall be provide with Boards or **Fixed aspect single Red Signals** at a place where trains normally come to a stop. Signal overlap is not required at such station/yard.

Wherever the single aspect red signal/stop Board is fixed at the fouling mark, the adequate distance for taking off goods home is reckoned is Zero. Speed of incoming trains below the respective Home Signals.

The station working rule of such “Terminal Yards” shall clearly specify the procedure to be followed for reception and dispatch of trains and regulation of shunting movements.

Fixed single aspect red signal/stop Boards should be provided in regular coaching terminals and bay lines in coaching yards, wherever necessary to indicate the place where the trains should normally come to a stop except at stations where standard buffers are provided at the terminal end of the lines.

Theses may also be provided at temporary terminals which are created as part of gauge conversion, doubling, new line work etc, where further movement beyond the place of stop is feasible and permitted. The stop board shall be rectangular in shape and painted yellow with letters ‘STOP’ in black and reflective paint/material shall be provided for visibility during night. The fixed Dummy red signal shall be a miniature red aspect mounted on a single aspect signal unit fitted on a standard signal post with the letters ‘STOP’ painted on the number plate.

This fixed Dummy red signal/Stop Board, shall be passed by a Shunter or LP when a proceed hand signal is shown by an authorized Railway servant at the foot of the Dummy red signal/Stop Board.

5.7

HAND SIGNALS (GR 3.52)

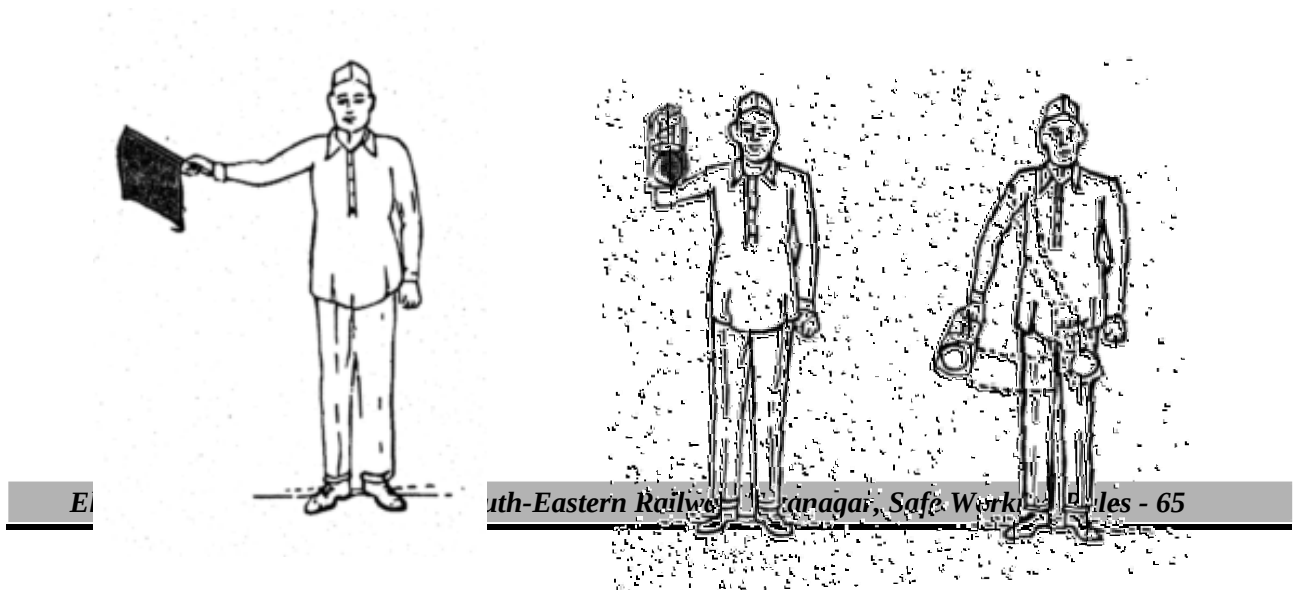
EXHIBITION OF HAND SIGNALS:

During day flag or flags shall be used as hand signals. Hand shall be used in emergencies only when flag are not available.

During night a hand signal shall normally be given by showing a red or green light. A white light waved violently shall be used as stop signal only when red light is not available.

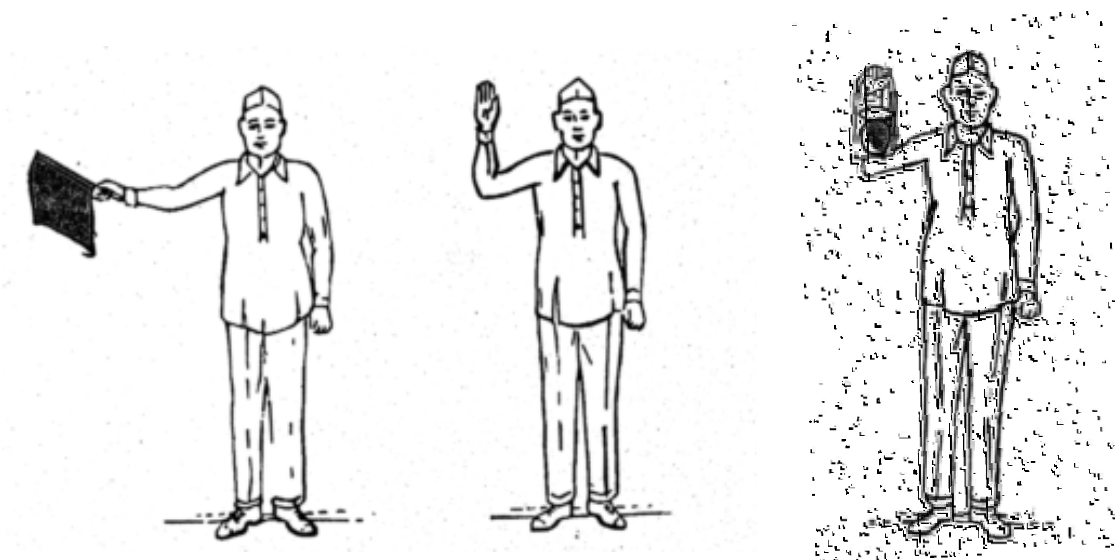
STOP HAND SIGNAL (GR 3.53)

- | | | |
|---------------|---|--|
| Indication | - | Stop dead |
| At Day time | - | By showing a red flag or by raising both arms with hands above the head. |
| At Night Time | - | By showing a red light or by violently waving a white light across the body of the person. |



PROCEED HAND SIGNAL (GR 3.54)

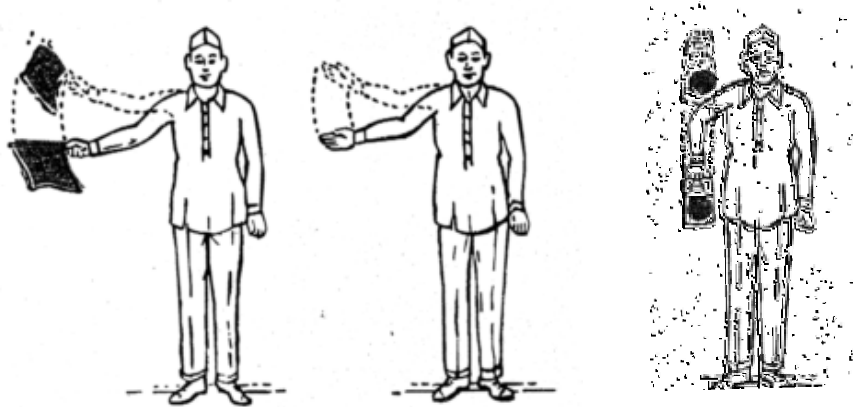
Indication	-	Proceed
At Day time	-	By holding a green flag or by holding one arm steadily
At Night time	-	By holding a green light steadily



PROCEED WITH CAUTION HAND SIGNAL (GR 3.55)

Indication - Proceed slowly reducing speed further if the signal is given at a progressively slower rate.

- At Day time- By waving a green flag vertically up and down or by waving one arm in the similar manner.
At Night time- By waving a green light vertically UP and DOWN.

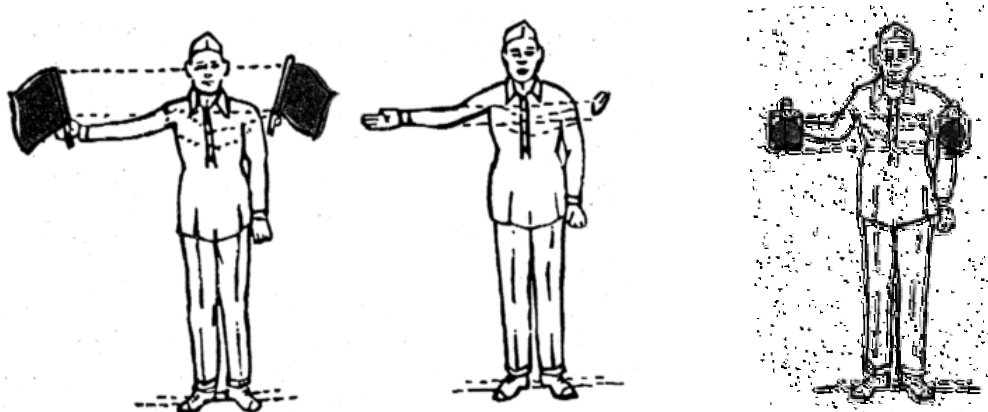


HAND SIGNALS FOR SHUNTING (GR 3.56)

- i) Indication - Move away from the person signalling
In Day time - By a green flag or one arm moved slowly up and down
In night time - By a green light moved slowly up and down



- (ii) Indication - Move towards the person signalling
In day time - By a green flag or one arm moved from side to side across the body
In nighttime - By a green light moved from side to side across the body.



- (iii) Move slowing for coupling
In daytime— By green and red flag held above the head or both hands raised over the head and moved towards and away from each other.
In nighttime — By a green light held above the head and moved by twisting the wrist



NOTE :- (SR 3.56.01)

Shunting signals are to be given by the station master, guard/brakes man of a train, Yard foreman, Shunting Jamadar or points man or any other duly qualified/authorised person.

(SR 3.56.02)

Red or stop hand signal given by any one supersedes all other signals and bars movement beyond such danger signal.

BANNER FLAG (GR 3.57)

A banner flag is a temporary fixed danger signal, consisting of a red cloth supported at each end on a post and stretched across the line to which it refers.

PICTURE INSERTED

5.8

DETONATING SIGNALS

DESCRIPTION OF DETONATING SIGNALS (GR 3.59)

Detonating signals, otherwise known as detonators or fog signals are appliances which are fixed on the rails, when an engine or a vehicle passes over them they explode with a loud sound so as to attract the attention of the Loco Pilot

METHOD OF USING DETONATORS (GR 3.60)

- i) Detonators shall be placed on the rail with label or brand facing upwards and shall be fixed on the rail by bending the clasps around the head of the rail.
- ii) In case of mixed gauge, detonators shall be placed on the common rail or on one rail of each gauge

STOCK OF DETONATORS: 10 Detonators in a box.

USE AND LIFE OF DETONATORS:

When a railway servant placed one or more detonators on the line he shall stand beyond the safety radius of 45 Metres from the detonator. Life span of detonator is 5 years from the year of its manufacture can increased upto 8 years after suitable testing.

PLACING OF DETONATORS IN THICK FOGGY OR TEMPESTUOUS WEATHER IMPAIRING VISIBILITY (GR 3.61) A&C 108

- i) In thick foggy and tempestuous weather, impairing visibility, the station master shall comply the visibility by "Visibility test object post" which is placed at a distance of 180 Metres from the centre of the station Master's office at each end of the station.
- ii) During thick, foggy and tempestuous weather if a station signal cannot be seen it is necessary to indicate of an approaching train about the locality of signal, the fog signal man will place two detonators on the line about 10 meters apart and at least 270 meters outside the first stop signal. The fog signalman shall show no signal to the approaching train except in case of obstruction he will show a stop hand signal. On single line the fog signalman will show white hand signal to the outgoing train.

NOTE:

- (i) In automatic signalling the placing of detonators (fog signal) shall be Dispensed with.
- (ii) In case of temporary speed restriction, during thick foggy or tempestuous weather by day or night two detonators shall be placed at a distance of 270 meters, 10 meters apart in rear of caution indicators.

PLACING OF DETONATORS IN CASE OF OBSTRUCTION (GR 3.62)

- i) Whenever in consequence of an obstruction of a line, it is necessary for a railway servant to stop an approaching train he shall proceed showing his stop hand signal and place one detonator at 600 meters and 3 detonators at 1200 meters from the obstruction about 10 meters apart from each other.
- ii) If the said railway servant is recalled before the obstruction is removed, he shall leave down 3 detonators and on his way back pick up intermediate detonators.

STOP SIGNAL DEFECTIVE IN OFF POSITION (SR 3.68.02)

- i) In case of reception stop signal is defective in OFF position, the station master shall take measures to put back the signal at ON position either by disconnecting wire or by breaking the green glass.

- ii) Either by disconnecting wire or breaking the green glass if the signal cannot be kept in ON

position, then the station master will arrange to protect the signal by placing one detonator at a distance of 90 meters in rear of the signal. A stop hand signal shall be exhibited at the foot of signal. The train shall be piloted by T/369(3b) and proceed hand signal from Engine's footboard.

NOTE:

In case of routing signal (not home) starter or advance starter, the detonator shall not be used.

USE OF ONE DETONATOR:

- i) In case of extreme emergency or where there is no time to place more than one detonator, only one detonator may be placed as far as possible from the obstructed site.
- ii) When approaching stop signal is defective in OFF position, one detonator is placed at a distance of 90 meters in rear of defective signal. The station staff who fix detonator should exhibit the stop hand signal to approaching train Loco Pilot by standing at the foot of the defective signal.

USE OF TWO DETONATORS

- i) In case of thick foggy or tempestuous weather two detonators are placed 10 meters apart at least 270 meters short of the first stop signal by the station staff.

USE OF THREE DETONATORS

- i) Three detonators are used to protect the train in rear in automatic section in case of obstruction or failure. The first detonator is placed at a distance of 90 meters, in rear of obstruction and second at 180 meters and third 10 meters apart (90M–90 M–10M)
- ii) When a train is working with block ticket or with “an authority to proceed without line clear” in both single line (S/L) or double (D/L) absolute block system or with an “Authority to proceed without line clear” in S/L automatic system, three detonators are to be placed in rear of train (250M – 250M – 10M)
- iii) When an engineering protection is required to be done by using banner flag in section when engineering work is in progress, Banner flag is to be placed at a distance of 600 Meters from the point of obstruction and three detonators should be placed at a distance of 1200 meters from the place of obstruction 10 meters apart (600M – 10M – 10M) and a man with red flag hand signal 45 metres away from last detonator. In auto signalling section 90m-10m-10m behind the banner.
- iv) Three detonators are used to protect in train staff and ticket system, when a train unable to proceed in mid section as 250 -250- 10 M – as per SR 10.09.

USE OF FOUR DETONATORS

Four detonators are to be placed in rear of train ,

- 1) when there is obstruction and train cannot proceed further during normal working in absolute block system and
- 2) abnormal working of total interruption in double line automatic system from the obstruction in rear as (600M - 600M – 10M – 10M)

NOTE --It is always to be noted that protection in front of train and protection of adjacent line is in all conditions shall be 600-600-10-10-45 M .(four detonators)

DUTIES OF LOCO PILOT ON BRUSTING A DETONATOR

- a. The loco pilot shall whistle intermittently when his engine explodes detonator(s) and take every possible caution including reduction of speed as necessary, so as to have the train well under his control and be able to stop short of any obstruction on the line
- b. After proceeding 1.5 kms from the place where his engine exploded detonator(s), if his engine does not explode any more detonator(s), he may then resume authorize speed and,
- c. Report the incident to the next station or cabin.

5.9

WARNING SIGNALS: GR 3.65

The signals to be used to warn the incoming of an obstruction shall be a red flashing hand signal lamp at night or a red flag during day.

USE OF WARNING SIGNALS GR 3.66

when it becomes necessary to protect an obstruction in a block section , a signal may be used , as prescribed by special instructions under 3.65 , while a railway servant proceeds to place detonators.

- a. When the loco pilot notices a signal warning of an obstruction except detonator(s), he shall stop his train intermittently and act on advice of the person exhibiting warning signal or on the basis of obstruction noticed by him.
- b. In case, no further details of exhibition of warning signal are noticed, after stopping one minute by day and two minutes by night to ascertain the location and / or cause of the warning, he shall proceed cautiously upto the next block station, keeping a sharp look out.
- c. The loco pilot shall acquaint himself with the system of working, location of signals and other local conditions affecting the running of trains on a section(s) of the railway over which he is to work, obtain the services of a qualified railway servant who is conversant with it to assist him.
- d. If in consequence of fog. Storm or any other reason the view of signal is obstructed, the LP shall take every possible precaution, so as to have the train well under control.

5.10

I.B. signaling

Intermediate block means an arrangement of signalling on double line or single line or multiple line in which a long block section is split into two portions, each constituting a separate block section by providing an intermediate block post and this may be called a "C" class station which is remotely controlled by the block station in rear .

I.B. SIGNAL (GR 3.11)

Intermediate block stop signal is the home signal provided at intermediate block post. It can be identified by a letter, IB in black on white circular disc provided on the signal post.

PURPOSE: To divide long block section into two short block sections.

UTILITY: To increase the section capacity and to minimise the detention. It is ensured by providing track circuit/axle counter

WORKING: Last stop signal of the rear station shall be taken off on the clearance of the line provided with the track circuit/axle counter between last stop signal in rear and intermediate block stop signal with an adequate distance.

A train may be allowed to proceed up to an intermediate block stop signal even when line clear has not been received from the station in advance. The intermediate block stop signal shall be taken OFF by the station in rear only when line clear has been received on the block instrument.

Explanation :- On single line intermediate Block Signaling, the line between two adjacent block stations is divided into two subsections, the first section which shall be termed as 'stations controlled intermediate block section' and the section between intermediate block signal to first

stop signal of block station ahead shall be termed as 'block controlled Intermediate Block Section.

5.11

GATE STOP SIGNAL (GR 3.34)

A fixed stop signal provided before level crossing gate which closes across the line to protect the gate is called gate stop signal when the gates are open for the passage of road traffic this signal shows stop aspect, both the UP and DOWN direction to control the movement of approaching train.

- i) Except under approved special instructions, every level crossing gate, which is not interlocked with station signal, shall be protected with gate stop signal. The gate stop signal shall be placed in rear of level crossing gate at a distance of 400 meters in TAST and 180 meters in MAST/MLQ
- ii) Every gate signal shall be preceded by a Warner/distant/Warning board or both where necessary.
- iii) This signal can be identified by a marker letter "G" in black on yellow circular disc.

5.12

LEARNING ROAD (SR 3.78.01) new AC 115 and 127

USR 3.78 (6)

(a): Every Loco pilot/Asstt. Loco pilot/motorman should be given 3 trips (Up and Down direction separately) for learning road out of which one must be by night to familiarize himself with the section (s) on which he is rostered for duty. On Ghat section and automatic territories minimum 6 trips of road learning shall be provided in both the direction. If more than one line is available in a section, at least one trip road learning in each line shall be provided.

" No separate road learning is required for Loco pilots/ALPs, who are already having learning in the same section, in case of existing section being added with 2nd /3rd /4th line and existing signaling system being upgraded to Automatic one. However, running staff may move in such sections with restricted speed of 40/15Kmph., during day/night, for the first trip only to acquaint themselves with the new signaling positions, sectional gradients and new infrastructure in the section.

Divisions shall ensure display of the location of new signals and sectional gradients in the crew booking offices, so that running staff will get prior information about the new infrastructure in the section with augmented sections such as 2nd /3rd /4th line and automatic sections in small stretches. In order to guide the engine crew and guard a signal location table for the new 2nd /3rd /4th line or section shall be provided to the crew guard as a ready reference." (A & C 127)

- (b): On promotion to or officiating as LP (Goods), road learning as prescribed in SR 3.78 (6)
(a) to be provided to loco pilot to understand train dynamics.
- (C): If loco pilot/asstt. Loco learning trip(s) as per the schedule given below-

Duration of absence	No of trips	No of trips on Ghat section and Automatic territories
1) 3 to 6 months	one trip	Three trips
2) 6 months to 2 years	two trips	Three trips

3) Over 2 years Three trips Six trips

- (d) Any additional trip (s) considered necessary should be provided with the approval of the controlling branch officers of the Division.
- (e) The scale of the trips provided as above would apply to all systems of working.
- (f) A register should be maintained at the crew booking point. A loco pilot/asstt. Loco pilot should record in the register 15 days in advance that he is lapsing road learning in a section. Also, the base depot should keep a record of the date of the last trip performed by a loco pilot/asstt loco pilot on different sections and update it every first of the month. On the basis of these records, depot in charge should book loco pilot/asstt loco pilot for road learning on a section where is is required.
- (g) The record of road Learning may also be kept in crew management system.

SR 3.78.01 (e) :-

- (1) Conducting a trip in a section guided by either a loco Inspector or a loco pilot shall also be construed as a road learning trip for this purpose. A competency certificate shall be issued, if found qualified, by a competent Railway official as may be nominated by the DME/DEE (OP). A record of all competency certificates issued to these categories of staff shall be maintained by the SSE/SE (loco or shed) for staff belonging to Diesel locomotives and by the chief crew controller for staff belonging to electric traction.
- (2) The learning road for engine crew in respect of siding will be as follows: 6 month and above ----- One trip.

Provided that an engine crew may be allowed to work a siding without such road learning trips when they are guided by an authorized shunting supervisor as mentioned in SR 5.13.03 such trip of a crew guided by an authorized shunting supervisor shall be construed as a road learning trip for the crew as required vide SR 3.78.01.

- (b) The SSE/SE/Loco/shed/Crew controller shall before booking any engine crew to work any train satisfy himself that the concerned staff is/are acquainted with the section over which he/they is/are required to work.

LESSON 6

DEFECTIVE SIGNALS

6.1 PASSING OF DEFECTIVE APPROACHING SIGNAL AT “ON”

S/No	Circumstances	Authority and action	Speed
1.	When approaching stop signal (Outer, Home, Routing) is defective or at ON in absolute block system	a) Stop dead in rear of defective signal and proceed with great caution after taking OFF the calling on signal (if provided) up to next stop signal or	a) Proceed cautiously and be prepared to stop short of any obstructions.
		b) By obtaining private No. from SM over signal post telephone (if provided) and proceed hand signal given from cabin/station platform or c) By obtaining a written authority (Pilot Memo) T-369(3b) and proceed hand signal from engine foot board by Jamadar or d) By obtaining advance pilot memo T-369(1) from SM in rear for goods train and last stopping station for Mail/express/ Passenger train and proceed hand signal from the foot of the defective signal.	b) Not exceeding 15 KMPH c) Not exceeding 15 KMPH d) Not exceeding 15 KMPH
2.	Home signal defective or at ON in auto block section	a) If “A” marker is not glowing, the authority and speed will be same as item No. (a) (b) and (c) above for absolute block system. Item (d) is not applicable.	Speed as above in (a), (b) & (c)

		(b) If "A" marker is glowing (i) Stop the train at signal for one minute by day and 2 minutes by night (ii) Give long whistle and exchange signal with guard and proceed cautiously and be prepared to stop within the half of the visible distance upto the next stop signal.	(b) Speed not exceeding 15 KMPH when view ahead is clear and 10KMPH when view ahead is not clear or at night.
3.	No light in distant signal	Stop the train at the foot of the signal and ensure "P" marker Proceed cautiously and be prepared to stop at the next stop signal and act accordingly to the aspect of stop signal, after reaching to it.	Proceed cautiously and be prepare to stop at the next stop signal and act accordingly to the aspect of stop signal after reaching it.

NOTE:

- (i) For coaching train the advance pilot memo **T-369(1)** may be issued from last stopping station in rear. but for goods train it can be issued from station in rear.
- (ii) If the station in rear is a block hut "C" class station **T-369(1)** may be issued from the station in rear of block hut.
- (iii) If signal is defective in OFF position or in auto section, advance pilot memo **T-369(1)** shall not be issued.

6.2

PASSING OF DEFECTIVE DEPARTURE SIGNAL

S/No	Circumstances	Authority and action	Speed
1.	Starter other than last stop signal is defective or at ON in absolute block System	i) Stop dead and proceed with great caution upto the next stop signal after taking OFF calling on signal if provided. OR ii) By obtaining a written authority T-369 (3b) and proceed hand signal at the foot of the defective signal i.e. STARTER. If it is not a last stop signal	i) Proceed very cautiously and be prepared to stop short of any obstructions. ii) Not exceeding 15 KMPH upto trailing point of the yard.
2.	Starter other than last stop signal is defective or at ON in Automatic block System	i) If A marker is glowing – stop the train one minute by day and two minutes by night. Give a long whistle, exchange signal with guard and proceed cautiously and be prepared to stop within the half of the visible distance up to the next stop signal. Be guided by the aspect of the next stop signal only after reaching it. iii) If "A" marker is not glowing – authority T/A 912	i) Not exceeding 15 KMPH when view ahead is clear and 10 KMPH when view ahead is not clear or at night. ii) Same as above.

3.	Advance starter/ Last stop signal is defective in absolute block system	i) Double line – Pilot memo T-369(3b) with Private Number and ID No. ii) Single line – (a) When block token instrument is provided – token and T-369(3b) (b) When block token is not provided or defective – Paper line clear (T/C-1425 for UP & T/D -1425 for DN trains) which includes authority to pass last stop signal at 'ON.'	Normal speed if there is no point beyond last stop signal. Hand signal to be given, if there is any point beyond last stop signal.
4.	Advance starter/ last stop signal is defective or at ON in Auto block system (Double Line)	i) When the last stop signal working as manual stop signal or semi-auto stop signal as manual stop signal (A marker not glowing) is defective or at ON driver shall receive – A) T/A-912	Not exceeding 15 KMPH where view ahead is clear and 10 KMPH where view ahead is not clear and at night upto the next stop signal.
5.	Advance starter/last stop signal is defective or at ON in auto block system (D/L) but there is no intervening signal between two consecutive stations.	A) T/D-912 B) Caution Order If Required.	25 KMPH for the first train. Subsequent trains may run at normal speed. The driver should exercise great caution while approaching level crossing.
6.	On S/L auto system when direction of traffic is established but last stop signal is defective	i) Starting order T- 511 ii) T/A-912 iii) Proceed hand signal from foot of the defective last stop signal if there is point beyond last stop signal	15 or 10 KMPH as per visibility upto the next auto stop signal, then obey the aspect of auto signal ahead

6.3

Flickering, Bobbing and conflicting signals

CONFLICTING SIGNAL

Sl/ No.	Nature of defective signal	Action in absolute block system	Action in auto block system
1	Warner is showing OFF while outer or Home is ON	Stop the train and shall be piloted in	Not provided
2	Distant signal shows proceed aspect but home signal shows Yellow with root indicator	Stop the train at the first stop signal and shall be piloted in	Not provided.

BOBBING OR FLICKERING SIGNAL

Sl/No.	Nature of defective Signal	Action in absolute block system	Action in auto block system
1.	In case of any colour light signal is found flickering or bobbing	i) Stop the train and treat the signal as showing its most restrictive aspect ii) If the signal subsequently obey the steady aspect which remains steady for 60 seconds iii) If so then obey that aspect otherwise the train shall be piloted.	Stop the train and observed the aspect which remain steady for 60 seconds, if so, then obey that aspect, otherwise obey the rule to pass the auto stop signal at danger or at ON
2.	If colour light signal shows more than one aspect at a time	Stop the train and treat the signal to be showing, it's most restrictive aspect. Don't pass it unless piloted with proper authority	Obey most restrictive aspect out of the aspects displayed
3.	If colour light signal showing no light or white light	Stop the train and obey most restrictive aspect of that signal post	Stop the train and obey the most restrictive aspect of the signal post

6.4

I.B. SIGNAL DEFECTIVE (GR 3.75)

PASSING OF IB STOP SIGNAL AT “ON” POSITION –

Sound a long continuous whistle and stop the train at the foot of IB signal and contact with station master in rear over the signal post telephone.

1st Condition:

When telephone is working and station master could be contacted.

- a) Take private number and I. D. No. From the station master in rear, if line clear has been received.
- b) Sound one short one long one short (0-0) whistle. Exchange signal with guard and proceed up to first stop signal of station in advance and act accordingly.
- c) Speed :- Normal

2nd condition:

When signal post telephone out of order/telephone not provided/station master could not be contacted.

- a) Wait for 5 minutes
- b) Give a long whistle and exchange the signal with guard and proceed cautiously up to first stop signal of next station.
- c) Speed not exceeding 15 kmph when view ahead is clear and 8 KMPH when view ahead is not clear or at night.
- d) Stop the train at 1st stop signal of a station, give whistle on hearing whistle signal may be lowered or piloted in.
- e) Report the matter at the next station in writing.
- f) If there is a gate stop signal in between the IB stop signal and the 1st stop stop signal of the station in advance, and even it show green, speed should not be exceeded 15/8 KMPH till the 1st stop signal is reached.

3rd condition:

When telephone is working but station master in rear station unable to obtain line clear due to no communication between two stations (total interruption)

- a) ASM will advice to call the guard by sounding two long and two short (- - 0 0) whistle.
- b) After consulting with station master the guard will give a written authority (memo) with private number received from station master authorising the driver to pass the IB signal at ON.
- c) After handing over memo to Loco Pilot, Guard will go to B/Van. Give one long whistle and exchange signal with guard.
- d) Speed not exceeding 15 KMPH when view ahead is clear and 8 KMPH when view ahead is not clear or at night.
- e) The matter shall be reported in writing at the next station.

4th condition:

If the station master is pre warned of defective IB signal

- a) The train shall be stopped at station.
- b) The Loco Pilot shall be issued T-369(3b) with private and ID No. To pass I.B. Signal at ON without stopping with normal speed.

NOTE: When the train is detaining at the IB Stop signal contact the rear station master in every five minutes when telephone is working.

6.5

GATE STOP SIGNAL DEFECTIVE

PASSING GATE STOP SIGNAL IN DEFECTIVE OR AT “ON” POSITION AT ABSOLUTE BLOCK SECTION (GR 3.73)

- i) Sound one long whistle and stop the train in rear of the gate stop signal.
- ii) Ensure “G” marker on the signal post. Stop one minute by day and two minutes by night. If the signal still remains at ON proceed cautiously up to the level crossing gate after giving long whistle and exchanging signal with guard.
- iii) If the gate is closed against the road traffic and gate man displays hand signal, proceed further and pass the level crossing gate cautiously.
- iv) If the Gateman is not available or is available but not exhibiting hand signals, he shall stop short of the level crossing, where he shall then be hand signalled by the Gateman and pass the gate. If gateman is not available, then-
 - a. Assistant Loco Pilot should close the gate and show proceed hand signal.
 - b. The train shall be stopped again after clearing level crossing by at least two vehicles.
 - c. Assistant Loco Pilot will re-open the gate for road traffic.
 - d. Stop the train at next station even through signal and report the matter in writing with KM No., Gate No and Gateman is not found etc. to station master.

6.6

PASSING GATE STOP SIGNAL AT “ON” IN AUTOMATIC SIGNALLING TERRITORY:

**Give one continuous whistle and stop the train in rear of gate stop signal.
Ensure “G” marker and illuminated “A” marker**

1) When “A” marker is illuminated (Gate closed)

- a. Stop one minute by day and two minutes by night
- b. Sound one long whistle, exchange signal with guard.
- c. Proceed cautiously up to the next stop signal not exceeding 15 KMPH when view ahead is clear and 10 KMPH when view ahead is not clear or at night and be prepared to stop within half of the visible distance.
- d. Be guided by aspect of next stop signal only after reaching it.

2) When “A” marker is extinguished (means gate is open) and section ahead may be occupied

- a. Stop the train in rear of the gate stop signal sound one long continuous whistle and sound one long continuous whistle to warn the gateman.

- b. Wait one minute by day and two minutes by night.
- c. If signal still remains at ON, proceed cautiously up to the level crossing.
- d. If the Gate man is available and exhibiting hand signals, proceed further and pass the level crossing gate cautiously and be prepared to stop within half of the visibility distance, at a speed not exceeding 15 KMPH when view ahead is clear and 8 KMPH when view ahead is not clear or at night, up to the next stop signal. Be guided by the aspect of the next stop signal only after reaching it.
- e. If the Gateman is not available or is available but not exhibiting hand signal stop in rear of the level crossing and after ascertaining that the gates are closed against road traffic and on getting hand signals from the Gateman and in his absence from the Assistant Loco Pilot. The Loco Pilot shall sound the prescribed code of whistle and cautiously proceed up to the next stop signal, speed is not exceeding 15 KMPH or 10 KMPH as per visibility. Be guided by the aspect of the next stop signal only after reaching it.

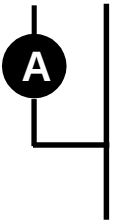
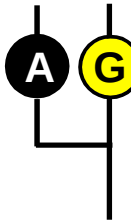
6.7

DEFECTIVE STOP SIGNAL IN AUTOMATIC BLOCK SYSTEM/ DUTIES OF LOCO PILOT TO PASS AUTOMATIC STOP SIGNAL AT “ON” (GR 9.02)

- i) When a Loco Pilot finds an auto stop signal with an “A” marker at ON, he shall draw his train to stop in rear of the signal as close as possible.
- ii) After stopping one minute by day and two minutes by night if the signal continue to be at ON, the Loco Pilot shall sound one long whistle and exchange signal with guards, then proceed ahead as far as line is clear towards the next stop signal in advance, exercising great caution so as to stop short of any obstruction.
- iii) After the signal has been passed at ON the Loco Pilot shall so regulate his speed so as to be able to stop within half of the visible distance. The speed shall not exceed 15 KMPH even in normal conditions of visibility until he reaches the next stop signal. When the view ahead is not clear due to curvature or fog or rain or dust or storm, engine working the train by pushing or other causes the line cannot be seen clearly the speed shall not exceed 10KMPH.
- iv) After proceeding cautiously upto the foot of the next signal only the Loco Pilot shall act upon its indication, even if the signal is found to be at “OFF” from a distance.
- v) After passing an auto stop signal at ON, the Loco Pilot of the following train shall ensure that a minimum distance of 150 M or two OHE spans is maintained between his train and the preceding train or any obstruction. In case of EMU, the distance may be reduced to 75 Mtrs or one OHE span.

NOTE: On S/L auto block system in addition to the above instruction, if the telephone communication is provided near the signal, the driver shall contact with station master.

DISTINGUISHING MARKS AND SIGNS FOR SIGNALS

APPEARANCE	PROVIDED ON	DESCRIPTION
	Automatic stop signal	Letter 'A' in black on white circular disc
	Semi-Automatic stop signal	White illuminated latter 'A' against black back ground when working as an auto signal & letter 'A' extinguished when working manually.
	Colour light distant or warner signal on a post by itself	Letter 'P' in black on white circular disc
	IB stop signal	Letter 'IB' in black on white circular disc
	Calling-on signal	Letter 'C' in black on white circular disc
	Repeating signal in sema-phore signaling territory	Letter 'R' in black on white circular disc
	Repeating signal in colour light signaling territory	White illuminated latter 'R' against black back ground.
	Gate stop signal	Letter 'G' in black on yellow circular disc.
	Gate stop signal in auto block signaling territory	Letter 'G' in black on yellow circular disc & White illuminated latter 'A' against black back ground.

LESSON 7

STATION AND CLASSIFICATIONS

7.1

INTRODUCTION : STAION WORKING

It is quite essential that movement of a train on a particular track should be safe and for this purpose various working systems are adopted for reception and dispatch of trains at or from a station. The stationmaster shall be responsible to see that working of a station is carried out in accordance with rules and regulations in force.

During working of a train every driver & assistant driver should know about the working system of the station, signals and any special and also station working rules of stations.

7.2

CLASSIFICATION OF STATION (GR 1.03)

BLOCK STATION:

Block stations are those at which the Loco Pilot must obtain an authority to proceed under the system of working to enter into the block section with his train. It is of three classes:

- i) **“A” CLASS STATION:**
Where line clear may not be given for a train unless the line on which it is intended to receive the train is clear for at least 400 meters beyond the home signal or upto the starter.
- ii) **“B” CLASS STATION:**
Where the line clear may be given for a train before the line has been cleared for the reception of the train within the station section.
- iii) **“C” CLASS STATION (BLOCK HUT)**
Class “C” station are block huts where line clear may not be given for a train, unless the whole of the last preceding train has passed complete at least 400 meters beyond the home signal and is continuing its journey. This will also include an intermediate block post (I.B.P).

NON-BLOCK STATION OR CLASS “D” STATION:

It means class D station. These are stopping places which are situated between two consecutive block stations and do not form the boundary of any block section.

SIGNAL AT CLASS “D” STATION:

At class “D” station a train may be stopped in such a manner as may be authorized by special instruction.

At a class D station a PH marker post shall be provided by the side of the track on either approach to the station, at a distance not less than 400 meters from the center of the platform.

SPECIAL CLASS STATION:

Any station, which cannot be worked under A, B, C & D class conditions is termed called Special Class station.

NOTE: The classification of each station on S. E. Railway shall be given in the working timetable.

7.3

A. STATION LIMIT

STATION LIMIT

It means the portion of a railway which is under the control of station master and is situated between the outmost signals of the station or as may be specified by special instructions.

DEMARCATON OF STATION LIMIT

Section	Signaling Territory	Portion of Railway which lies between
Single line	TALQ	Between two outer most signals
(absolute block system)	MAST/MLQ/MOMA	Between two Distant signals
Single line (Auto signaling system)	Auto signaling section	Between UP & DN first stop signals
Double line	MAST/TAST/MLQ	Between the outer most signal on each direction separately.
(Absolute Block system)	(Single distant) MAST/MLQ/MOMA (Double distant)	Between inner distant and the last stop signal in each direction separately
Double line (Auto Section)	Auto section	Between the first automatic signal in rear of the home signal and the advance starter or Up to the outermost point at the trailing end where no advance starter is provided

NOTE: At a station where the auto signal falls within the jurisdiction of the Station in rear, the station limit shall be reckoned from the home signal

B. STATION SECTION:

- i) Station section is a part of station limit.
- ii) It exists only in B class station
- iii) It is situated between two consecutive block sections
- iv) Under the direct control of stationmaster on which obstruction is freely permitted.

DEMARCATON OF STATION SECTION

	Signalling	Commence from	Ends at
D/L	TAST	Home signal	- Last stop signal
	MAST	- At outer most facing point or	- Last stop signal
	MLQ	- At BSLB where there is no point or 1 st point is trailing point	- Last stop signal
S/L	TAST	i) Advance starter if provided	i) At the advance starter for opposite direction.
		ii) At the SLB of opposite direction if there is no advance starter or	ii) At the SLB if Advance starter is not provided
		iii) At the home signal if there is no Advance starter or SLB	iii) At the home signal of opposite direction
		iv) Outermost facing point if there is no advance starter or SLB	iv) At the outer most facing point if there is no advance starter or SLB in opposite direction.
S/L	MAST	i) Advance starter if provided	i) At the advance starter for opposite direction.
	MLQ		
		ii) At the SLB of opposite direction if there is no advance starter or	ii) At the SLB if Advance starter is not provided
		iii) Outermost facing point if there is no advance starter or SLB	iii) At the outer most facing point if there is no advance starter or SLB in opposite direction.

C. **BLOCK SECTION:-**

means the portion of running line between two block stations on to which no running train enter until line clear has been received from the block station at the other end of the block section.

DEMARCATON OF BLOCK SECTION:

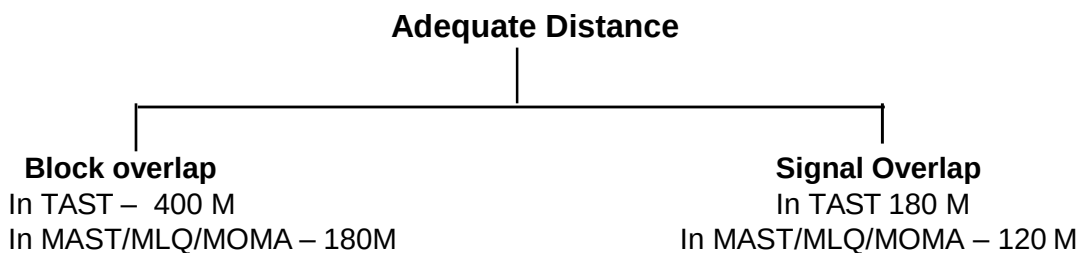
Class of station	Paint at the station in rear Block section commence	Point at the station in advance at which Block section ends
"A" class S/L & D/L section both in TAST	At the last stop signal	At the starter signal
"B" class D/L section in TAST	At the last stop signal	At the home signal
"B" class D/L section in MAST/MLQ	At the last stop signal	At the outermost facing point or at BSLB
"B" class S/L on TAST	i) At the advance starter if pro- vided or ii) At the SLB or iii) At the home signal of the op- posite direction if there is no ad- vance starter or SLB iv) At the outermost facing point, if there is no advance starter or SLB or Home signal.	i) At the advance starter of the op- posite direction if provided or ii) At the SLB for opposite direction if advanced starter not provided or iii) At the home signal if no advance starter or SLB iv) At the outermost facing point if there is no advance starter or SLB.
Class of station	Paint at the station in rear Block section commence	Point at the station in advance at which Block section ends"
"B" Class S/L in MAST/MLQ	i) At the advance starter if provided or ii) At the SLB if no advance starter or iii) At the outermost facing point if there is no advance starter or SLB	i) At the advance starter for opposite direction or ii) At the SLB for the opposite di- rection if no advance starter or iii) At the outermost facing point if there is no advance starter or SLB for opposite direction.
"C" class in TAST/ MAST/ MLQ on both S/L and D/L	At the home signal	400 M beyond the home signal.

7.4

ADEQUATE DISTANCE, BLOCK BACK AND BLOCK FORWARD

ADEQUATE DISTANCE:

It means the distance sufficient to ensure safety. There are different kinds of adequate distances kept for different purposes. The adequate distance is kept for granting line clear for a train is “BLOCK OVERLAP,” the adequate distance which is kept for lowering home signal is “SIGNAL OVERLAP,” the adequate distance which is required to bring the train to a stop is “BRAKING DISTANCE.” In auto section the portion of line which is required to be clear for change of aspect of the previous auto signal is called adequate distance. All the engineering warning boards and indicators also are placed at an adequate distance.



BLOCK OVERLAP:

It means adequate distance beyond the 1st stop signal of a station. This portion is to be kept clear for granting the line clear. This adequate distance shall not be less than 180M in MAST/MLQ/MOMA and 400 M in TAST.

NOTE: In MOMA at “C” class station it will be 400M

SIGNAL OVER LAP

It means the adequate distance kept beyond the starter signal on double line and the last trailing point in S/L for lowering of home signal of the station. This adequate distance shall not be less than 180M in TAST and 120 M in MAST/MLQ/MOMA.

BLOCK BACK:

It means to dispatch a message from a block station intimating to the block station immedi-

ately in rear on a double line, or to the next block station on either side on a single line that the block section is obstructed or is to be obstructed.

BLOCK FORWARD

Means to dispatch a message from block station of double line intimating to the block station immediately in advance the fact that the block section in advance is obstructed or is to be obstructed.

7.5

DIFFERENT SAFETY SIDINGS

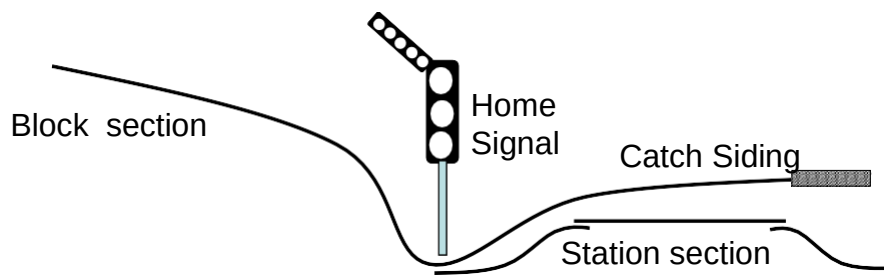
SIDINGS GR 3.50

For the purpose of reception and departure of the train in safe manner and to keep sick wagon and to ensure safety of block section and station section, different siding are provided at a station.

Except when the setting of switch, points is indicated by a fixed signal, a driver shall not pass over these points whether facing or trailing unless these are manned and proper hand signal exhibited.

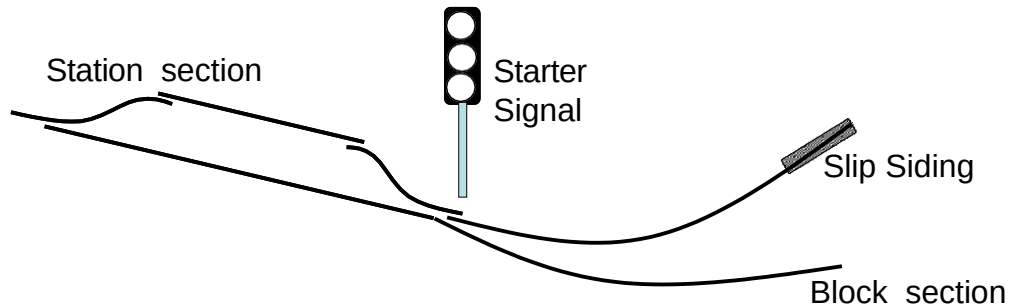
CATCH SIDING:

- (i) This is a safety siding provided to protect the station section/yard.
- (ii) It prevents unauthorized movements from the block section.
- (iii) It is provided where the station yard is in falling down gradient.
- (iv) It is interlocked with home signal in the approaching end and spring loaded in trailing end.
- (v) Normal setting of the point is always for the siding.



SLIP SIDING

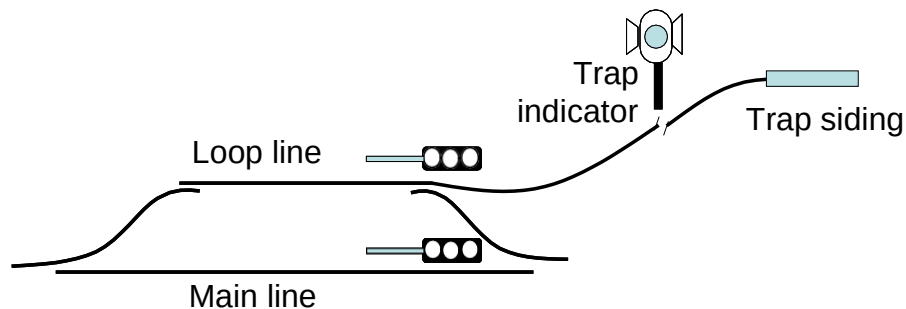
- i) This is a safety siding provided to protect the block section
- ii) It prevents unauthorized movements of vehicles from station yard.
- iii) It is provided where block section is in falling down gradient
- iv) It is interlocked with starter signal and the trailing end, is spring-loaded.
- v) The normal setting of the point is always for the siding.



NOTE: Backing is not permitted after passing spring-loaded point unless Authorized to do so by stationmaster through a written memo.

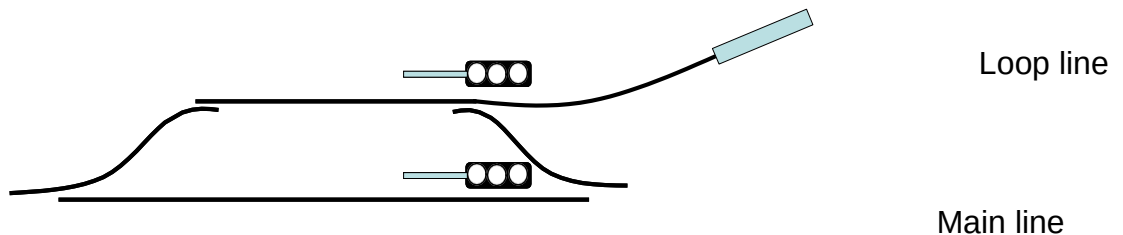
TRAP SIDING

- i) This is a extension of running line, ends in buffer stop.
- ii) It is provided to prevent the accidental escape of vehicle from the siding and fouling the running line.

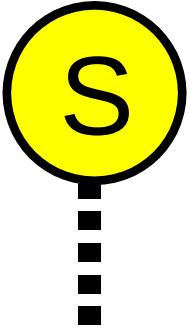


SAND HUMP

- i) It is an effective substitute for signal overlap
- ii) It is provided to facilitate simultaneous reception and dispatch of a train from the station.



“S” MARKER



- i) It is an indicator to indicate the Loco Pilot for points at the outlying sidings outside the station limit.
- ii) It shall be placed 30 m in rear of the facing points of the outline siding.
- iii) A speed indicator if any shall be fixed below the “S” marker to indicate the speed restriction.
- iv) It shall be preceded by a caution indicator fixed at 800 M in rear of “S” marker, in addition, the speed shall be given on the caution indicator board also.
- v) A “TP” board at a distance of 550 M and a “TG” board at a distance of 700 M shall be placed beyond the outlying siding point to indicate the driver for resuming the normal speed.

7.6

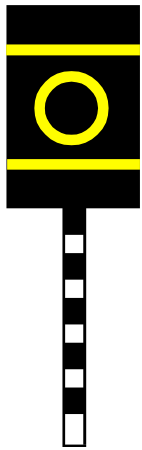
WARNING BOARDS

Warning boards are provided with a view to warn a Loco Pilot of an approaching train that he is approaching the first 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.

There are two kinds of warning boards-

1) Goods warning board & 2) Passenger warning board.

Note- In sections provided with double distant and in auto sections NO warning board is provided.

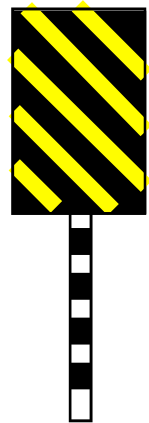


GOODS WARNING BOARD

This board is provided at a distance of 1.4 KM in rear of the first stop signal or a Gate or IB stop signal which is not pre-warned by a Warner/Distant signal located at a distance of not less than 1.4 KM. It is applicable to all goods trains and also to all passenger carrying trains on high speed section.(where the maximum permissible speed is above 100 KMPH).

PASSENGER WARNING BOARD

Passenger warning boards are provided at a distance of 1 KM in rear of the first stop signal I.B. stop signal or a Gate stop signal which is not pre warned by the provision of a Warner/Distant signal located at a distance not less than 1 KM from it. where the maximum permissible speed is upto 100 KMPH. Where the sectional speed ranges from 50 to 72 KMPH on broad gauge, passenger warning boards to be provided only at those stations where the first stop signal is not visible from an adequate distance of 800 m.



BOARDS IN STATION SECTION



Mainly 2 kinds of boards can be seen in station section to demarcate the block section and station section. They are BSLB and SLB.

SHUNTING LIMIT BOARD

- i) It is a board to demarcate the area of block section and station section in "B" class single line section under the absolute block system.
- ii) It shall be placed at an adequate distance not less than 400 meters from the 1st stop signal in TAST and 180 M in MAST/MLQ where there is no advance starter.
- iii)
- iv) It shall bear the word "SHUNTING LIMIT" on the side which faces this station and shall be fitted with a lamp.
- lv) It shall mark the limit up to which shunting may be permitted.

BLOCK SECTION LIMIT BOARD (BSLB)

- i) It shall be provided on D/L “B” class station under absolute block system equipped with MAST/MLQ signalling system where there is no points or 1st point is trailing point at the approaching end.
- ii) It shall be placed at a distance not less than 180 M in advance of the home signal and protect the fouling mark of outermost trailing point.
- iii) It shall bear the word “BLOCK SECTION LIMIT” on the side, which faces the station and provided to demarcate the block section.



7.7 Conditions for taking OFF signals

1) Conditions for taking OFF Home signal.

- 1) When a train is approaching a home signal otherwise than a terminal station, the signal shall not be taken OFF until the train has been brought to a stand outside it, unless-
 - a) On a double line, the line is clear for an adequate distance beyond the starter ;or
 - b) On a single the line is clear for an adequate distance beyond the trailing points or for an adequate beyond the place at which the train is required to come to a stand.
- 2) Where a train has first brought to a stand outside the home signal, the signal may be taken OFF if-
 - a) On a double line , the line is clear upto the starter, or
 - b) On single line, the line is clear upto the trailing points or under approved spl instructions upto the place at which the train is required to come to a stand.
- 3) The approved adequate distance (signal overlap) is 180m for TAST and 120 m for MAST/MLQ.
- 4) A sand hump or a siding having derailing switch with sufficient length is efficient substitute for the adequate distance as above.
- 5) If a train is be received on a loop line having a sand hump or trap siding is not with sufficient length, point is to be set towards main line upto the adequate distance beyond starter or trailing point as the case may be.

2) Conditions for taking OFF Outer signal.

- 1) When a train is approaching the Outer signal otherwise than a terminal station, the signal shall not be taken OFF unless the line on which the train is to be received in the station is clear-
 - A) In the case of double line , up to the starter and
 - B) In the case of single line, for an adequate distance beyond the first facing points.
- 2) Where the train has first been brought to a stand outside the Outer signal, the signal shall not be taken OFF unless the line is clear up to the facing points or upto the Home signal at a station where there is no facing points.

3) Conditions for taking OFF Last Stop Signal or IB Stop Signal

- 1) For double line, the Last Stop Signal or Intermediate Block Stop Signal shall not be taken OFF unless Line Clear has been obtained from the block section in advance.
- 2) On single line the Last Stop Signal shall not be taken OFF unless Line Clear has been obtained from the block section in advance.
- 3) For single line Intermediate Block Signalling –

- i) First the direction of traffic shall be established and then line clear shall be obtained from the block station in advance as per established direction of traffic.
 - ii) Only after establishing the direction of traffic, the train movement in the 'station controlled intermediate block section' shall be permitted, and
 - iii) The intermediate block stop signal shall not be taken OFF unless the line clear has been obtained from block station in advance and direction of traffic established.
- 4) Where Intermediate Block Stop Signal is provided, the Last Stop Signal of the station in rear shall be taken OFF on the clearance of the line provided with track circuit or axle counters between the last stop signal of station in rear and the IB stop signal.

4) Condition for taking OFF Warner signal

A warner signal shall not be taken OFF for a train that is booked to stop or for a train that has to be stopped out of course.

7.8 WORKING OF SIGNALS AND POINTS

INTRODUCTION

The working of signals and points are so interconnected mechanically or electrically or by both, that their operation must take place in proper sequence to ensure safety. A signal cannot be lowered (OFF) unless the concerning points are correctly set and locked and points cannot be reversed unless the signal is put back to "ON". Every fixed signal is so constructed that in case of failure of any part of the connection it shall remain at "ON" or return to its most restrictive aspect.

POINTS AFFECTING THE MOVEMENT OF A TRAIN (GR 3.38)

The station master shall not give permission to take signal off for a train until:

- a) All facing points over which the train will pass are correctly set and locked
- b) All trailing points over which the train passes are correctly set
- c) The line over which the train is to pass is clear and free from obstruction.

FACING AND TRAILING POINT

Points are facing or trailing in accordance with the direction a train or vehicles moves over them. Points are said to be facing points when by their operation a train approaching them can be directly diverted from the line upon which it is running.

LOCKING OF FACING POINTS:

Facing points when neither interlocked nor key locked shall be locked for the passage of a train either by a clamp or by a through bolt, with a pad lock. It is not sufficient to lock the lever working the points. (GR 3.39)

7.9

INTERLOCKING, ITS KINDS & STANDARDS of INTERLOCKING:

Means an arrangement of signals, points and other appliances, operated from a panel or lever frame so interconnected by mechanical locking or electrical locking or both that their operation must take place in proper sequence to ensure safety.

DIRECT INTER LOCKING

It means all levers i.e. points and lock lever and the signal lever are connected in one lever frame operated by mechanical and electrical means.

INDIRECT INTER LOCKING

It means that the points are set and locked from one frame and signals are operated from another place by other lever frame. Interlocking is affected by means of keys or transmitted from one place to another place.

Types of Interlocking

1. Mechanical interlocking
2. Panel interlocking (Relay)
3. Route Relay interlocking
4. Solid state interlocking

BASIC PRINCIPAL OF INTERLOCKING

- 1) It shall not be possible to take 'OFF' conflicting signals at once at the same time.
- 2) It shall not be possible to take 'OFF' signal for a running line unless-
 - a) All points on the running line are directly set and facing points are locked.
 - b) All points towards the siding and root line are set against the running line.
 - c) Interlocked level crossing gates are locked across the roadway.
 - d) The running line referred to above shall include adequate distance also.
- 3) Once a signal lever is pulled to take "OFF" a signal, it must be locked or back-locked as necessary.
- 4) Once a signal is in "ON" position all points which would be locked for taking it "OFF" must be free for shunting purpose.
- 5) It must be impossible to take "OFF" a Warner signal until all the relevant stop signal in advance have been taken "OFF" first and when "OFF" it must be back-locked.

STANDARD OF INTERLOCKING

The interlocking of facing points of a station are divided into 4 standard and according to the standard of interlocking the speed of a train over that interlocked facing points is fixed.

i) Standard- I Interlocking

- a) Speed over facing point – Not exceeding 50 KMPH
- b) Isolation - Isolation of main line is recommended but not essential.
- c) Points - The facing point should be provided with key locks.
- d) Interlocking - Interlocking between points and signals may be carried out indirectly by means of key locks.

ii) Standard- II Interlocking

- a) Speed over facing point – Not exceeding 110 KMPH
- b) Isolation - Isolation of main line is essential.
- c) Point s- The facing point should be provided with plunger type lock.
- d) Interlocking - Interlocking between points and signals may be direct or indirect.

iii) Standard- III Interlocking

- a) Speed over facing point – Not exceeding 140 KMPH
 - b) Isolation - Isolation of main line is essential.
 - c) Points - The facing point should be provided with plunger type lock.
 - d) Interlocking - Interlocking between points and signals must be direct.
- iii) Standard- IV Interlocking**
- a) Speed over facing point – Not exceeding 160 KMPH
 - b) Isolation - Isolation of main line is essential.
 - c) Points - The facing point should be provided with plunger type lock.
 - d) Interlocking - Interlocking between points and signals must be direct.

ISOLATION OF POINTS

It is an arrangement, secured by the setting of points or other approved means to protect the line so isolated from the danger of obstruction from other connected line or lines.

TRACK CIRCUIT AND AXLE COUNTER

TRACK CIRCUIT

It means an electrical circuit provided to detect the presence of a vehicle on a portion of track, the rails of the track forming part of the circuit.

AXLE COUNTER

It means an electrical device which when provided at two given points on the track, proves by counting axle in and counting axles out, whether the section of the track between the said two points is clear or occupied.

LESSON 8

SYSTEM OF WORKING

8.1

INTRODUCTION

The system under which trains are worked between stations is called system of working. All trains working between stations shall be worked on one of the following systems :-

- i) The absolute block system
- ii) The automatic block system
- iii) The following train system
- iv) The pilot Guard System
- v) The train staff and ticket system
- vi) The one train only system

The absolute block system and the Automatic block system normally shall be used on every railway, except any railway or portion of a railway on which the use of any other system of working mentioned above may be sanctioned under special instruction subject to the conditions applicable to each system. In S.E. Railway the Absolute Block System is in force in all sections, except the following

S/No.	Section	System of working in force
1	Tikiapara – Kharagpur (D/L)	Automatic Block system
2	Tatanagar – Rajkharswan (D/L)	Automatic Block system
3	Chandil – Sini (D/L)	Automatic Block system
4	Tikiapara --kharagpur (M/L) (Middle)	Single Line Automatic Block system
5	Tata - Aunlajhari (S/L)	Train staff and ticket system
6	Aunlajhari – Badampahar	One train only system
7.	Aunlajhary-Gorumahisani	One train only system
8.	Tamluk Junction- Digha	One train only system
9.	Bankura – Sonamukhi	One train only system
10.	Rupsa-Baripada	One train only system
11.	Adityapur – Rajkharswan (S/L)	Automatic block section

1.

THE ABSOLUTE BLOCK SYSTEM

ESSENTIALS OF THE ABSOLUTE BLOCK SYSTEM (GR 8.01)

- i) Where trains are worked on the absolute block system
 - a. No train shall be allowed to leave a block station unless line clear has been received from the block station in advance.
 - b. On D/L such line clear shall not be given unless the line is, clear not only up to the 1st stop signal at the block station at which such line clear is given but also for an adequate distance beyond it.
 - c. On single line such line clear shall not be given unless the line is clear of trains running in the same direction, not only up to the 1st stop signal at the block station at which such line clear is given but also for an adequate distance beyond it and is clear of trains running in the direction towards the block station to which such line

clear is given.

- ii) The adequate distance beyond the first stop signal shall not be less Than 400 m, in TAST and 180 m, in MAST/MLQ.

8.3

AUTHORITY TO PROCEED

Means the authority given to the driver of a train, under the system of working, to enter the block section with his train.

AUTHORITY TO RECEIVE A TRAIN

It means the authority which a Loco Pilot receives for getting into a station with his train. The normal authority which a driver may receive while getting into a station is taking "OFF" of the reception signal.

AUTHORITY TO DESPATCH A TRAIN

It means the authority which a Loco Pilot gets from a block station, for getting into the next block section with his train. The normal authority for a Loco Pilot to get into the next block section with his train is the taking "OFF" of departure stop signal.

8.4

Signal put back to danger (GR 3.36)

In case of emergency to avert an accident, or where starter and advance starter taken OFF for departing trains, that is trains starting from station after stop, are required to put back for the purpose of movement of another train for precedence or crossing shall be put back only after taking following precautions:-

- I) Relevant starter and advance starter may be replaced to ON position and thereafter , loco pilot of the train for which the signals had been taken OFF shall be advised by on duty station master through a secured means of communication , specified under special instructions or where secured means of communications are not available , through a written memo to the effect that the said signals have been replaced to ON and that the loco pilot shall not start.
- II) Till the loco pilot has been advised through secured means of communication referred above or through a written memo and his acknowledgement received , the route set shall not altered except to avert an accident.

8.5

AUTOMATIC BLOCK SYSTEM

ESSENTIALS OF AUTO-BLOCK SYSTEM ON DOUBLE LINE (G.R.9.01)

- I) Where, trains on D/L are worked on the automatic block system.
 - a. The line shall be provided with continuous track circuiting or Axle counters.
 - b. The lines between two adjacent block stations may, when required be divided into a series of automatic block signalling sections, each of

which is the

portion of the running line between two consecutive stop signals and the entry into each of which is governed by a stop signal.

c. The track circuit or axle counters shall so control the stop Signal governing the entry into an automatic block signalling section i.e.

i) The signal shall not assume an 'OFF' aspect unless the line clear is not only up to the next stop signal in advance but also for an adequate distance beyond it.

ii) The signal is automatically placed to "ON" as soon as the train passes it.

II) The adequate distance beyond the next stop signal shall not be less than 120 Mtrs.

ESSENTIALS OF AUTO BLOCK SYSTEM ON SINGLE LINE (GR 9.03)

i) The line shall be provided with continuous track circuiting or axle counters

ii) The direction of traffic shall be established only after line clear has been obtained from the block station in advance.

iii) The train shall be started from one block station to another only after the direction of traffic has been established.

iv) It shall not be possible to obtain line clear unless the line is clear, at the block station from which line clear is obtained, not only up to the 1st stop signal but also for an adequate distance .

v) The line between two adjacent block station may where required be divided into two or more automatic block signalling section by providing stop signal.

vi) After the direction of traffic has been established the movement of trains into, through and out of each automatic signalling section shall be controlled by the concerned auto stop signal and the said auto stop signal shall not assume OFF position unless the line clear is up to next automatic stop signal, if the next stop signal is a manual stop signal, then line is clear from an adequate distance beyond it.

vii) All stop signals against the direction of traffic shall be at "ON"

viii) The adequate distance refer to shall not be less than 180 m for 1st stop signal.

SIGNALS provided in AUTOMATIC BLOCK TERRITORY single line.

a) Manual stop signals at a station –

i) A Home

ii) A Starter.

iii) An automatic signal in rear of the home signal of a station.

NOTE Under approved special instruction the automatic stop signal in rear of home signal in single line section may be Dispensed with.

PROTECTION OF TRAIN STOPPED IN AN AUTOMATIC BLOCK SECTION (GR 9.10)

In case of accident, failure or obstruction, if the train cannot proceed in auto section, driver shall

i) Sound four short whistle (o o o o)

- ii) Use flasher light to stop an approaching train
- iii) Display danger hand signal Use warning signal, if required to stop an approaching train
- iv) Use the short circuiting clip on the adjacent track to control the movement of approaching train if required.
- v) When a train stops in automatic block signalling section, the guard shall immediately exhibit stop hand signal towards the rear end and check up that the tail light is correctly exhibited.
- vi) The train shall be protected immediately as per (GR 6.03) i.e. 600M – 600M-10M– 45M danger hand signal, except that for the protection of the occupied line, one detonator shall be placed at 90M from the train on the way out and similarly two detonators 10M apart, not less than 180M from the train and a stop hand signal shall be exhibited at a distance of 45M from the last detonator i.e. protection in rear from the last vehicle on the occupied line as 90 – 90 – 10 – 45M and danger hand signal.
- vii) Protection in front on the occupied line from engine as 600M-600M-10M-10M-45M and danger hand signal if any relief is required.

LOCO PILOT TO REPORT FAILURE IN AUTO SIGNAL (GR 9.11)

When a driver shall pass an auto stop signal at ON he shall stop his train at the next reporting station or cabin and report particulars of auto stop signals passed at ON by him, at the reporting station.

AUTO SIGNAL FAILURE REPORTING STATION (SR 9.11.01)

The driver shall report to the stationmaster at stations given below about the failure of an auto stop signal in writing, quoting the signal No.:

Howrah- Kharagpur section

- a) Suburban trains UP/DOWN at terminating stations.
- b) Down Goods train at Santragachi (SRC)
- c) Down coaching trains at Howrah (HWH)
- d) UP Goods /Coaching train at KGP.

TATA - Rajkharswan section

Tatanagar, Gamharia (GMH, Sini (SNY), RKSJ.

Chandil – Sini section

Chandil (CNI), Kandra (KND) & SNY

EXAMINATION OF DRIVER/ASSISTANT DRIVER FOR WORKING IN AUTO SECTION (SR 3.78.02)

All Loco Pilots /Assistant Loco Pilots who are required to work train on section having auto block system of working shall be imparted one day's intensive course once in every six months about the rules pertaining to this system and they found qualified, a certificate of competency shall be issued to each Loco Pilot/Assistant Loco Pilot.

8.6

ONE TRAIN ONLY SYSTEM

USE OF THE ONE TRAIN ONLY SYSTEM (GR 13.01)

Where trains are worked on the one train only system, only one train shall be on the section on which this system is in force at one and the same time.

Trains may be worked on the one train only system only on short terminal branches on the Single line.

AUTHORITY TO ENTER IN TO THE SECTION (GR 13.03)

A Loco Pilot shall not take his train into the section unless he is in possession of authority to proceed as prescribed by special instructions.

The authority to proceed shall be metallic badge.

NOTE: In case the loss of metallic badge a paper line clear ticket shall be issued, under the signature of the stationmaster on duty.

PROTECTION: (As per GR 6.03)

If a train becomes disable in the mid section and is unable to proceed the guard shall convey a written advice through Assistant Loco Pilot to the Stationmaster of the station from which assistant can be obtained. Disable train shall be secured properly and protected as per GR 6.03.

If no Assistant Loco Pilot, the Guard shall proceed to station and instruct to the Loco Pilot in a written to keep the train stationary until he is return and obtain written acknowledgement.

8.7

TRAIN STAFF AND TICKET SYSTEM

Essentials of the Train-staff and Ticket

Where trains are worked between two stations on the Train-staff and Ticket System, -

- (a) a single Train-staff shall be kept at one of such stations, and
- (b) no train shall start from either of such stations to the other unless the said Train-staff is at the station from which the train starts and has either been handed to or shown to the Loco Pilot by the Station Master when giving such permission.

System where applicable .

Trains may be worked on the Train-staff and Ticket System only when the line is single and only between such stations as have been declared by special instructions to be Train- staff stations.

Conditions to be observed for following trains on the Train-staff and Ticket System.

Trains shall not follow one another in the same direction between Train staff stations, unless -

- (a) the Loco Pilot has been properly warned of the time of departure of the preceding train and of the place at which it will next stop;
- (b) all the trains are timed to run at the same speed, and such speed shall not exceed 25 kilometers an hour except under special instructions; and
- (c) an interval of fifteen minutes has elapsed since the departure of the preceding train.

Loco Pilot to have Train-staff or Train-staff Ticket.

No train shall be started from a station unless the Loco Pilot has in his possession to be carried with him on the journey, either the Train-staff or a Train-staff Ticket, for the section of the line over which the train is about to travel.

Note -

The Loco Pilot shall not accept a Train-staff Ticket unless he sees the Train-staff

at the same time in the possession of the person who delivers the Train-staff Ticket to him.

8.8

FOGGY WEATHER WORKING (A&C 109/113)

- (1) Provision of Fog safe device:- A reliable fog safe device, if available, may be provided on all locomotives running in fog affected area during fog. Placement of detonators under conditions prescribed in para 5(i) will be dispensed with, where reliable fog safe device is available and is in working order.
- (2) Modification of Automatic signaling system : Introduction of modified Automatic Signaling System as per GR 9.01 (3) & (4) and 9.03 (3) and (4) and gR 5.18 to be followed strictly.
- (3) PME/refresher training and other Safety/Promotional courses of Loco Pilots/Asstt. Loco Pilots and guards in STCs/ZRTs etc who become due between 15th December and 31st January should be completed by 15th December. All crews (loco Pilots/Asstt. Loco Pilots and guards) on stationary duty should be utilized for train working especially during fog. Simultaneously loco/crew/rake links to be reviewed during the period of fog.

(4) Visibility Test Object (VTO) :-

- (i) The check of adequacy of visibility through the VTO is to guide the SM/ASM so as that he can decide when detonators are to be placed to warn the loco pilot of the location of an approach stop signal.

- (ii) VTO for semaphore signaling and for two aspect CLS :-

The VTO may be the light (or arm by day) of a starter signal (where exists) or the back light of the home signal etc, as defined in GR 3.61/(2) (b). in such cases, the VTO is normally located 300-350 meters at a place from where it is to be seen by the SM During foggy or tempestuous weather, when such a VTO is not seen by the SM, it shall determine fog has set in.

Note :- the Visibility test object to be defined in the SWR of stations, which qualify for placement of detonators, should be on each end of a station (for Junction stations there may be more than two VTOs)

- (iii) Prescribed VTO for multiple aspect colour light signaling :-

- (a) Stations with MACLS shall have a prescribed VTO located at a distance of 180 meters from a nominated location where the SM Shall stand.

- (b) When a prescribed VTO is not visible from 180 meters or more during dense fog, the SM shall not use his discretion as per GR 3.61 (2)(a) but will arrange to place the detonators to warn the loco pilot, unless specified otherwise in these instructions.

Note :- There should be one visibility Test Post MACLS territory (at stations which qualify for placement of detonators) located at a distance of 180 meters from the place where at the SM shall normally stand to see the prescribed VTO.

- (iv) Where the VTO (or the prescribed VTO) provided under conditions laid down is not visible to the SM, he shall take action as under :-

- (a) Ensure that signals are lit during night as well as during day in Semaphore Signaling sections when visibility is impaired due to fog, and VTO is also lit.

- (b) Observe the VTO before granting line clear to a train.

- (c) In case prescribed VTO is not visible take action as under :-

Depute fog signalman with detonators to place detonators in situations prescribed under para 5 (i) at 270-280 meters from the first stop signal to inform in advance the location of this signal to the loco Pilot of the approaching train.

Engineering Department will make all efforts to provide fog signalman.

No shunting should be carried out on non-isolated lines after granting line clear to an approaching train.

- (d) Provisions given as per GR 5.18 to be followed strictly and no train to be advanced beyond the starter, or beyond intermediate starter signal where these exists, up to the advance starter at stations which do not have track circuiting in the zone.

(5) Necessity of placement of detonators :-

- (i) **Where it is necessary to place detonators** :- The detonators should be placed at 270 meters short of the First stop Signal at station detailed as under :-

- (a) At 'A' class stations where warner exists – Detonators to be placed short of Home signal and not the warner.
- (b) At 'B' class station equipped with lower Quadrant Signals – Detonators to be placed short of Outer Signal.
- (c) In Multiple Aspect Signaling, where single distant signal is provided Detonators to be placed short of Home Signal.

Note :- The fog signal posts will be provided only at stations where there may be a requirement for placing detonators. Such post may, therefore, be shifted suitably based on the above mentioned position (s).

- (ii) **Where not necessary to place detonators** :- it is not necessary to place detonators to indicate 'location of a Stop Signal' to the loco Pilot in the following circumstances :-

- (a) In sections where a reliable fog safe device has been provided on locomotives.
- (b) Where adequate pre-warning is provided, i.e., at stations where double distant signals are provided.
- (c) Where maximum speed allowed in the station section is up to 15 kmph even at stations where pre-warning signal is not available, but a warning board exists.
- (d) Where speed of the section is less than 50 kmph (but more than 15 kmph) and the first signal of a station is not a stop signal.
- (e) In Automatic Signaling territory.
- (f) On Gate signal.
- (g) On departure Signal.
- (h) At a site (s) of Temporary speed Restriction imposed due to maintenance of Track/OHE/Signal.

(6) **Precautions by Loco Pilot** :- (SR.3.78.04 is reproduced here)

The loco Pilot shall take action in regard to speed of the train during fog as under :-

- (i) During fog when the loco pilot in his judgment feels that visibility is restricted due to fog. He shall run at a speed at which he control the train so as to be prepared to stop short any obstruction, this speed shall in any case not be more than 60 kmph.

However, speeds of trains during foggy/inclement weather may be enhanced to 75 kmph provided that there is fog safe device in the loco and subject to the judgment of loco pilot.

- (ii) Loco Pilot to whistle frequently to warn the gateman (whenever provided) and road users of an approaching train at level crossing.
- (iii) In absolute Block System the speed should not exceed 60 as detailed at item (i) above.
- (iv) In Automatic Block Territory the speed will be subject to the judgment of the Loco Pilot as mentioned in item (i) above and shall not exceed as under :-
 - (a) After passing Automatic Stop Signal at 'Green' , the speed not to exceed 75/60kmph.
 - (b) After passing Automatic Stop Signal at 'Double Yellow', the speed not exceed 30 kmph.
 - (c) After passing an Automatic stop Signal at 'Yellow', the loco Pilot to run at a further restricted speed so as to be prepared to stop at the next stop signal.
- (7) (a) As provided under GR 4.16(1) (b), a red tail lamp of approved design displaying a flashing red light, during day or night, to indicate last vehicle check device in foggy weather should be provided and lit on the last vehicle.
- (b) First stop signal location kilometer chart of every station to be provided to each Loco Pilot either as an easy to carry card or in the Working Time Table.
- (c) Prevailing Fog situation should be advised to crew and guard in lobby during 'Sign on

DUTIES OF THE STATION MASTER- In such weather conditions, when the light of **VTO**, located at a distance of 180 meters in either side of station building, can not be seen, the station master on duty shall personally ensure the station signal are lit and then send trained fog signal man to each direction to the fog signal post which are erected at all stations 270 meter in rear of the 1st stop signal of the station to place detonators.

On reaching the fog signal post the fog signal man shall place two detonators 10 meters apart with a view to indicating to the approaching train Loco Pilot about the proximity of fixed signal.

DUTIES OF ENGINEERING STAFF - When the light of the caution indicator, provided at a temporary speed restriction zone can not be seen from a distance of 180 meters, the engineering official incharge of the spot arrange to place two detonators about 10 meters apart at a distance of 270 meters in rear of the caution indicator to indicate to the driver of an approaching train about the proximity of the temporary speed restriction.

LESSON 9

OPT FORM (AUTHORITIES)

9.1

DIFFERENT FORMS/AUTHORITIES USED IN CONNECTION FOR TRAIN MOVEMENT

T/369(1) _

1. Advance authority to pass defective reception signals of the station in advance.
2. This is used in absolute block system only.
3. For goods trains it is issued from the station immediately in rear of the block station at which the signal become defective
4. If the station immediately in rear happens to be a block hut, T/369(1) shall be issued from the station in rear of the block hut.
5. For mail express trains this authority shall be issued from the last stopping station of the train.

NB:- this authority should not be issued for NO light signal.

T/369(3b)

It is a written authority

- i) For Piloting a train into the station when outer, home or routing signal at ON or defective.
- ii) For piloting a train into the station where conflicting signal occurs.
- iii) For piloting in a train into the station when approaching stop signal remains flickering / bobbing or showing more than one aspect or no light or white light.
- iv) For passing IB signal at ON or defective when rear station is aware of the defective of IB signal.
- v) For dispatching a train when lock and block instrument is suspended.
- vi) For piloting out a train from the station during non-interlocking work.
- vii) For piloting out a train when departure stop signals at ON or defective.
- viii) For piloting IN from home signal in auto section.

T/509-

- i) Authority to receive a train on an obstructed line or non signalled line.
- ii) Receive a train from wrong line
- iii) To restart a train stopped after passing an approaching stop signal due to any reason.

T/511

- i) It is a written authority to start a train from a non signalling line.
- ii) To restart a train stopped after passing any departure stop signal **other than last stop signal** due to any reason.
- iii) Working of a train in auto block system (S/L) when direction of traffic is established but last stop signal is defective T511 and T/A-912 is given.

NOTE:

- a) Tangible authority and T/511 will be given when more than one train is waiting for departure for the same direction in single line sections.
- b) If there is only one train T/511 will not be given, only tangible authority will be given

T/512- Authority to start a train from a line with common starter (with lowering of common starter).

T/806- Shunting order

This authority is given -

- 1) When there is no fixed signals to control shunting movements.
- 2) When fixed signals provided for shunting movement has become defective.
- 3) When it is required to perform shunting movement by entering in to the block section. Note- When shunting movements are being performed by entering in to the block section after 'Blocking back' or "Blocking forward" the authority shall contain Pvt. No .
- 4) When SPI becomes defectives.

T/A-912

It is a written authority

- i) To pass all governing and non governing auto stop signal/semi-auto stop signal, working as manual stop signal/gate stop signal in auto block territory at ON or defective without private No.
- ii) To pass last stop signal at ON or defective on D/L auto section

T/B 912

Authority to proceed with out line clear on Automatic block signalling territory.

T/C-912

Authority to proceed for relief engine/train into on automatic block signalling section

T/D-912

- i) Authority to proceed on Automatic block system during prolonged failure of all signals or series of automatic stop signals.
- ii) To pass the defective last stop signal when there is no intervening stop signals provided between two block stations (consecutive) in auto signalling territory.

T/A - 602 - Block ticket

- i) Authority to proceed for relief engine /train on occupied block section,
- ii) During heavy engineering work.
- iii) Without introducing single line working train to run on right direction but on wrong
Line (for goods train /Light engine only)

T/409- Divisional Caution order :-- Issued from notice station/originating station.

T/A-409- Nil Caution order.

T/B -409- Reminder caution order- Form intermediate stations.

T/C-1425 Paper line clear ticket for UP train**T/D-1425 Paper line clear ticket for DN train**

- i) During S/L working introduced on D/L auto block system.
- ii) To pass last stop signal at ON or defective on token less system (S/L).
- iii) When block token instrument is out of order or not provided.(S/L).
- iv) S/L auto section ,when panel working is suspended to pass last stop signal at ON.

ED 9.39 (UP) /ED 9.40 (DN)

Engineering stop order for UP and Down trains.

OCC key or SKB

Shunting authority to the station provided with token less instrument on S/L section.

9.2**CAUTION ORDER**

A caution order is the guideline issued from a block station, in the form of a list or chart in a prescribed form solely meant for the purpose to the Loco Pilot and Guard of a train, where in consequence of the line being under repair or for any other reason, special precaution are necessary to be observed between stations.

A Loco Pilot must not start his train from a originating station or a notice station without a caution order. If no caution is required to be observed in section, a 'NIL' caution order is to be issued.

CONDITION FOR ISSUING CAUTION ORDER

Given below are few circumstances under which a caution order shall be issued.

- i) When in consequence of the line being under repair or for any other reason special precaution is necessary.
- ii) To look out for a train which is overdue.
- iii) When any interlocked points, derails etc. go out of order or become defective in any way.
- iv) When a material train works between stations etc.

9.3**TYPES OF CAUTION ORDER**

Caution orders are of three types, namely -

- i) Caution order-T/409
- ii) Nil caution order -T/A 409
- iii) Reminder caution order-T/B 409

CAUTION ORDER-T/409

This is issued either from a train originating station or from a notice station. In this caution order, all speed restrictions are written serially which are to be observed through out the journey.

NIL CAUTION ORDER -T/A 409

This caution order is issued either from a train originating station or from a notice station when there is no caution to be observed throughout the journey.

REMINDER CAUTION ORDER-T/B 409

This caution order can be issued from any block station in case of any emergency when a restriction or special precaution which is to be observed is not written on T/409 or as a re- minder caution order to attract the attention of a Loco Pilot.

9.4

TERMINOLOGY OF A CAUTION ORDER

Following are the terminology used in a caution order with their meanings:

Sl. No.	Abbreviation	Explanation
1	O.E.S	OBEY ENGINEERING SIGNAL
2	C.T.R	COMPLETE TRACK RENEWAL
3	T.R.R.	THROUGH RAIL RENEWAL
4	L.W.R.	LONG WELDED RAIL
5	C.W.R	CONTINUOUS WELDED RAIL
6	T.S.R.	THROUGH SLEEPER RENEWAL
7	S.W.R	SHORT WELDED RAIL
8	U/S	UNSERVISABLE SLEEPER
9	S.E.J.	SWITCH EXPANSION JOINT
10	U.C.	UNCONSOLIDATED (LESS BALLAST)
11	S.D.I.R	STOP DEAD IF REQUIRED
12.	P.B.R.	PULLING BACK OF RAILS
13	R.A.T	RAILWAY AFFECTED TANK
14	MFD	MASCHINEN FABRIKEN DEUTSCHLAND

A & C 101 issue of caution order for changing of signal location or erection of new signal for 90 days from the date of such changing.

PRESERVATION OF CAUTION ORDER

Caution orders are prepared in triplicates. The first foil is issued to the Loco Pilot, the 2nd to the Guard and the 3rd foil is preserved as record. The record foils of the caution orders shall be preserved for a period of 12 months after issue.

DISPOSAL OF CAUTION ORDER

The Loco Pilot and the Guard shall hand over the caution order to the Loco/Traction Foreman (RSO) and station master respectively at the end of the journey along with other train papers.

LESSON 10

WHISTLE CODE

10.1

INTRODUCTION:

To establish the communication in between or to warn the guard, station staff, train driver, gateman and road users and staff working on track, prescribed whistle codes are sounded from engine cab as per situation and conditions.

10.2

TYPES OF WHISTLE CODES.

The whistle codes, which are used in different occasions, are mainly two types.

- | | | |
|------|---------------|---|
| (i) | Short Whistle | 0 |
| (ii) | Long Whistle | — |

The prescribed code of whistle shall be blown in different conditions in different ways.

10.3

SIGNIFICANCE OF DIFFERENT CODES:

The driver shall sound engine whistle as per special instructions.

- i) Before putting an engine on motion
- ii) When entering tunnel
- iii) At such other times and places as may be prescribed by special instruction.

10.4

WHISTLE BOARDS (SR 4.50.02)

Whistle boards are provided with a view to indicating to Loco Pilot of an approaching train to sound the engine whistle to warn gateman, gang man and staff working on track or road users at the level crossing or site of work or curve or cuttings.

The Loco Pilot shall sound the whistle/Horn continuously up to the site from W board.

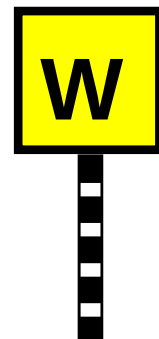
At level crossings an intermittent whistle from W/L board to RW/L board and continuous whistle from RW/L to level crossing shall be sounded.

Whistle boards are of three types:

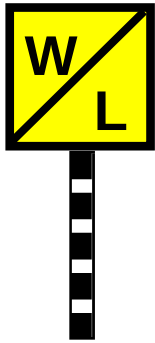
- | | |
|-----------------|------------------|
| i) "W" board | (ii) "W/L" board |
| iii) RW/L board | |

i) "W" BOARD:

"W" board is provided before curve, cuttings and when visibility of line ahead is limited up to **800M** or less. It shall also be



provided on approaches to every tunnel at a distance of 800M from it in broad gauge.



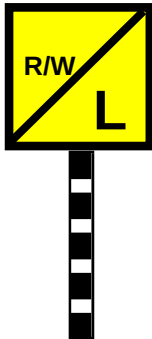
ii) “W/L” BOARD

It shall be provided on the approaches to all unmanned “C” class level crossings and also to those manned level crossings where the view not clear on either side from a distance **600m** and those which have normal position open to road traffic without interlocking and protection by signals. This board shall be provided at a distance of 600m from the level crossings.

iii) “RW/L” BOARD

Repeater whistle board as per figure (c) with the letters “RW/L” shall be provided on the approaches of all unmanned level crossings only, at a distance of 250 metres on the either side followed by W/L boards.

R/W/L board figure to be inserted.



10.5

WHISTLE CODES AND THEIR INDICATIONS (SR 4.50.01)

Sl. No.	Code of engine whistle	Indication
1.	0	a) Before starting - i) Indication to driver of assisting/banking engine that the driver of leading engine is ready to start. ii) Acknowledgement by the driver of assisting/banking engine to leading engine. iii) Engine ready to leave loco yard or after completing loco works. iv) Engine ready to go to loco yard. b) On run (i) Assistance of other engine not required (ii) Acknowledgement of driver of assisting/banking
2	00	a) Call for guard signal b) Signal not exchange by guard c) Signal not exchange by station staff
3	—0	a) Guard to release brake b) Before starting engine, train from station/mid section c) Main line clear after backing into siding
4	0 0 0	a) Guard to apply brake b) Train is out of control guard to assist c) Before detaching engine from train.
5	0 0 0 0	
		a) Train cannot proceed due to accident, failure, obstruction or other exceptional cases b) Protect the train in rear
6	— — 0 0	
7	0 — 0	a) Call for guard to come to engine
8	—	a) Token not received or missed b) With wrong "Authority to proceed" c) Passing stop signal at ON with proper authority a) Before starting vacuum recreated on Ghat section remove sprang b) Passing an auto stop signal at ON c) Passing an IB stop signal at ON when telephone is out of order d) On run acknowledgement of guard's signal.

9(i)	----- (Continuous)	a) Approaching level crossing, tunnels, curves, and cuttings site of accident or when view ahead is obstructed due to fog storm or any other reasons the view of signal is obstructed. b) Recall the railway servant protecting the train in rear c) Material train ready to leave d) Running through a station e) Approaching stop signal at ON f) Detained at a stop signal
9(ii)	(.....) Long intermitently)	Approaching level crossing gate from W/L to RW/L.
10	----- 0----- 0	a) Train parting b) Train arriving in complete.
11	0 0 —	a) Alarm chain pulled (ACP) b) Insufficient BP pressure in engine c) Guard applies brake by BP dropping
12	— —	a) Raise pantograph to be acknowledged by the other engine
13	----- 0 -----	Lower pantograph to be acknowledged by the other engine
14	----- 0 0	a) Signal arm lowered but light extinguished b) Signal arm improperly/insufficiently taken OFF c) Defective signal
15	— — —	Fouling not cleared
16	0 0 0 0 0 0 (Frequently)	a) Apprehension of danger b) Danger signal to the driver of approaching train whose path is fouled or obstructed for any reason c) While working on a single line section during total failure of communication or when single line working is introduced on double line section. d) Moving in wrong direction on double line or against the signalled direction in the auto block signalling territory (D/L) or against established direction in the automatic block signalling territory (S/L)

10.6

Bell signals (SR 4.51.01)

For single or multiple unit electric trains, the following bell signal codes shall be used between the Motorman and the Guard. In case of failure of electric bell equipment in the cab, the codes shall be sounded by horn.

S/No.	Code of Bell signal	Indication	Acknowledgement
1.	0	Stop train	0
2.	00	Start train	00
3.	000 pause 0	To push back train	000 pause 0
4.	00	During run through	00
5.	000	Guard required by Driver	000
6.	00000	Brakes tested found alright	00000
7.	00000 pause 0	Brakes tested and not found alright	00000 pause 0
8.	0000 pause 0000	Information to Motorman regarding guard leaving the cab.	0000 pause 0000
9.	00 pause 00	Passing automatic signal at on	00 pause 00
10.	0000	Protect train in rear	0000
11.	00 pause 0	Proceed with caution while working under GR 4.21 (2) (a)	00 pause 0
12.	000 pause 000	Guards warning to Motorman if EMU exceeds the prescribed speed after passing an auto signal at 'ON'	000 pause 000
13.	0 pause 0	Zone of speed restriction is over, resume prescribed speed	0 pause 0

LESSON 11

WORKING OF TRAINS

INTRODUCTION

Loco Pilot/Motorman must be on the alert and be ready to start his train on receiving the guards signal after having satisfied that correct departure signal if any have been taken OFF, and correct authority to proceed under the system of working has been received. No passenger train must be allowed to start before the departure time, notified in public time table.

11.1

STANDARD TIME (GR 4.01)

The working of trains between stations shall be regulated by the standard time prescribed by the Government of India which shall be transmitted daily to all Principal stations of the railway at 16.00 hours in the manner prescribed.

On receipt of correct standard time daily at 14.10 hours from the Telecommunication Inspector of each division test room, the Chief controller or in his absence the Deputy chief controller of each divisional control office shall check the time of the Divisional Control Office. He shall then use common ring to communicate at 16.00 hrs to all the Section controllers. He shall also transmit the correct time to other Sub/Area control office in the same manner.

ADHERENCE TO ADVERTISED TIME (GR 4.02)

No passenger train or mixed train shall be despatched from a station before the advertised time.

PUNCTUALITY OF TRAINS (SR 4.02.01)

Loco Pilot/ Motorman must be on the alert and be ready to start his train immediately on receipt of the Guard's starting signal, but only after satisfying themselves that the correct departure signal, if any, have been taken "OFF" and they are in receipt of " Authority to proceed", but no train carrying passenger must be allowed to start before the departure time notified in the public time table.

SETTING OF WATCH (GR 4.03)

Before a train starts from terminal or crew changing station, the guard shall set his watch by the station clock, and communicate the time to the Loco Pilot who shall set his watch accordingly.

SUPPLY OF WORKING TIME TABLE (GR 4.07)

A copy of working time table and (appendices) if any shall be supplied to the Loco Pilot.

TIME OF ATTENDANCE FOR TRAIN CREW (GR 4.04)

Every guard, Loco Pilot, Assistant Loco Pilot shall report for duty at such place as

may be ordered by the DRM or by an Officer on his behalf.

LIMITS OF SPEED GENERALLY (GR 4.08)

The driver shall regulate and control the running of the train according to the working time- table so as to avoid either excessive speed or loss of time. He shall not make up more time

11.2

RECEIVE A TRAIN ON OBSTRUCTED LINE :

1.
 - a) when ever possible intimate the LP through SM of the station in rear that the train is to be received on as obstructed line.
 - b) Ensure that all the signal or signals controlling the the reception of the train are not taking OFF and
 - c) Ensure that all the points over which the train has to pass are correctly set and facing points locked.
2. Stop at the stop signal, it may be received on the obstructed line
 - a) by taking OFF the callin_ on signal, where provided.
 - b) Where the signal post telephone provided, in accordance with special instruction.
 - c) through a written authority i.e. T/509, by piloting the train.
3. Stop, the train at the facing point leading to the reception line until hand signal shown by SM/Cabin ASM.
4. A stop hand signal shall be exhibited at a distance of not less than 45 meters from the point of obstruction.
5. The LP shall keep his train well under his control and be prepared to stop short of any obstruction between any two stations than allowed in this behalf in the working timetable observing the speed restrictions in force.

11.3

BACKING OF TRAIN FROM BLOCK SECTION TO THE STATION FROM WHICH IT LEFT (SR 4.12.01)

Whenever due to unavoidable circumstances the Loco Pilot wants to push back the train to the station from which it has come, the Loco Pilot shall inform the fact to the guard then

- i) Guard will authorise the Loco Pilot to do so by issuing a written memo after obtaining permission from the station in rear to push back ,by any available means.
- ii) If the view ahead is not clear or at night, assistant Loco Pilot or other railway servant shall pilot the train with hand signal at an adequate distance in advance of the leading vehicle.
- iii) The guard shall travel in the leading brake van/vehicle while pushing back and shall be prepared to apply brakes if necessary.
- iv) The driver shall push back the train at walking pace up to the 1st stop signal on single line or 1st stop signal of the correct line/last stop signal of the wrong line, which ever comes first and from their train shall be piloted in

- v) After the train has been brought to stop at the station, the driver shall sound the engine whistle two long. (- -)

11.4

BACKING OF TRAIN ON THE PORTION OF LINE AFTER PASSING THE IB STOP SIGNAL.

- 1) When the loco pilot of a train finds it necessary to back his train after clearing an intermediate block stop signal, on the portion of the line provided with axle counters, track circuit, due to unavoidable circumstances, he shall not do so without attention of guard by sounding four short whistles, where upon the guard shall check up that the tailboard/lamp is correctly exhibited and shall proceed to protect the train as prescribed in GR 6.03.
- 2) The guard shall then check the location of the train and enquire from the Loco Pilot the distance up to which backing is required and ensure that the distance is not likely to foul the track section provided for axle counter/track circuit. In order to clearly demarcate the track section, a board with legend **BACKING IS NOT PERMITTED BEYOND THIS POINT** shall be fixed at an adequate distance beyond the track section.
- 3) If the backing is not likely to foul the axle counter/track circuit section, guard shall give a written permission to the Loco Pilot for indicating the approximate distance and after protecting the train with reference to the point upto which train has to be backed.
- 4) If the train which has passed the portion of the line controlled by axle counter /track circuit is to be backed and while backing, likely to foul the above track circuit portion, the guard shall before giving such permission walk to the telephone provided on IB stop signal post and contact the station master on duty of the station in rear over the telephone and confirm by a private number from the station master in rear that no train has been allowed behind his train shall be allowed from the rear till the guard confirms the station master that his train is cleared the section.
- 5) The private number so received shall be recorded on the memo to be issued to Loco Pilot.

11.5

ENGINE PUSHING (GR 4.12)

- i) No engine shall push a train outside the station limit except in accordance with special instructions and at a speed not exceeding 25 kmph
- ii) This rule shall not apply to an assisting/banking engine in rear of a train, which may be permitted under a special instruction to run without being coupled or coupled to a train.
- iii) A "Patrol" or "Search Light" special with one or more vehicles attached in front of the engine may be permitted to run at a maximum speed of 40 KMPH.

11.6

DIMMING OF HEAD LIGHT (SR 4.14.02)

The Loco Pilot shall dim the headlight on their engines in the following cases.

- i) When remains stationary at a station.
- ii) While crossing a train in opposite direction in D/L section
- iii) While performing shunting
- iv) When required to avoid running into dazzled cattle or human being
- v) To spot the light indication of a signal.

11.7

RIDING ON ENGINE in motion(SR 4.22.01)

In addition to the engine crew the following persons may ride on the engine or driving cab of EMU/Train , but not more than 3 (three) excluding Engine crew.

- i) An Officer holding a metal pass
- ii) Guard in case of emergency
- iii) Traffic staff when performing shunting or when piloting in.
- iv) Staff proceeding to attend an accident.
- v) An officer or inspector whose pass is specifically endorsed by CEE/CME/DRM

11.8

EXCHANGE OF SIGNALS BETWEEN LOCO PILOTS, GUARDS & STATION STAFF (GR 4.42)

Exchange of signals by the engine crew, guard and station staff is must, which ensures the alertness.

EXCHANGE OF SIGNALS BETWEEN LOCO PILOT AND STATION STAFF

- i) While passing through a station, signal shall be exchanged with the station staff.
- ii) While entering at station – with 1st cabin
- iii) While starting a station – with departure cabin

- NOTE:**
- a) One long continuous whistle is to be sounded while passing Through a station in addition to exchanging of signals.
 - b) Loco Pilot and Assistant Loco Pilot should remain in driving cab.

EXCHANGE OF SIGNALS BETWEEN LOCO PILOT AND GUARD (4.42;4.42.01)

- i) As soon as the train starts from a station
- ii) As soon as the train starts after stopping outside the station limit
- iii) When the last vehicle leaving the last trailing point of the yard

Usual starting signal from his brake van/ SLR as per 4.35.03.Loco pilot shall acknowledge by whistle code prescribed in SR 4.50.01 (3) (b) and start the train.

Exchanging of signal between Guard and Loco Pilot while passing level crossing gate :- If the train is found passing NORMAL, the Gateman must exchange All Right Signal with guard and the guard in turn exchange of “All right signal” with LP/ALP after passing train at all manned level crossing gates.

Exchanging of signal by Gateman (SR 16.04.01 A&C 105)

The gateman of all level crossing gates should stand attentively at the gate lodge side facing the track with furled Red and Green flags during day in right and left hand respectively and at night hold the hand signal lamp with the white light pointing towards the track.

EXCHANGE OF SIGNALS WITH STATION CABIN STOPPING AND NON-STOPPING TRAINS

The Loco Pilot and the guard shall be on the look out for the signals displayed by the cabin man and shall acknowledge and exchange green hand signal with that person when they are opposite to each other. If the cabin man exhibit a stop hand signal, The guard and the Loco Pilot shall take immediate steps to stop the train and find out the reason for showing danger hand signal.

GUARD DOES NOT EXCHANGE THE SIGNAL:(SR 4.42.05)

In case the Loco Pilot does not receive signal from the guard he shall sound two short, (o o) whistles, if still the guard does give any signal, the train shall be stopped and the cause to be enquired.

SR 4.42.01 (d) The guard of Rajdhani, Duronto & shadabdi type of trains i.e. trains having air –conditioned guard compartment, is not required to acknowledge hand signals given by station staff but a sharp look out must be kept by him for enabling to stop the train, should a danger signal being exhibited by station staff / gateman. Other train guards must exhibit signal and watch for all right signal by station staff.

SIGNAL NOT EXCHANGED BY STATION STAFF:(SR 4.42.07)

In case the station staff does not exchange signal while passing through a station the Loco Pilot shall exercise extra caution to ensure, all is right for the train to proceed on and record the same in the rough journal.

11.9

Starting of Trains :- (GR 4.35) Sub- rule (3)

- 1) The Guard shall not give the signal for starting unless he has satisfied himself that, except in accordance with special instructions, no person is travelling in any compartment or vehicle or roof of the vehicle not intended for the use of passengers.
- 2) Guard, loco Pilot or Asst. Loco Pilot shall take help, if necessary from Government Railway Police, Railway protection force and station staff to remove the unauthorized persons from the compartment or vehicle or roof of the vehicle.
- 3) If the starting signal is not visible due to curvature, bridge or any other reasons, the guard shall give verbal permission to LP/ALP to start the train, over walkie talkie mentioning his identity along with station name/train number while communicating.
- 4) Guard shall also confirm the identity of the speaker at the other end. LP shall acknowledge it through whistle code and then only start the train.
- 5) After the train has started, the Guard shall satisfy himself that everything is 'all right' and shall then exchange all right signal as soon as possible and also after the last vehicle has passed over the points on quitting the yard.
- 6) LP/ALP shall acknowledge it by prescribed whistle code as well as with hand signal.

- 7) If all right signal is not received from the Guard, then LP shall call for the Guard's signal by sounding whistle code or contacting over walkie-talkie and still if there is no response from the Guard then LP must stop the train immediately and ascertain the cause.

Note :- At stations where it is not possible to obtain the view of the signal displayed from the brake van/SLR by the Guard after the train has started, it is sufficient to exchange signals when they are visible to each other. It will be applicable to all trains except those trains which are using bell code.

LOCO PILOT/ASSISTANT LOCO PILOT TO KEEP GOOD LOOK OUT (GR 4.40)

The Loco Pilot and Assistant Loco Pilot shall keep a constant look out for obstruction and be prepared for an immediate application of brakes at any moment when the train is in motion.

LOCO PILOT & ASSISTANT LOCO PILOT TO LOOK BACK (GR 4.41)

The Loco Pilot and assistant driver shall look back frequently during journey to ascertain the safe running of train.

PASSENGER TRAIN ADMITTING IN GOODS YARD (SR 3.40.03)

If for any reason a train carrying passengers is required to be admitted in goods loop or in goods yard then.

- i) If possible a caution order is to be issued to the Loco Pilot and Guard from station in rear stating that the train shall be received on goods yard or goods loop at next station.
- ii) In above both cases the train shall be stopped at the 1st stop signal and then the signal shall be taken Off.
- iii) In case the station in rear cannot be advised then the SM of the concerning station shall send a memo in duplicate to the driver informing the fact. Speed 10 KMPH.

11.10 HOT AXLE

How to detect HOT AXLE

The various signs of an axle box 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 sufficient hot to ignite the waste, flames and smoke can be seen emanating from the box and the metal of the box

become red hot. In this condition, the axle may break within few kilometers.

Action to be taken by different staff :-

- 1) Attention of all railway servants is drawn to the danger which result from allowing a vehicle with hot axle.
- 2) An employee who notices a hot axle must immediately attempt to stop the train and bring the fact to the notice of guard and loco pilot.
- 3) If it is not possible, he must report it to a responsible person such as station master, who may have take steps to examine it.
- 4) Hot boxes on trains, if not detected in time, constitutes a grave danger to trains in motion. So all the train passing staff observe the condition of vehicle on trains passing through the station as per GR 4.42.
- 5) Staff on duty (station master, Cabin man, points man, gateman, token porter, etc) shall be alert to detect any hot axle, burning smell, screaming noise, smoke or flames and take immediate action to stop the train.
- 6) Station should take the help of section controller for switching OFF power in case of electrified section.
- 7) **The guard and the crew shall keep a sharp look out and loco pilot & ALP shall look back frequently as per GR 4.41 and 4.43.**
- 8) **If an axle box found to be running hot or informed by someone, Loco pilot at once examine the condition the suspected vehicle.**
- 9) **The loco pilot remove the cover and examine the packing, put new waste if possible & available and bring the train at the speed he considered safe to run to the nearest station where siding facility exists.**
- 10) **Water must not be thrown on hot axle.**
- 11) **The station master receiving advice of hot axle on train, when possible, receive train on main line. If not possible, stop the train at first stop signal, then bring it in to loop line.**
- 12) **If the axle box is empty and no waste is there, then wagon must be detached and message to be sent to C&W staff who will arrange to pack it.**

11.11

ODC AND ITS CLASSIFICATION: OPM 15.03)

ODC (OVER DIMENSIONAL CONSIGNMENT) 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 ODC. It is also known as out of gauge load.

CLASSIFICATION OF ODC:

Depending on the extent to which the clearance of consignment are short of normal clearance, the loads are classified as:

- i) "A" class load
- (i) "B" class load
- (ii) "C" class load

Class	Sanc. Auth.	Speed	Day/Night Restriction	Escortin g
"A" Class	DRM(Divn) COM (Zone/Inter Rly.)	normal or at a speed given in BPC	NIL	NIL
"B" class	DRM(Divn) COM (Zone/Inter Rly.)	40 KMPH for straight 15 kmph for curvature , stn yard	NIL	TXR
"C" class	CRS	25 KMPH / 8 KMPH	Night Restriction	TXR, PWI DTI & ATFO

11.12

Push & Pull Freight train operation

SR 4.25.03 :- The Push & Pull Freight train operation is a configuration or mode of train operation where locomotives are attached on both ends of the train. The brake van is eliminated in this train composition. The train may be driven from both ends, based on the direction of traffic.

Duties of front and rear crews in Push & Pull train :

- 1) The train will run with working crews at front and rear locomotives and without Guard.
- 2) The LP deployed in the rear locomotive will perform the duties of Guard. The responsibilities of Guard will be devolved on the LP of rear locomotive according to the direction of the traffic.
- 3) Before starting/stopping/controlling, the leading crew should start the train after exchanging all right signal with rear LP/ALP.
- 4) In case of abnormal situations, the LP/ALP of the rear loco should protect the rear side of the train as laid down in GR 4.44, 6.03 & 9.10.
- 5) The rear loco ALP should make the T-34 HF with full particulars of both leading crew and rear crew.

- 6) In case of GDR it will be conducted both by the crews of the front and rear locomotives.
- 7) All other safety and train working instructions will remain the same.

11.13

Working a train without guard (A & C no.110) SR 4.25.02

- (1) In an emergency or under special instruction issued in each case, if it provided with continuous and effective air pressure from the engine to the rearmost vehicle which may be a brake van.
- (2) If Guard is not provided at the originating station of the train, the SSE/SE/JE (C&W) shall mention the number and type of the rearmost vehicle in the Brake Power Certificate (Mech./V5) issued for such train.
- (3) In case no guard is provided at any intermediate point such as at crew Changing station, the loco pilot on being informed by the station Master, shall examine the brake power of the train and also ensure that the rearmost 3 (three) Pistons (of last three air braked vehicle including brake van proper working order.
- (4) The last vehicle indicator as indication SR 4.16.01 shall invariably be fixed at the tail end of the rearmost vehicle by loco pilot.
 - (b) A caution order shall be issued to the loco pilot with necessary endorsement for running the train without a guard and also indicating the last vehicle number.
 - (C) i. Running of the train without a guard as well as the last vehicle number shall be mentioned in each line clear and reply message or with the departure report while working trains in automatic block system.
 - ii. The SM on duty at the station either originating or enroute from where guard is not provided shall relay such information to the section controller with an endorsement in the station diary. The section controller on duty shall keep a record to this effect in his train control chart.
 - (d) the duties devolves to guard for protection of the train laid down in GR 4.44, 6.03, and 9.10 shall devolve on the loco pilot.
 - (e) In automatic block system or in case of IB signaling, a second train shall not be allowed leave the same block station unless previous train arrives at next block station completely.

14.

MATERIAL TRAIN WORKING

MATERIAL TRAIN

It means a departmental train intended solely or mainly for carriage of railway materials when picked up or put down or for execution of works either between stations or within station limit

WORKING OF MATERIAL TRAIN (GR 4.62)

- a) A materials train shall be worked only with the permission of station master of each side
- b) Except under special circumstances, material train shall work between sunrise to sunset
- c) If a material train is required to work in night, special precaution to be taken as there should be no woman worker on train and sufficient arrangement of flood lights to be done.
- d) Authority to proceed for material train
 - i. General authority to proceed as per system of working and a caution order
 - ii. A caution order and block back with private No. When materials train is required to work on wrong line on D/L section and return.
 - iii. Block ticket (T/A602) and caution order when material train is required to work on obstructed block section

SPEED OF MATERIAL TRAIN

- i) General speed of a material train working between stations shall not exceed 25 KMPH
- ii) When running through between block stations with the engine leading – the speed of the material train shall not exceed the speed prescribed for goods train of similar weight.
- iii) When engine is pushing and brake van is leading 25 KMPH in straight line and 8 KMPH over a turn out.
- iv) When the engine is pushing but the brake van is not leading not exceeding 8 KMPH.
- v) When working with block ticket 15/10 KMPH.

PRECAUTION TO BE OBSERVED

- i) The train crew shall keep a good look out especially in the direction in which the train is moving and must be ready to stop short of any obstruction.
- ii) The Loco Pilot and Assistant Loco Pilot shall keep a sharp look out to hand signals exhibited by Guard and act accordingly and positively obey in the special instructions and restrictions given in caution order.
- iii) Normally material train shall not be divided nor engine uncoupled from train in section except in emergency.
- iv) A material train shall work between sunrises to sunset except under special circumstances.
- v) Female labour should neither be engaged nor carried on the train during night.
- vi) Ensure that railway materials loaded on any wagon, do not infringe standard moving dimensions.

15. TIME TABLE (OPERATING MANUAL 4A.03)

Railway operating works are divided into two main branches, which are Passenger Train operation, and Goods train Operation. The public judge the efficiency of railway by punctuality and safe running of passenger services. To maintain the punctuality of trains timetables are made and published twice a year, once in the 1st April for the summer season and again on the 1st October for the winter season.

Following types of timetables are published on this railway and issued in every six months to come into force:

1) Public timetable-

This is handy volume for use by the public and are printed in English and regional

language. In addition to the time schedule they contain a variety of useful information for passengers including fare-tables.

2) Suburban timetable

This is printed in English and regional language and is of pocket size. This contains in details the timings of all suburban services as well as of other passengers services running over the sub urban sections and also abstract timings of other main line passenger trains.

3) Sheet timetable

These are exhibited on the notice board of station platform and in passenger waiting halls. They are printed in English and also in regional language and contain the schedules of various coaching services, tabulated and brought together on a large sheet for reading and ready for public reference.

4) Staff copy of the timetable

This is copy of time table meant for use by railway staff.

5) Working timetable

These are issued separately for each division for the information and guidance of all railway staff , specially running staff, station and control staff. These time table contains the schedule of all coaching trains, as well as of goods trains and other valuable information, such as load table of goods train, headquarters of divisional staff, permanent and semi permanent speed restrictions and special working instructions.

16. SPEED AND TIME.

MAXIMUM PERMISSIBLE SPEED

The maximum permissible speed over different sections is approved by the commissioner of railway Safety (CRS) taking into consideration the conditions of track, bridges, curvatures, gradient. This speed limit may not be exceeded under any circumstances.

Maximum permissible speed for each type of locomotive is also fixed for different sections and notified in the working timetable.

BOOKED SPEED:

The booked speed means the speed at which a train is booked to run. The booked speed of mail/express/Passenger train and other trains varies according to the classes of train. The booked speed is generally fixed at least 10% less than the maximum permissible speed.

In case of the late running a driver may run up to maximum permissible speed subjected to other restriction in force.

MINIMUM PERMISSIBLE RUNNING TIME (MRT)

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 timetable.

NORMAL RUNNING TIME:

The normal running time for a particular train between stations is fixed on the basis of booked speed of the particular train. While fixing the normal running time, due considerations is given to the permissible track speed, load of the train, type of locomotive, acceleration, deceleration, restriction over facing points and turnouts and engineering restrictions, when a train is running late the driver can exceed the normal running time up to the limit of maximum permissible speed subjected to other speed.

TIME ALLOWANCES.

The time allowances indicated in the working timetable are the following.

TIME ALLOWANCE FOR STOP AND START

Train	Start (In Mts.)	Stop (In Mts.)	Total (In Mts.)
Mail/Express	1	1	2
Suburban	$\frac{1}{2}$	$\frac{1}{2}$	1
Goods	3	2	5

TIME ALLOWANCE TO COVER TEMPORARY ENGINEERING RESTRICTION

The time allowance to cover temporary engineering speed restrictions is provided in each section based on the work proposed, to be carried out by the engineering department.

RECOVERY TIME

The time allowances are provided to compensate for time lost by a train due to ACP, points and signal failure, fog storms etc. Generally recovery time is provided at the last lap of run of passenger train.

11.17

TYPES OF TRAINS:

According to the railway operating work trains are classified into two main branches.

- (i) Passenger Train Operation (ii) Goods Train Operation

TYPES OF TRAINS:

i) PASSENGER TRAIN

- Mail/Express Train - These are high speed trains which carry passenger and postal mail over long distance –stopping only at important stations.
- Local Passenger Train – These trains cover relatively short distances, generally stops at every station.
- Mixed Train – It carries passenger and goods both and runs on unimportant branch line section such train stops on all stations and are slower in speed.
- Suburban Train – these are light trains of greater frequency serving the

suburban area of metropolitan city.

ii) **GOODS TRAIN**

iii) **MATERIAL TRAIN**

iv) Except these trains special trains are run under the authority of passenger trains such as (a) Special troop train & (b) VIP special.

11.18

SPEED OF DIFFERENT TYPES OF TRAINS –

1.

- a) Every train shall run on each section of the railway with the limit of speed sanctioned on that section, under approved special instruction.
- b) The sectional speed sanctioned and the permanent speed restriction imposed on that section shall be shown in working time table.

2. The Loco Pilot shall -

- a) Regulate and control the running of the trains according to the working time table and caution order issued to him so as to avoid either over speeding or loss of time.
- b) The Loco Pilot should not make up time between any two stations more than it is allowed in this behalf in the working time table and he shall also observe all other speed restrictions in force.

3. In order to indicate to the Loco Pilot where train are to run at restricted speed or where trains have to stop due to the line being under repair or due to any other obstructions, caution orders are issued.

MAXIMUM SPEED over this railway

i)	Goods train	100 KMPH
ii)	Passenger train	100 KMPH
iii)	Mail/Express train	110 KMPH
iv)	Superfast train	110 KMPH

NOTE: Goods trains speed depend on the section, types of wagon and type of locomotive.

MAXIMUM PERMISSIBLE SPEED OF DIFFERENT TYPES OF LOCO

i)	WAM4 /WAP-4	110 KMPH
ii)	WAG-5	100 KMPH
iii)	WAG-7	100 KMPH
iv)	EMU	90 KMPH
v)	WAG 9	100 KMPH
vi)	WAP5	160 KMPH

CRANE WORKING (SR 4.27.02 AND 03)

When running on the main line, the crane shall be placed four vehicles away from the engine but when proceeding to brake down i.e. in case of emergency the crane may be placed any where on the train.

SPEED: As per caution order.

11.19**TRAIN HELD UP AT 1st STOP SIGNAL (GR 4.44)**

If the train is standing outside the 1st stop signal without any apparent cause

- i) Give continuous whistle to warn the guard and station staff.
- ii) After 5 minutes Assistant Loco Pilot is to be sent to station for information with showing a stop hand signal.
- iii) After 15 min. if the signal is not taken OFF or nobody comes to pilot the train.
 - a. The train shall be protected in rear from last vehicle by the guard as per GR 6.03
i.e. 600m-600m-10m-10m-45m with danger hand signal.
 - b. In the mean time, if the signal is taken OFF or if driver is authorised to pass the signal at ON – give one long whistle exchange signal with guard and pick up the Assistant driver on the way.
 - c. Guard is to pick up the intermediate detonator when he will be recalled.
 - d. Report the matter in joint train report of the guard and Loco Pilot (T-34 H&F)

NOTE: i) Before going to protect the train GD shall tie a red hand signal (i.e. flag) to side lamp bracket by day and reverse one of his brake van side lamps where provided as an additional indication to the driver.
ii) After protection Guard shall continue to show a stop hand signal to stop any approaching train until he is recalled.

LESSON 12

ENGINEERING BOARDS AND SIGNALS

12.1

PERMANENT WAY INTRODUCTION :-

The finished or the completed track of a railway line over which trains moves are commonly known as permanent way. It is a combination of the facing and trailing points, fouling marks, interlocking, isolation, track circuit, axle counter and different types of indicator boards. It essentially consists of the following three parts.

(iii) RAILS (ii) SLEEPER (iii) BALLAST

These are fixed with each other by means of fishplates; now days rails are welded to increase the length. Rails are rested on sleeper, in turn rest on ballast, which spread over the formation ground preparation for the railway track.

Inspector of way or works is responsible for the construction, maintenance of permanent way, points, bridges or other works connected there with.

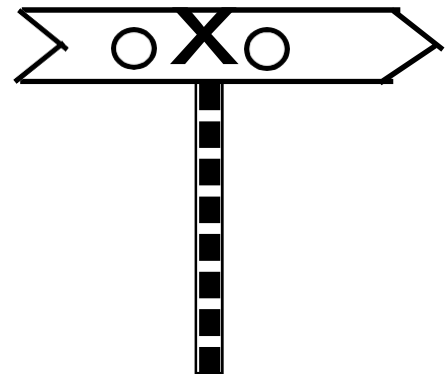
12.2

ENGINEERING BOARDS IN BLOCK SECTION

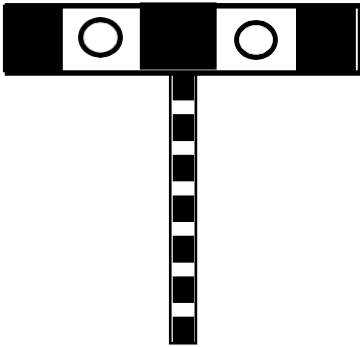
To guide the Loco Pilot to take action as the conditions deserve, different kinds of boards and engineering indicators are provided in the block section. The appearance, the indications that they provide , where and why are they provided are given below:

CAUTION INDICATOR BOARD

- a) This board indicates the Loco Pilot for permanent, semi-permanent and temporary speed restrictions.
- b) It is a horizontal board fish tailed at left and pointed at right, painted in yellow and black and fixed on a post painted black and white alternately.
- c) This board shall be fixed at a distance of 1200M from the point of restriction.
- d) Two yellow lights will be displayed for temporary restriction and no light for permanent restriction.



STOP INDICATOR



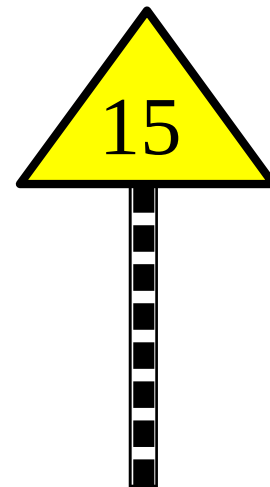
- i) This board indicates to the Loco Pilot to stop the train.
- ii) This is horizontal board painted in red and white strips, fixed on a post-painted black and white alternately.
- iii) This board shall be provided at a distance of 30M from the point of restriction.
- iv) A signalman is posted for hand signalling the train to pass the indicator.
- v) As soon as the train stops the signalman shall take the signature of the Loco Pilot on the stop order book (ED 9.39 for UP

train and ED 9.40 for Dn trains) and allow the train to proceed by showing a green hand signal.

- vi) The Loco Pilot must obey the green hand signal and proceed accordingly unless the full train is passes the obstruction.
- vii) This board shall display two red lights horizontally.

SPEED INDICATOR

- i) This is a yellow equilateral triangular board.
- ii) This board indicates to the Loco Pilot about the speed to be observed.
- iii) This board shall be placed on both permanent and temporary restriction and will be illuminated at night for temporary restriction only.
- iv) It will be placed 30 M before the site.

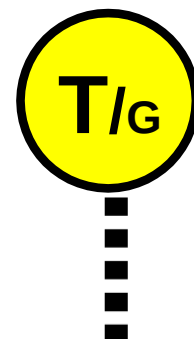


TERMINATION INDICATORS

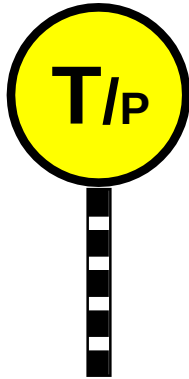
These indicators consist of yellow disc and bearing letters "TP" and "TG" in black.

"TG" BOARD

- i) This board indicates the Loco Pilot of goods train a point from where normal speed may be resumed.
- ii) This is yellow circular board with letter "TG" in black is fixed on a post painted in black and white.
- iii) This shall be provided at a distance of 700M beyond the point of restriction or length of the long- est goods train running on the section.



- iv) For temporary restriction it shall be illuminated at night by fixing a hand signal lamp.



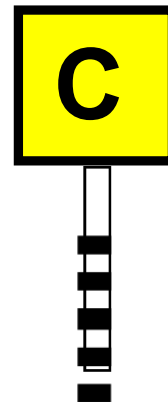
“TP” BOARD

- i) This board indicates the Loco Pilot of passenger train, a point from where the normal speed may be resumed.
- ii) It is a yellow circular board with letter “TP” in black is fixed on a post- painted in black and white alternately.
- iii) This board shall be provided at a distance of 550 M beyond the point of restriction or length of the longest passenger train running on the section.
- iv) For temporary restriction it shall be illuminated at night by fixing a hand signal lamp.

12.3 CAUTION & TERMINATION BOARD AT VULNERABLE LOCATION

“C” BOARD –

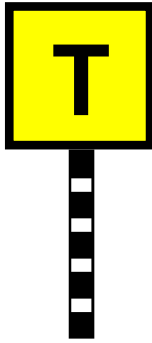
- i) A special type “C” board shall be provided in such of the bridges where during monsoon water level may touch the danger level mark or at other vulnerable locations, danger may lurk suddenly during monsoon.
- ii) It is a square board painted in yellow with letter “C” in black fixed on a post-painted black and white alternately.
- iii) It shall be provided at a distance of 1200M in respect of the point from which the vulnerable bridges or locations starts. It need not be lit-up at night.
- iv) A series of “C” boards shall be provided at an interval of 800 M to remind the driver that the vulnerable length has not been passed completely, where the distance between “C” & “T” boards exceeds 1.6kms.



A termination board of same type as “C” board but bearing the letter “T” instead of “C” shall be fixed at a distance of the longest train running in the section, when vulnerable location is over to indicate the driver for resuming the normal working.

On observing “C” board Loco Pilot shall be extra vigilant and be prepared at any moment to reduce the speed or to stop when ever any signal is received from any stationary watchmen, patrolman or gang man or he himself observes any danger to the track.

“T” BOARD



A termination board of the same description as the “C” board but bearing a letter “T” in place of “C” shall be fixed at a distance beyond the vulnerable bridges and locations equal to the length of the longest train running on the section.

On single line sections, the 1st and last boards may have the letter “C” or “T” painted on opposite faces so that no separate “T” board need be provided.

Intermediate boards if any shall have the letter “C” painted on both faces.

12.4

SPEED RESTRICTION

Speed restrictions are classified as permanent, semi-permanent and temporary.

PERMANENT SPEED RESTRICTION

The speed restriction which is likely to continue over a long period with no prospect of early removal is known as **permanent speed restriction**. This restriction shall be notified in work- ing time table to indicate the Loco Pilot about the location of such restrictions. A caution and a speed indicator shall be provided at 1200m& 30m in rear of such restrictions.T/P&T/G boards also shall be provided at 550m&700m respectively from the point at which the restric- tion ends.The engineering indicators provided at such restriction shall not be eliminated at night.

SEMI-PERMANENT SPEED RESTRICTION

The kind of speed restriction which although of limited duration, are likely to extend for the full period of the working time table are termed as ‘semi permanent speed restriction.’ This shall also be notified in ‘working time table’. The rules relating to permanent speed restriction shall equally apply to semi permanent speed restrictions also.

TEMPORARY SPEED RESTRICTION:

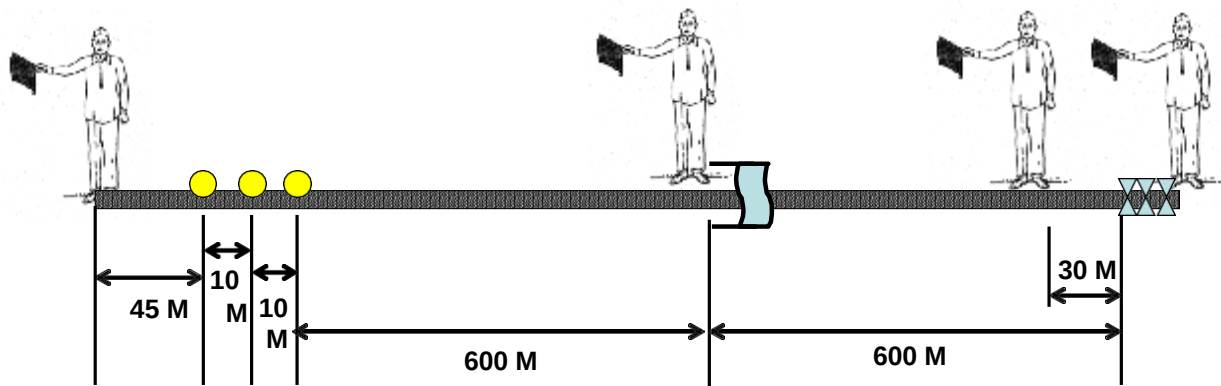
This restriction is purely short term in nature . Normally the duration of such restriction is from sunrise to sunset or for a few days only. This restriction shall not be mentioned in working time table but shall be indicated in the caution order. The indicators, provided for temporary restrictions shall be illuminated at night.

12.5 ENGINEERING PROTECTION (GR 15.09)

CONDITION (I)

WHEN THE TRAIN IS REQUIRED TO STOP AND THE RESTRICTION IS LIKELY TO LAST FOR A DAY OR LESS (ABSOLUTE SYSTEM)

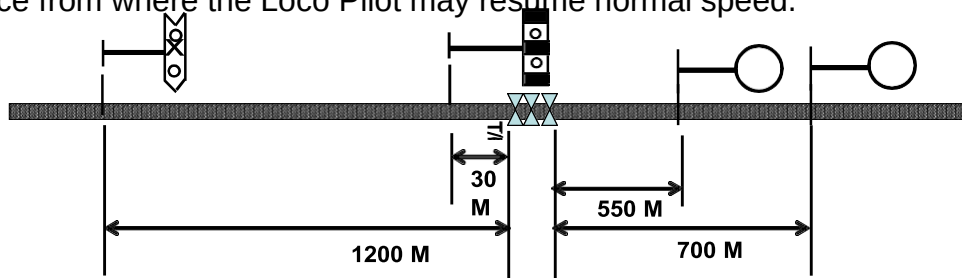
- A banner flag shall be placed at a distance of 600 M on the B/G and 3 detonators shall be placed at 10M apart at a distance of 1200M from the place of obstruction i.e. 600M from the banner flag.
- A stop hand signal shall be exhibited at a distance of 30M from the place of obstruction at the banner flag and at a distance of 45M from the 3 detonators.
- A proceed hand signal shall be exhibited to the driver for resuming the normal speed after the train has passed the place of obstruction.



CONDITION II

WHEN THE TRAIN IS REQUIRED TO STOP AND THE RESTRICTION IS LIKELY TO LAST FOR MORE THAN A DAY

- a) A stop indicator shall be provided at a distance of 30M from the place of obstruction. In addition termination indicator (i.e. TP or TG) shall be provided at the place from where the Loco Pilot may resume normal speed.

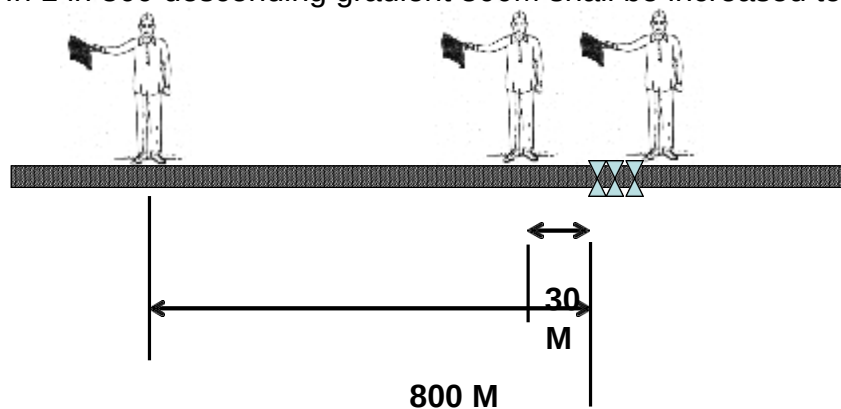


CONDITION III

WHEN A TRAIN IS NOT REQUIRED TO STOP AND THE RESTRICTION IS LIKELY TO LAST ONLY FOR A DAY OR LESS:

- a) Proceed with caution hand signal shall be exhibited at distance of 30M and again at a distance of at least 800M from the place of obstruction. This distance of 800 M shall be suitably increased if required.
- b) The railway servant at the place of obstruction shall give proceed hand signal to indicate the driver when he may resume normal speed after the train has passed the place of obstruction.

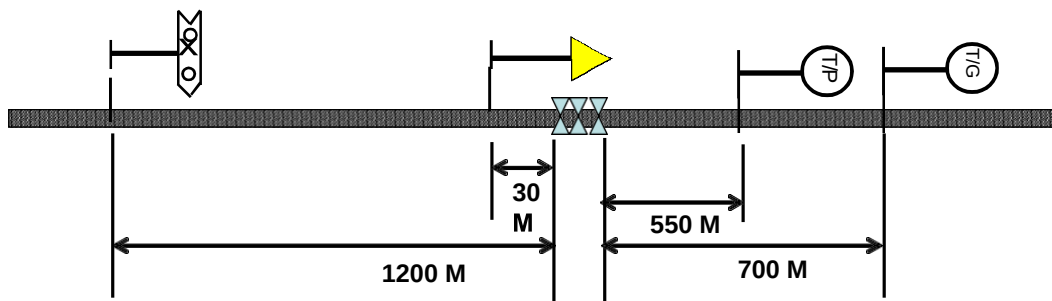
NOTE: In 1 in 300 descending gradient 800M shall be increased to 1200M.



CONDITION IV

WHEN THE TRAIN IS NOT REQUIRED TO STOP AND THE RESTRICTION IS LIKELY TO LAST FOR MORE THAN A DAY

- a) A speed indicator shall be provided at a distance of 30M from the place of obstruction and again a caution indicator, at a distance of 1200M from the place of obstruction.
- b) In addition termination indicators shall be provided at the place from where the Loco Pilot may resume normal speed.

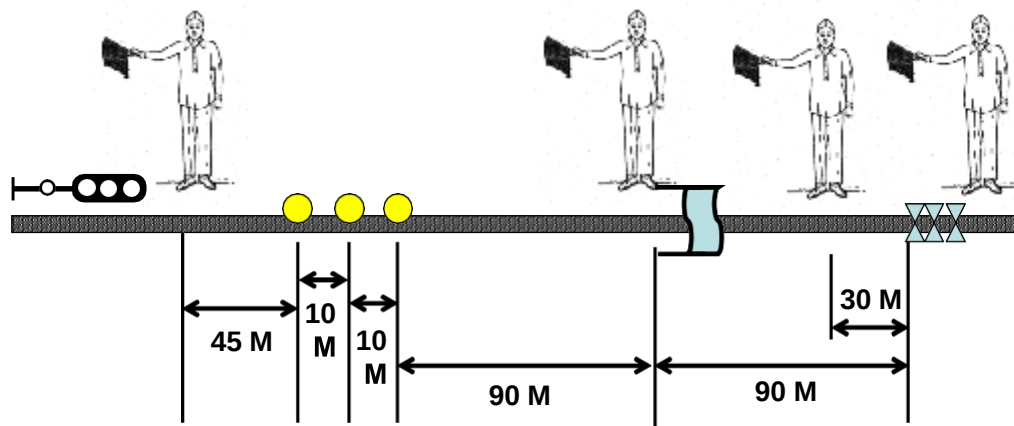


CONDITION V

WHEN THE TRAIN IS REQUIRED TO STOP IN AUTOMATIC BLOCK SYSTEM

- An automatic stop signal shall be put in ON position.
- Banner flag shall be placed at a distance of 90M from the place of obstruction and 3 detonators each 10M apart at a distance of 180M from the place of obstruction.
- A stop hand signal shall be shown at a distance of 30M from the place of obstruction after the banner flag at a distance of 45M from the 3 detonators.
- A railway servant at the place of obstruction shall give proceed hand signal to indicate the Loco Pilot when he may resume normal speed after the train has passed the place of obstruction.

NOTE: If auto signal is not secured at ON or the distance is more than 1200M, the protection shall be like item No.1 in absolute block system.



BOARDS PROVIDED AT SPEED RESTRICTION ZONE AND THEIR INDICATIONS

The following kinds of boards are provided at speed restriction zones:-

A speed restriction zone is preceeded by a **CAUTION INDICATOR** board at 1200 meters and by a **SPEED INDICATOR** board at 30 meters in rear of the zone and the zone is again complemented by the provision of “**T/P**” and “**T/G**” boards located at 550 meter and 700 meters beyond the point at which the restriction zone terminates. **STOP INDICATOR** board is provided in place of speed indicator if train is required to be stopped.

INDICATION

The caution indicator board indicates to the Loco Pilot of an approaching train that he is approaching a speed restriction zone so as to enable him to bring his train under control to observe the speed restriction which is forthcoming. The restriction of speed which is to be observed at the zone also is indicated on the caution indicator board.

The speed indicator board indicates to the Loco Pilot what speed he has to observe

at the zone and “T/P” boards indicates to the Loco Pilot of passenger train and “T/G” to the LocoPilot of goods train from where they can resume their normal speed.

12.6

GREEN NOTICE

It is an advance information to all concerned on the ground of safety so as to arrange the train services to suit the block or speed restrictions required for engineering or signalling work.

It shall be issued by D.O.M on getting necessary information from DEN or DSTE.

In case of other works affecting running lines and involving speed restriction block shall not be imposed unless all concerned have been notified by a circular issued on green paper known as ‘GREEN NOTICE’

Following items to be included in this notice :-

- i) Nature of work
- ii) Probable duration of work
- lii) Speed restrictions if any
- iv) System of work, interlocking introduced during progress of work
- v) New signal any erected
- vi) Additional time required for coaching trains, etc.

DURATION OF GREEN NOTICE (CURRENCY OF GREEN NOTICE)

Validity of Green Notice - 7 days to 3 months from the date of its issue.

LESSON 13

GDR AND BPC

13.1

AIR BRAKE SYSTEM USED IN ROLLING STOCK

INTRODUCTION:

Air brake used in rolling stock utilizes compressed air for brake application. The reserve braking power in the form of compressed air is stored in the reservoir of each vehicle. A control valve or a distributor valve is attached by brake pipe pressure that run through the length of the train and governs the flow of compressed air into and out of the brake cylinder. /The pressure in brake pipe is normally maintained at a predetermined value of 5 Kg/cm² and brake application occurs when the pressure in the brake pipe is reduced either intentionally or automatically.

SALIENT FEATURES

Air brakes are efficient and reliable to run heavy and long train at high speed. Air brake has following advantages:

- i) Shorter braking distance
- ii) High braking force
- iii) Reduced brake power deterioration
- iv) Uniform brake power over train length of the train
- v) Compact and light equipment.

TESTING PROCEDURE

The Loco Pilot and guard shall ensure at the time of taking over charge of a train that their train has the prescribed minimum brake power as follows:

OPM 23.04

(AIR STOCK) SPECIFICATION FOR Min.PERCENTAGE OF BRAKE POWER

Types of rake	Originating	Enroute
CC Rake	95%	75%
Normal Rake	85%	75%
Ghat section	90 %	75 %
Coaching train	100%	10% IOP of the total No. of cylinders (Max. 02 cylinders only)

OPM 23.02 (b) GAUGE READING (AIR STOCK)

TYPE OF TRAIN	BP ON LOCO	BP ON BRAKE VAN
Coaching train	5 kg/cm ²	4.9 Kg/cm ²
Goods train up to 56 wagons	5 kg/cm ²	4.8 kg/cm ²
Goods train more than 56 wagons	5 kg/cm ²	4.7 kg/cm ²

Brake Power Certificate(BPC)

INTRODUCTION:

A BPC is the document through which a Loco Pilot know whether his train is possessing the required percentage of brake power, it is the document by receiving which the Loco Pilot grows in confidence that he can work his train safely and can bring his train under control or to a stop as and when required. A Loco Pilot must not work his train without valid BPC.

IDENTIFICATION OF BPC

A BPC shall be a in a prescribed form No. Mech/ V-5 RB2 for air stock trains used for this purpose and may be of rosy or greenish or yellow colour. Now a days it may be in white colour.

ISSUE OF BPC

BPC for a train is issued by the train examiner TXR (JE/SE/SSE C&W) who shall before issuing the same satisfy himself that the train is having prescribed amount of air pressure on engine and brake van gauges. The TXR (JE/SE/SSE C&W) also check and ensure that all the wagons/vehicles on the rake is having in good condition and FIT to PROCEED. The train must also have the required percentage of brake power. He shall also ensure that the relevant columns of BPC have been properly filled up and BPC is duly signed by the train driver guard and finally he himself (TXR) has signed the same.

PLACE OF ISSUE:

Except otherwise required, BPC shall be issued from the train originating station. It may also be required to be issued from a station enroute under certain conditions.

13.3

TYPES OF BPC:

BPC caters to three types of rakes i.e.

- (1) NORMAL RAKES (END to END single trip)
- (2) CLOSE CIRCUIT RAKES (CC RAKE)
- (3) PRIMIMUM RAKES

NORMAL RAKES:(END TO END)

The BPC of the normal rakes/trains contains the details of the train No./load, percentage of brake power and details of brake system, effects on the vehicles of the train TXR driver and guard should sign the certificate respectively. This certificate is to be issued after single trip checking (round trip). this is preferably checked by C&W staff in empty condition before issuing BPC, in which destination not mentioned. After loading on this rake, destination column filled by SM/YM or C&W staff which is valid up to unloading point. There after unloading it can be return to the base station from where the BPC is issued on GDR. But if back loaded or go to any other direction apart the base depot, C&W should issue fresh BPC. (except some cases of prescribed patterns)

CLOSE CIRCUIT RAKES:

- 6) CC rakes will be formed predominantly out of off ROH & POH wagons and new wagons. Each CC rake will be based for maintenance of CC pattern at its nominated CC maintenance depot normally. In exceptional cases, the rake may be allowed for CC examination at any other CC rake depot of this railway without changing the original ID of the rake. The name of the original CC base and also the ZRs defined in the Circuit will be clearly mentioned on the BPC.
- 7) **Primary Maintenance Examination (PME)** for CC Rakes will be done at the nominated CC maintenance depots.
- 8) The BPC for close circuit rakes is in the form of full scrape sheet (A-4 size) apart from the details as contained in a normal brake power certificate sheet, it contains columns indicating the driver's name, HQ, Train No. Load details, journey from & to, No. of KM run & the cumulative KMs covered by the rake.
- 9) The Loco Pilot should fill in the relevant details such that the total KM covered by CC rakes can be monitored and offered for intensive examination by carriage and wagon staff (C&W), which is normally done after running 5500 KMs/6000KMs.
- 10) CC rakes shall be monitored closely through FOIS by all Sr.DOMs to ensure that these rakes are worked to their respective base depot before completion of stipulated KMs. or days. **If a CC BPC becomes invalid**, it will lose its CC rake status. It may be loaded for a destination towards the base depot/ short of base depot or **run up to base depot in empty condition on GDR check for PME**. Sr.DMEs & Sr.DOMs to personally monitor CC rakes. Loss of CC rakes to be viewed seriously.
- 11) Rakes operating on ZRs not mentioned on the BPC will lose their CC character and will be treated as per instructions prevailing for normal end to end rakes.
- 12) All rakes will be returned back to their nominated CC maintenance depot normally or any CC rake depot of this Railway if it is unavoidable as per validity of BPC.
- 13) **In empty condition**- In case of **BPC of the CC rake becomes invalid** or nears invalidity at outstation in the specified circuit, it can be intensively examined by TX R at the nearest point and **BPC may be revalidated once at the outstation depot (within the circuit) for one trip (maximum 7 days** from date of such examination or date of expiry of original BPC, whichever is earlier).
- 14) It can move to CC maintenance depot for examination and issue of fresh BPC on CC basis. Thereafter, the rake should be returned back to its nominated CC maintenance depot normally or any CC rake depot of this Railway for examination and issue of fresh BPC on CC pattern, otherwise it will lose CC character and treated as normal rake.
- 15) **In loaded condition** — In case BPC becomes invalid at outstation in the circuit it will be examined at the next available TXR point in the direction of movement and BPC shall be revalidated in the specified circuit upto CC maintenance depot viz unloading point. Examination in loaded condition should be in exceptional circumstances.
- 16) In case of examination and revalidation of a rake at other than its nominated mother CC base, loading/ unloading in such rakes will be confined to the destinations. Otherwise, the rake shall lose its CC character and will be logged in FOIS.
- 17) The rakes should be given a unique nomenclature. These nomenclature rakes should be entered in FOIS and monitored, including breaking/ loss of CC rakes.

- 18) Loading in rakes with overdue BPC should be scrupulously avoided. If there is a problem of stabling of surplus rakes, those rakes should be lifted first whose BPC is expiring first. Rules regarding loading in valid BPC rakes only should not be bypassed in any case.
- 19) In exceptional case, CC rake may be taken for maintenance and issue of BPC at other CC base depots of SER with information to original base depot. Rake ID will remain same.
- 20) Loading of CC rakes should as far as possible be for circuits are mentioned in the BPC. In case the present traffic flows requires modification of the circuit, proposals for the same should be sent to Railway Board for issuing revised orders regarding the jurisdiction of CC rakes.
- 21) However, in case a rake is received by a Zonal Railway which is **not in the jurisdiction defined in BPC**, in either loaded or empty condition, **it should not be treated as "invalid" provided the BPC is valid in terms of both kilometres and days** and such a rake should be run accordingly.
- 22) In case an overdue CC rake is received by a Zonal Railway not mentioned in BPC the procedure followed by the Zonal Railway for movement of overdue rakes should be followed in this case.
- 23) Further, on receipt of a CC rake by a Zonal Railway not covered in the jurisdiction mentioned in the BPC, a message should be immediately given to the loading Zonal Railway regarding the wrong loading with a copy to 'FYI' Directorate of Railway Board.
- 24) The CC rake after release should be moved in empty/ loaded condition on priority to a Zonal Railway within the jurisdiction of the CC rake.
- 25) Performance shall be monitored jointly by Operating and Mechanical departments in addition to other statutory condition like discipline in CC rake circuit, logging of km. by crew, proper driving technique to avoid CBC component failures, monitoring of loading / unloading practices at siding.

PRIMIUM RAKES

(BOXN, BCN, BOST, BTPN & BOBRN):

- 1) Premium end-to-end rakes will be formed of wagons in sound Mechanical condition and will be examined in empty condition in the following examination points.
- 2) Premium Examination will be done at following depots: NMP, BKSC, BNDM, ADTP, TATA, DPS and BJE.
- 3) After the lapse of 12 days, the rakes should be offered for next intensive examination at the first examination point in the direction of movement. To avoid examination in loaded condition, a grace period of 3 days be permitted.
- 4) However, after expiry of the grace period i.e. after a lapse of 15 days after the date of issue of BPC, even a loaded premium rake shall be offered for examination at the first TXR point in the direction of movement.
- 5) Further, in no case premium end-to-end rake (with invalid BPC) shall be offered for loading through by pass routes or through yards which are not nominated for examination.
- 6) After examination, the rake will be certified as Premium rake subject to fulfillment of above mentioned conditions, otherwise as conventional end-to-end rake.

The following timings are prescribed for Train examination by TXR:

- 1) End to End Examination : 3 (three) hours
- 2) Premium rake : 4.5 (four and half) hours
- 3) PME for CC rakes : 6 (six) hours
- 4) Combined post tripping-cum-pressure continuity check : 1 hour 30 minutes.

11.4

VALIDITY OF BPC:

A BPC normally remains valid from the train originating station (place of issue) to destination station yard.

The BPC shall remain valid:-

- a) When an intensively examined empty rake has been loaded at the station/siding
- b) When a close circuit (CC) empty rake has been loaded or back loaded at a station/siding, provided the validity of the CC rake has not expired.
- c) When a CC rake has been unloaded or back loaded at a station/siding provided the validity of the close circuit rake has not expired.
- d) When a train with valid BPC, loaded or empty, is stabled at a way side station for not more than 96 hours.
- e) When the integrity of a train with valid BPC has not been disturbed by more than 4 VUs (5 VU for BLCA/B).
- f) When a train with valid BPC, loaded or empty, is stabled at a TXR station for not more than 24 hours.
- g) For premium rake BPC, loading is done within 12 days.

BPC may get invalid under the following conditions:

- i) If the integrity of the rakes is disturbed and the composition is changed by more than 4 VU or its equivalent, (in case of BLCA/B 5 VUs).
- ii) If the train remains stabled at a TXR station for more than 24 hours.
- iii) If the premium rake BPC exceeds 15 days in loaded condition also.
- iv) If a CC rake exceeds its stipulated period of 30/35 days as mentioned in BPC.
- v) If a CC rake exceeds its stipulated KMs .
- vi) If a CC rake BPC KM not logged n by crew, than validity is only 20 days.
- vii) When a rake stables in non TXR station more than 96 hours.
- viii) If an END to END examination BPC is backloaded.
- ix) If end to end exam BPC has not mentioned destination after loading.

The Loco Pilots are instructed to make entry in the proforma given in the BPC of CC rakes. Loco Pilot/SM/SS should inform to controller if the rake is running with invalid BPC so that the same can be directed for further examination.

Stabling of trains:

1) If a train with valid BPC is stabled at a TXR point –

- a) In case of power interposing within 12 hours – Train can be started after continuity check between Driver and Guard.
- b) Between 12 to 24 hrs. — It can be run on GDR check is BPC is valid, brake power check as part of GDR will not be mandatory. Time prescribed for GDR check is 45 minutes.
- c) If a CC/ Premium rake train is stabled for more than 24 hours at a TXR examination point, the BPC will become invalid and it will have to be revalidated by TXR after examination and endorsed on BPC. In other cases fresh BPC will be issued by C&W staff.

2) If a train is stabled at a non-TXR point —

- a) In case of power interposing within 12 hours - Train can be started after continuity check between Driver and Guard.
- b) Between 12 to 24 hrs. — It can be run on GDIR check and BPC will remain valid. However, Brake power check as part of GDR will not be mandatory. Time prescribed for GDR check is 45 mins.
- c) Between 24 to 96 hrs. — It can be run on GDR check and BPC will remain valid. Brake power check as part of GDR will be mandatory. Time prescribed for GDR check is 1 hr 30 mins
- d) More than 96 hrs. — BPC will become invalid. It can be run on GDR check and must be offered for examination on next Train examination point.

GDR CHECK

13.5

While starting a train after loading/unloading/ back loading operation from a station where no TXR staff are posted or which is not declared as a TXR point, or clearing a load from TXR station within 24 hours of stabling , the GD and LP shall be jointly responsible for the checking of the load to clear it from that station. This check is called GDR check.

WHEN GDR CHECK IS REQUIRED

- 1) This check will be done before clearance of a load stabled at a TXR station for more than 12Hrs. but less than 24 Hrs. However brake power check as a part of GDR will not be mandatory. (without brake power)
- 2) This check will be done before clearance of a load stabled at a non- TXR station for more than 12Hrs. but less than 24 Hrs. However brake power check as a part of GDR will not be mandatory. (without brake power)
- 3) It will also be done before clearance of a load stabled at Non TXR point for more than 24Hrs. but less than 96hrs. (with brake power)
- 4) For load stabled at Non-TXR station for more than 96Hrs. The load will have to be done GDR and also offered for examination at first TXR point in the direction of movement and issuing of fresh BPC before clearing it for further movement. (with brake power)
- 5) If any rake is unloaded/back loaded/trippled at Non TXR point than GDR check should be done. Brake power check as a part of GDR will not be mandatory provided the rake is not stabled for more than 24Hrs.

13.6

During GDR following items to be checked

- 1) Doors of all wagons are properly closed and secured
- 2) Empty/load handle is in proper position as per load
- 3) Loose fittings to be checked for any hanging parts
- 4) Hand brakes of all vehicles are released
- 5) Integrity of the rake should not be disturbed more than 4 VUs
- 6) CBC of all wagon are properly closed and locked
- 7) Other any abnormality, which may endanger safety
- 8) Continuity of air pressure from engine to last vehicle
- 9) Angle cocks are open up to the last vehicle

All the above items to be checked in all occasions of GDR, but in case load is stabled for more than 24 hours, percentage of Brake Power of the rake is also to be calculated mandatorily.

13.7

BRAKE POWER TEST

The checking of brake power is basically depends upon the two factors :-

- 1) Validity of BPC, which is described earlier.
- 2) The duration of load stabled at stn./yard, which is described as under:-

If a train with valid BPC is stabled at TXR point:-

- A) In case of powers interposing within 12 hours:- Train can be started after continuity check between LP & Gd.
- B) Between 12 to 24 hours:- Pressure creation and conduct GDR check.(prescribed time is 45 minutes) {Brake power % is not mandatory}
- C) If a CC/Premium rake train is stabled for more than 24 hours at a TXR examination point, the BPC will become invalid and it will have to be revalidated by TXR after examination and endorsed on BPC. Fresh BPC will be required for other trains.

If a train is stabled at NON TXR point:-

- A) In case of powers interposing within 12 hours:- Train can be started after continuity check between LP & Gd.
- B) Between 12 to 24 hours:- It can be run on GDR check and BPC will remain valid. However brake power check as a part of GDR will not be mandatory.
- C) Between 24 to 96 hours:- It can be run on GDR check and BPC will remain valid. Brake power check as a part of GDR will be mandatory.
- D) More than 96 hours:- BPC will become invalid. It can be run on GDR check and must be offered for examination on next TXR point.

Time prescribed for GDR check of loads stabled for less than 24 hours is 45 minutes and GDR time stipulated is 1Hr.30 minutes where load is stabled for more than 24 Hrs. (Brake power check of load is mandatory) During GDR, checking of percentage of brake power is not always mandatory.

During GDR check, in addition to brake power check of the rake the brake continuity test is also very essential and it is an integral part of the GDR check and it must be done in all cases while clearing the stable load.

BRAKE CONTINUITY TEST

Brake continuity test is one of the most important test of air brake system. This test is done to check the continuity of the brake pipe throughout the train.

WHEN REQUIRED:-The brake continuity test must be carried out in the following circumstances without any exception:-

- A) Loco or additional loco attached to the front of the train.

- B) Loco or additional loco attached to the rear of a fully fitted train.
- C) Vehicle attached at any position on a train.
- D) Vehicle in the fitted portion of the train detached from other than extreme rear.
- E) After any brake defect or irregularity which has affected the continuity of the brake has been rectified.

WHEN NOT REQUIRED:-

- A) When the train locomotive is detached from extreme front of the train.
- B) When the train locomotive is used for "complete" brake test of the whole train and is not thereafter detached before starting.
- C) When locomotive or vehicle is detached from the extreme rear of the train.

Procedure for brake pipe pressure continuity test:-

- 1) Keep DAB(A-9) handle on release position and create 5Kg/cm² in engine gauge and prescribed amount in the rear B/V.
- 2) Reduce 1Kg/cm² BP pressure by A-9 handle without a pause (retain 4Kg/cm² on the gauge).
- 3) After the brake pipe pressure has stabilized, close the L/T (A-8) cock for BP charging.
- 4) The Gd. must then without delay carry out the following:-
 - i) If a brake van is the rear vehicle, open the Gd's emergency brake valve until all air is exhausted. Then the valve must be closed, OR –
 - ii) If a brake van is not the rear vehicle, open the brake pipe cut off angle cock on the rear vehicle until all air exhausted. Then the cock must be closed, OR -
 - iii) If locomotive is the rear vehicle then the Gd. must instruct the LP of the rear most locomotive to carry out the brake continuity test. The LP must move the A-9 to emergency until the brake pipe pressure falls to '0'. He must then close the L/T cock and observe the brake pipe pressure does not immediately rise. The Gd. must obtain an assurance from the LP of the rear most locomotive that this has been done.
- 5) The LP of the driving locomotive must observe that the brake pipe pressure has dropped to '0' in the leading driving compartment's BP pressure gauge and does not commence to rise again. If the brake pipe pressure does not fall, this can be due to a brake pipe cut-off angle cock being closed between vehicles. If the brake pipe pressure does not fall to '0', check if any locomotive's L/T cock in another cab is not in the closed position. After correction if any fault a further brake continuity test must be carried out.
- 6) If BP pressure in engine gauge comes to '0' then after consultation with Gd. Open the L/T cock for BP charging.
- 7) After opening the L/T cock for BP pressure charging, put A-9 on release position. BP pressure should again build up to 5 Kg/cm² in the locomotive and to a maximum pressure in the last vehicle as stipulated in the operating rule specification. It indicates BP pressure is continuous up to the last vehicle.

13.9

**CLEARING LOAD FROM A STATION/SIDING
WHERE NO TXR STAFF ARE POSTED (SR 4.31.03)**

At stations where no train examining staff are posted or at wayside stations (enroute) while clearing a stable load, the Guard and the Loco Pilot shall jointly responsible for following the procedure described above:

- 1) At first, Loco Pilot should check the BPC of the stabled rake and the enquired about the timing of stabling.
- 2) Then Loco Pilot make EOT on rake/load start creating air pressure up to the last vehicle/brake van.
- 3) On noticing this required amount of air pressure in rear brake van the Guard and the LP shall communicate with each other and shall thereafter jointly check the train to ensure the items as per GDR.
- 4) Henceforth GDR check will be required to be done in all cases of unloading/loading of rakes, irrespective of method of loading/unloading as well as type of BPC, so as to ensure all the doors and fitting of wagons have been properly secured and there is no possibility of them turning loose on run.
- 5) Closure of doors should always be checked by train crew before drawing out a rake from a terminal as part of the prescribed GDR check. Updated Performa to be filled up after GDR check is enclosed herewith.
- 6) The LP shall check the train from the station side and the Guard shall check it from offside.
- 7) Where brake power checking is mandatory, brake power also to be checked during GDR with following parameters -
 1. Total number of cylinders.
 2. Total number of working cylinders.
 3. Percentage of Brake power.
 4. Air pressure in engine.
 5. Air pressure in brake van.
- 8) Thereafter, the Gd. & LP shall prepare a memo in triplicate jointly in the following format and shall sign in each copy.

Proforma for Joint check by the Driver and Guard

1	DATE & PLACE	
2	Train No & LOCO No	
3	From	To
4	BPC No, Date & Place of issue	
5	Loaded at	Unloaded at
6	Time Loco attached	

inoperative piston, when the driver reduces the brake pipe pressure, the piston of such a vehicle does not respond and remain inoperative due to the non functioning of the DV.

ROLLING PISTON

Normally after destruction of full brake pipe pressure an active piston should remain in applied condition for a period not less than 30 minutes.

The piston of a brake cylinder, which does not fulfill this condition, is known as rolling piston.

EXCESSIVE PISTON STROKE (EPS)

Any vehicle that has a piston stroke i.e. more than the stipulated length is deemed to be having excessive piston stroke. This results in poor brake power and the Loco Pilot should take it into account while checking the brake power percentage of the train.

LESSON 14

ABNORMAL WORKING

14.1

ABNORMAL LOCO WORKING

INTRODUCTION

There are the occasions in which defects arises in respect of working of head light, speedometer, engine horn etc. or at times engine's driving cabs gets defective or a Loco Pilot gets incapacitated during run.

In any of the above mentioned circumstances a trainee has to be able to undertake required measures when required after completion of this lesson.

14.2

DEFECTIVE HEAD LIGHT

- (i) In case the engine head light goes out of order after leaving engine or crew changing station, the Loco Pilot shall work the train at night or during thick foggy or tempestuous weather or inside a tunnel cautiously at a Speed not exceeding 20kmph after ensuring the proper glowing of marker lights up to the repairing station and the driver shall sound long continuous whistle frequently.
- (ii) The Loco Pilot shall hand over a written memo to the station master of the next station for necessary repair of headlight.

14.3

DEFECTIVE DRIVING CAB(SR 4.21.01)

In case of on electric engine or diesel engine having twin cabs, if the leading driving compartment is defective –

- (i) The Loco Pilot shall inform the TLC.
- (ii) The Asstt shall work the train from the trailing cab.
- (iii) The Loco Pilot shall remain in leading cab and be responsible for the correct operation of the train.
- (iv) SPEED not exceeding 40 kmph up to the repairing station or work till such time relief engine is arranged by the TLC in consultation with deputy chief controller.

14.4

DEFECTIVE SPEEDOMETER

No locomotive shall be turned out from Shed with deficient or defective speedometer. If it becomes defective enroute, Loco Pilot shall work the train at a speed of 10% less than the permissible speed by estimating the speed with help of his watch, km. Post and inter section running time given in the working time table.

The following formula will help a Loco Pilot to calculate the speed in this regard.

i) No. of electric mast passed in one minute $\times 4.3 =$ ___ kmph

ii) $\frac{60 \times 60}{\text{Time taken to cover one km. In seconds}}$ = ___ kmph

14.5

LEADING CAB HORN NOT SOUNDING (SR 4.21.01) –

- (i) In case horn/whistle of the driving cab of an engine becomes defective in the section the Loco Pilot will run the train/engine at 40kmph in day time up to the destination or till the defect is rectified and at night he will only clear the section at a speed not exceeding 40kmph.
- (ii) During run the horn/whistle as prescribed should be sounded by Asstt. Loco Pilot from rear cab.

14.6

LOCO PILOT INCAPACITATED – (G.R. 4.20. SR. 4.20.01)

- (i) If a driver becomes incapacitate while the engine in motion, the Asstt. Loco Pilot if duly qualified may work the train up to the next station cautiously and where the Asstt. Loco Pilot is not duly qualified he shall bring the train to a stop and send a message to the station master of the nearest station to make arrangements for a Loco Pilot to take over the train and for so doing he may take assistance of the guard.
- (ii) The speed of the train shall not exceed more than 25 kmph up to the next block station and on arrival at next station the fact shall be reported to the stationmaster.
- (iii) If required train shall be shunted into a suitable line and shall remain under the charge of Asstt. Loco Pilot till relief arrives.

14.7

FLASHERLIGHT

It is an emergency warning light fitted on the roof of the loco by the side of the head light. Flasher light works on 110V DC Battery. When a Loco Pilot senses an emergency, he should switch the Flasher light 'ON' by operating an 'ON' & OFF switch, provided on the Flasher light control box. When the switch is put 'ON' the light starts Flickering in 2 seconds, interval with an amber/orange colour to attract the Attention of an approaching trains driver of the other line to stop for any obstruction. Flasher light can be lit automatically when BP drops due to any reason except by A-9.

USE OF FLASHER LIGHT – It is under the following circumstances –

- (i) During sudden jerk on run with drop of vacuum/pressure of the Train.
- (ii) Sudden increase in airflow indicator (gauge).
- (iii) During train parting/derailment of train.
- (iv) During OHE failure or it is required to send information through the opposite line's train Loco Pilot.

- (v) When S/L is introduced on D/L absolute block system and train is running on wrong line. And without introducing single line working.
- (vi) While LE will go to open the communication in S/L total interruption.

DUTIES OF ADJACENT LINE LOCO PILOT, WHILE HE SEES A FLASHER LIGHT IS GLOWING –

Soon after the Loco Pilot of the train coming from the opposite direction finds that flasher light is glowing, he shall immediately take action by applying emergency brake if required and stop his train, short of the flasher light to avoid any mishap.

14.8

REPORTING OCCURANCES ON LINE –

- (i) When a train is stopped for any reason between station, the Loco Pilot shall sound four short whistle (0 0 0 0) and the train shall be protected as per G.R. 6.03.
- (ii) A memo jointly signed by the guard and the Loco Pilot indicating the Site, date, time, cause, nature of failure and kind of relief required shall be send to the nearest station.
by quickest possible means through a competent railway servant. (Asstt. Loco Pilot, Brakes man, Gagman) quoting the name and designation of such messenger in the memo. The Guard and Loco Pilot shall try to inform the fact to the controller through portable telephone if provided.

B. DIFFERENT ABNORMAL OCCURENCES

INTRODUCTION

While on duty during run a Loco Pilot may have to face different circumstances like bad riding, wheel slipping, storm, cyclone, breakage of pantograph, no tension on line, defecton OHE line and run over cases etc.

At the end of the lesson the trainee should able to negotiate different situation adopt required measures and report the occurrences to the concerning authority.

14.9

BAD RIDING

BAD RIDING DUE TO DEFECT IN TRACK (S.R. 2.11.01)

a) DUTY OF THE LOCO PILOT WHO EXPERINENCE BAD RIDING-

- i) The Loco Pilot shall note as accurately as possible the KM No. at which bad riding has occurred and he shall also put on the flasher light and put off the head light if it is night time.
- ii) He shall apply train brakes and look back to see the condition of the train behind and after the train comes to a stop, he shall take account of the extent of damage.
- iii) After going through the condition of track if the Loco Pilot thinks that he can pass the spot safely with his train he will proceed pass the spot carefully and then resume normal speed.
- iv) He shall while approaching the next block station , whistle frequently and bring his train to a stop in such a manner that the engine is in front of the

station building or the cabin where block instrument is located without clearing block section in rear. Hand over a written memo to the station master or the switch man as the case may be, specifying the exact location as far as practicable and nature of defect noticed. On single line section the driver shall not hand over the authority to proceed till such time he has issued the memo to the station master /cabin man.

- v) He shall also make a report of the occurrence to the CCC(E) on return to the head quarter.

b) DUTIES OF LOCO PILOT OF SUBSEQUENT TRAIN

In the absence of engineering officials, the first train allowed in the effected section should be issued with a caution order instructing the loco pilot to stop dead before the effected kilometer and after satisfying himself about the condition of track, pass over the track in question, at a speed not exceeding 10kmph or if he finds that, the track is unsafe to pass, stop dead at site and inform the nearby SM to send Engg. Officials to attend and certify.

If the loco pilot not able to detect any thing doubtful, subsequent trains shall be dispatched with a speed restrictions of 10 kmph till the track is safe certified by the Engg. Officials. **(A&C 93) (USR 6.07 also to be referred)**

BAD RIDING DUE TO ENGINE DEFECT (SR 2.11.02)-

In such a case the Loco Pilot shall-

- i) Note down the KM. No. and time.
- ii) Stop his train and take account of the extent of damage and proceed cautiously to the next station and report the station master about the fact by giving a written memo.
- iii) Inform LC (loco controller) and SCR (section controller) whether any assistance is required or he will be able to continue the journey up to the next repairing station.

14.10

WHEEL SLIPPING (SR 2.11.03)

- i) In the event of wheel slipping of an engine while on run between stations ensure the safety of track and try to stop wheel slipping as quickly as possible.
- ii) Note carefully the kilometer and the extent of damage. If required ask for assistance by contacting TLC over telephone.
- iii) Inform the SM of the next block station in writing about the full particulars of the incident.
 - h) In case the track in his opinion is not safe for passage of trains at the normal speed take necessary action, as per action during bad riding (Point 3 & 4) (SR 2.11.01)

14.11

RAIL FRACTURE (SR 15.17.01)

If a rail is badly fractured, no train shall be allowed to pass over the affected portion of track until the fractured rail is replaced or otherwise made safe by an official not

below the rank of PWI and certified fit by him.

A gap of more than 75mm (25mm in the case of outer rail of a curve) or there is more than one fracture in a length of 1 meter along the rail head are known as badly fractured rail.

SR 15.17.02 IN CASE OF RAIL FRACTURE LESS SERIOUS IN NATURE

In this case permanent way Mistry/gangmate/Keyman may allow the train at the speed not exceeding 20 KMPH but only after making the rail safe for purpose by using special/joggled fishplate if available for the passage of train until the track has been made safe as above. No train shall be allowed to pass over the affected portion.

14.12

STORMS AND CYCLONE (SR 2.11.04)

In case of a train be caught on the run in a cyclone, storm or strong wind which is likely to an danger the safe running of the train in the opinion of Loco Pilot, he should,

- i) Stop the train avoiding sharp curves, high embankment and bridges
- ii) In coaching train ensure that doors and windows of the coaches are kept open by the passengers to allow the free passage of winds through the coaches.
- iii) The train should be restarted in consultation with the guard only after the cyclone, storm or strong wind abates and it is considered safe for the train to proceed.

C. DIFFERENT CIRCUMSTANCES

INTRODUCTION –

While working on line a Loco Pilot may have to meet different circumstances in the form of an accident/obstruction, single line working on double line, running on wrong line, total interruption and train parting etc. And it requires adopting different measures.

The trainee should be able to have a proper knowledge to negotiate different circumstances and be able to follow the rules at the end of the lesson.

14.13

WORKING IN THE EVENT OF ACCIDENT –

In case of accident on the line or to any train or of failure or in an emergency or interruption of communication train shall be worked between stations in accordance with a special instruction.

14.14

WORKING OF L/ENGINE OR TRAIN TO AN ACCIDENT SITE/OCCUPIED BLOCK

SECTION –

SR 6.02.05-Rules and regulation for working of trains on the occupied block section in case of obstruction or accident on the authority of Block Ticket/Authority to proceed for relief engine/ train into an occupied block section in Absolute Block System **T/A-602**, which includes -

- i) Block Ticket to proceed in obstructed block section.
- ii) Authority to pass signal in 'ON' position and
- iii) Caution order

Until obstruction is removed, if required, trains shall be worked on the obstructed line upto the place of obstruction on **Block Ticket (T/A-602)** with clear instruction whether the train is to return, or to wait at the place of obstruction or to proceed to the next station.

After sending a train on **Block Ticket**, a following train shall not be dispatched in the same direction unless-

- i) The previous **Block Ticket** is collected and cancelled, or
- ii) Necessary endorsement is made on the previous Block Ticket with the advice to wait at the site for a next train to follow, or
- iii) The previous train has met with an accident or has been disabled, or
- iv) The **Block Ticket** has been collected from the Loco Pilot of the previous train by the official in - charge at the site and kept in his personal custody and the fact has been relayed to the S.M. over phone quoting the **Block Ticket** number.

If more than one train accumulates at the site, after completion of work, the traffic official in-charge at the site with the concurrence of the Station Master through the exchange private no., shall decide which train to go to which side and if possible he shall arrange to couple the trains together and instruct them to proceed cautiously to the station as directed having due consideration to minimize delay to more important trains.

If it is not possible to couple up trains; one train may follow another after an interval of 15 minutes at a speed not exceeding 8 KMPH.

SPEED-

Not exceeding 15 KMPH during day light when view ahead is clear and 10 KMPH during night or whenever clear view for 800 meters is not available.

INSTRUCTIONS for LOCO PILOT-

- a) Check carefully the Block Ticket about the instruction given.
- b) Check the date and time of issue of previous Block Ticket and instructions given there in.
- c) Use engine whistle frequently.
- d) Maintain the speed restriction of 15/10 KMPH.
- e) If required protect your train in rear from the last vehicle by placing detonators at **250M- 250M-10M-45M** with danger hand signal (SR 6.02.03) if it gets detained at the block section for more than 10 minutes.
- f) On arrival of the train, hand over the Block Ticket to the S.M. with signature, date, time, etc.

SR 9.12.08

Rules and regulation for working of trains on the obstructed line in case of obstruction or accident on the authority of **Block Ticket**/Authority to proceed for relief engine/train into an Automatic Block Signaling section (**T/C-912**)

When it becomes necessary to work trains on the obstructed line on the authority of Block Ticket/Authority to proceed for Relief engine/train into an automatic Block Signaling section, all the instructions contained in SR 6.02.05 shall be followed except in lieu of prescribed form no. T/A-602, form T/C-912 shall be used.

14.15 [SR 6.02.01]

SINGLE LINE WORKING INTRODUCED ON DOUBLE LINE WHEN ONE LINE IS OBSTRUCTED AND COMMUNICATION AVAILABLE

Rules and regulation for single line working on a double line section when one line is obstructed:

Single line working is introduced only after obtaining reliable information in writing, that the line on which single line working is going to be introduced is clear of all

obstruction in consultation with the Section Controller.

When for the time being trains are being worked on single line working system, the Driver of each train shall be handed over with an “ **Authority for temporary single line working on double line**” (T/D-602), which includes-

- i) A line clear ticket
- ii) An authority to pass signal in 'ON' position and,
- iii) A caution order

The authority indicates-

- i) The line on which the train or the light engine is to run.
- ii) The KM between which the obstruction exists.
- iii) Any speed restriction which may have been imposed by way and works staff.

- iv) An assurance to the effect that any trap points on the line in question have been spiked and clamped.

The caution order portion of the authority issued to the Loco Pilot of the first train shall have an endorsement to inform all Gatemen and Gangmaen on the way about the introduction of temporary single line working and to specify the line over which the trains shall run.

SPEED-

First train 25 KMPH and subsequent train shall run at normal speed.

INSTRUCTIONS:

a) For trains proceeding on the right line-

The last stop signal shall be kept at 'ON'. It can be passed at 'ON' on the authority issued to the Loco Pilot by the S.M. The train may be admitted on signal or be piloted in at the next station.

b) For trains proceeding on the wrong line-

- i) The train shall be piloted out of the station on the written authority (T/D-602) issued by the Station Master to the Driver.
- ii) The train shall be brought to a stop at the first stop signal of the right line or the last stop signal of the wrong line which ever comes first and from there the train shall be piloted in by T-509.
- iii) The Loco Pilot should switch on the flasher light of his engine when proceeding via wrong line.

14.16

TRAIN RUNNING IN RIGHT DIRECTION BUT ON WRONG LINE WITHOUT INTRODUCING S/LINE WORKING SR 6.02.05 (g)(i)

On a double line section, if for any reason other than introducing single line working, it becomes necessary to run an engine or train against the normal direction of traffic, the line concerned shall be blocked (Block back) indicating the section to which the train /engine is to proceed.

After obtaining acknowledgement from the Station Master of the station at the other end, the Station Master intending to run the train shall issue a Block Ticket (T/A-602) which shall include-

- i) Authority to proceed [n obstructed block section.
- ii) Authority to pass signal in 'ON' position.
- iii) Caution order

The caution order portion of the Block Ticket shall have the following particulars-

- a) Existing speed restrictions.
- b) Instructions to Loco Pilot/Guard-
 - i) To work out for possible obstruction and take action accordingly.
 - ii) To ascertain the condition of the train/obstruction over the adjacent line and to report the same at the next station in writing.

SPEED

15 KMPH at day time or when view ahead is clear and 10 KMPH at night or when view ahead is not clear from a distance of 800 meters.

ACTION

The Loco Pilot should sound the engine whistle frequently and he should observe the items mentioned in the caution order.

PROTECTION

If the train which is proceeding with block ticket is held up in the block section due to accident, failure or obstruction and cannot proceed further the train should be protected in rear by placing 3 detonators at 250 meters, 250 meters, 10 meters

and exhibit danger hand signal at a distance of 45 meters from the 3rd detonator.. For the protection in front GR 6.03 to be followed.

NOTE

The procedure is restricted to only one goods train or light engine and not for passenger train.

TOTAL INTERRUPTION OF COMMUNICATIONS

MEANS OF COMMUNICATION –

- (i) Block instrument, Track circuit and Axle counter.
- (ii) Telephone attached to block instruments.
- (iii) Station to station fixed Telephones, where available.
- (iv) Fixed Telephones such as Railway Auto Phones and BSNL Phones(with caller ID facility where feasible)
- (v) Control telephones
- (vi) VHF sets

If any of the above mentioned means of communication is not available then it is called total interruption of communication. In this situation, before any train is allowed to enter into the block section in advance, the train shall be brought to a stop at the station first and the Loco Pilot and guard of the train shall be advised of the circumstances by the S.M. on duty.

14.17

TOTAL INTERRUPTION OF ALL COMMUNICATION ON DOUBLE LINE SECTION (S.R. 6.02.03)

AUTHORITY - T/C-602,

An authority for working of trains during total interruption of communication on Double Line section which shall include-

- 1 Authority to proceed without line clear.
- 2 An authority to pass the last stop signal at 'ON'
- 3 A caution order restricting the speed to 25 KMPH for straight line or when view ahead is clear. 10 Kmph when view ahead is not clear due to curve, rain, fog, obstruction or any other cause. If required Asstt. Loco Pilot will pilot the train with proceed hand signal.

ACTION/ INSTRUCTION for LOCO PILOT

- (i) Fixed signals except the last stop signal can be taken off.
- (ii) Engine whistle to be used frequently.
- (iii) A tunnel should be entered only after ensuring that it is clear.
- (iv) An interval of 30 minutes is to be maintained between two trains.
- (v) Train must be stopped at the outside of the first stop signal of station in advance first then it may be taken on signal or piloted in.
- (vi) Loco Pilot must give four short whistles (0 0 0 0) if he is unable to proceed further, in block section due to accident/failure or any other reason.
- (vii) Loco Pilot will hand over the authority for working of trains during total interruption of communication on double line section. “**T/C-602**” to the S.M. of

the station at the other end i.e. next station.

PROTECTION

Protection in rear from last vehicle 250m-250m-10m-45m with danger hand signal. When train stop in block or detained more than 10 minutes at the out side of 1st stop signal of the next station and protection in front or adjacent line as per G.R.6.03.

14.18

TOTAL INTERRUPTION OF ALL COMMUNICATION ON SINGLE LINE SECTION (S.R.6.02.04)

In case of total interruption of all communications the driver and guard will be informed and the engine will be detached from the train to open the communication.

AUTHORITY

Before dispatching the Light Engine/Train Engine the Station Master on duty shall hand over the Driver **T/B-602**, an authority for opening of communication during total interruption of communication on single line section, which include-

- i) An authority to proceed without line clear
- ii) A caution order specifying the limit of speed that has to be observed in the affected section.
- iii) An authority to pass the last stop signal at 'ON.'
- iv) A line clear enquiry message (asking line clear for awaiting train).
- v) A conditional line clear reply message for the light/train engine to return light or attached to a train.

NOTE

- i) The last stop signal shall be kept at 'ON'.
- ii) After the light/train engine has been dispatched with "line clear enquiry message " and conditional line clear reply message, no other engine or train shall be allowed to proceed in the same direction until the return of that engine.

SPEED

15 KMPH during day or when the view ahead is clear and 10 KMPH at night or when the view ahead is not clear.

PRECAUTION/INSTRUCTIONS

- (i) Engine whistle to be used frequently.
- (ii) Switch 'ON' the F/light of LE while going to open the communication.
- (iii) A tunnel should be entered only after ensuring that it is clear.
- (iv) When view ahead is not clear then Asstt.Loco Pilot will pilot the engine with hand signal.
- (v) After the engine brought to a stand at the 1st stop signal of next station it may be admitted on signal or may be piloted in.
- (vi) The Loco Pilot of light engine will hand over the authority for opening

communication during total interruption of communication on S/L section contain ing the “**line clear enquiry message**” and “**condition line clear reply message**” to the S.M. at the next station.

- (vii) In the event of the light engine which is going to open communication, meeting another engine coming from the other end, the distance from the nearest station and the importance of the train for which line clear is required, to be taken into consideration, to which direction they will proceed.

NOTE

In case a light engine which is being despatched to proceed to the next station on the authority **T/B-602**, is not meant for opening the communication and to continue its journey on-ward, “**Line clear enquiry message**,” and “**Conditional line clear message**” shall be struck out. In this case another engine can be sent at an interval of 30 minutes. The Loco Pilot of Light Engine will hand over the authority T/B-602 to the S.M. on arrival at the next station.

After opening communication, when the engine is returning light or attached to a train

the Loco Pilot shall be handed over with-

- i) Conditional line clear ticket **T/G-602** for up train and **T/H-602** for dn train.
- ii) Conditional line clear reply message (**T/F-602**).
- iii) **T/369(3b)** to pass the last stop signal at on, and
- iv) Caution order (**T/B-409**).
- v) Line clear inquiry message (**T/E 602**)

SPEED

While returning light or attached to a train after opening communication on the authority of **conditional line clear ticket**, it may run at **normal speed**.

INSTRUCTION

On approaching the next station the Loco Pilot of the light engine/train shall bring his train to a stop at the first stop signal, from where it may be taken on signal or be piloteted in to the station. On arrival at the station, the Loco Pilot shall hand over the **conditional line clear reply message** to the Station Master.

On the basis of line clear reply message now the S.M. will allow trains into the affected section with the following authorities-

- i) Conditional line clear ticket.(**T/G-602** for UP trains & **T/H-602** for DN trains)
- ii) Authority to pass last stop signal at 'ON' **T/369(3b)** and
- iii) Caution order (**T/B 409**).

NOTE

i) The first train entering into the affected section after opening communication may run at normal speed. A clear interval of 30 minutes shall be kept between the preceding train and the next train to proceed into the affected section

- ii) The second and subsequent train shall maintain a speed restriction of 25 KMPH on straight when view ahead is clear and 10 KMPH when view ahead is not clear due to rain, fog, curve, obstruction etc. which shall be endorsed in the caution order issued to the Loco Pilot of the subsequent trains.
- iii) The line clear ticket shall contain the departure time of the last preceding train.

PROTECTION

When being worked on the authority of “Conditional line clear ticket” issued on the basis of “Conditional line clear reply message”, if due to accident, failuer or

obstruction a train can not proceed further, the Loco Pilot shall sound “0000” (4 short) whistle, where upon the Guard shall protect the train in rear by placing detonator in rear from the last vehicle at 250M-250M-10M and at 45M with danger hand signal and also the train shall be protected in the same manner when it is being detained outside the signal for more then 10 minutes.

NOTE: No train shall be backed in the block section when trains are following one another, if it becomes necessary under exceptional circumstances, it can be backed only after providing protection as mentioned above.

14.19

Abnormal working in AUTOMATIC block Section

a)

PROCEDURE TO PASS LAST STOP SIGNAL AT 'ON' ON DOUBLE LINE AUTO BLOCK SECTION (S.R.9.14.01(b))

When the last stop signal which may either be a manual stop signal or semi auto matic signal working as manual stop signal ('A' marker is not glowing) is defective or at 'ON', it can be passed on the authority of

- (i) T/A-912
- (ii) Proceed hand signal shall also be exhibited at the foot of the defective signal if there is any point beyond the signal.

SPEED

15 kmph in normal visibility condition up to the next auto stop signal or 10 KMPH when owing to curvature, fog, rain, dust, storm etc. the visibility condition is im- paired and be prepared to stop within the half of the visible distance.

b)

PROCEDURE TO PASS LAST STOP SIGNAL AT 'ON' IN AUTO SECTION WHEN THERE IS NO INTERVENING AUTO STOP SIGNAL BETWEEN TWO CONSECUTIVE BLOCK STATION (i.e. no intervening signal)SR9.14.01(b)

AUTHORITY –

- (i) An authority to proceed on Automatic Block System during prolonged failuer of signals, **T/D-912** with private no. and ID no.
- (ii) Caution order, **T/B-409**

SPEED – 25 kmph for 1st train and subsequent train with normal

speed. **ACTION** – Train may be admitted on signal or piloted in at the

next station. **ABNORMAL WORKING IN AUTO BLOCK SECTION**

c)

PROLONG FAILURE OF AUTO STOP SIGNAL WHEN COMMUNICATION ARE AVAILABLE ON DOUBLE LINE (SR 9.12.01)

AUTHORITY/ACTION –

- (i) An authority to proceed on auto block system during prolonged failure of signals **T/D-912** with private number and ID number ,distinguishing numbers of the departure and gate sig- nals required to be passed, shall also be indicated in this authority authorising the Loco Pilot to pass them.

- (ii) Caution order **T/B-409**
- (iii) On approaching at the next station train may be admitted on signal or piloted in.

SPEED – 25 kmph for 1st train and normal speed of subsequent trains.

d)

AUTO STOP SIGNALS ARE WORKING BUT COMMUNICATION IS NOT AVAILABLE ON DOUBLE LINE SECTION (SR 9.12.05)

AUTHORITY/ACTION

For 1st train

- (i) A caution order (Containing the list of trains if any) indicating the circumstances.
- (ii) A copy of list of trains to be run on that section.
- (iii) Train may be admitted on signal or piloted in only after the train stop at the first stop signal of the next station.

For Subsequent Train –

Train may run as per signal aspect.

SPEED – Follow as per aspect of auto signal for first and also subsequent train.

NOTE – At next station the driver of the first train shall hand over the list of trains to the S.M., which was given by the Station Master of the rear station.

e)

FAILURE OF AUTOMATIC STOP SIGNALS AND ALSO COMMUNICATION IS NOT AVAILABLE ON DOUBLE LINE (Total interruption) (S.R.9.12.02)

AUTHORITY –

Authority to proceed without line clear on auto block signalling territory (**T/B-912**) which shall include-

- i) An authority to proceed without line clear.
- ii) An authority to pass automatic/ semiautomatic/manually operated gate signal at 'ON' with individual distinguishing number of each signal.
- (iii) Caution order.

SPEED – 25/10 kmph as per visibility.

ACTION –

- (i) Engine whistle is to be used frequently.
- (ii) A tunnel should be entered only after ensuring that it is clear.
- (iii) 15 mts. time interval to be maintained in between the two trains.
- (iv) Loco Pilot must stop the train at first stop signal of the next station. The train may be admitted by taking 'OFF' the signal or piloted in.
- (v) In case of accident or failure in block section, give four short whistle (0000) and the train to be protected in rear from last vehicle as G.R.6.03 i.e. 600m-600m-10m-10m- 45m & danger hand signal .When train is detained for more than 5 mts. at the out side of first stop signal.GR 4.44 to be followed.

- (vi) Hand over the “Authority to proceed without line clear”(T/B912) in Automatic block signalling territory to S.M of the next station.

f)

ON S/L AUTO SECTION WHEN COMMUNICATION ARE NOT AVAILABLE AND DURING SUSPENSION OF PANNEL WORKING OR S/L WORKING INTRODUCED ON D/L WHEN NO MEANS OF COMMUNICATIONS ARE AVAILABLE (S.R.9.12.06 or S.R.9.12.04)

In the above mention two circumstances, trains shall be worked between the stations concerned in the manner as laid down in **SR 6.02.04**. except that in lieu of **T/369 (3b)**.

The prescribed form. **T/A-912** shall be issued. **T/A -912** shall indicate the individual number of Automatic/semiautomatic/manually operated gate signals at ‘ON’. In case of departure signals, the Loco Pilot shall pass the signals only on being hand signalled past by a railway servant gate signals shall be passed cautiously up to the level crossing , where he shall ascertain that the gates are closed and proceed hand signal is being displayed by the gate man.

g)

SR 9.12.03 Working of trains under Automatic block system (Double line) during obstruction of one line when signals are operative and communications are available:-

1. Single line working will be introduced only on receipt of written information from guard/driver/PWI/Traction Foreman that the line on which single line working is to be introduced is clear of obstructions.
- 2 Single line working will be introduced between the nearest station provided with cross - overs between UP and Down lines on either side of the obstruction.

Authority/Action-

a) Loco Pilot of all trains running on the wrong line and each first train to run on right line shall be given

- i) A paper line clear ticket on prescribed form (**T/C-1425** for UP train and **T/D -1425** for DN trains)
- ii) On authority on prescribed form (**T/A- 912**) authorising the Loco Pilot to pass the intervening non governing /governing semi automatic and manually operated signal on being hand signal past by a point man in uniform. The distinguishing no of each signal shall be indicated in the authority .Semi automatic gate signal shall be passed cautiously only after ascertaining that the gate are closed and proceed hand signal displayed by the gateman.
- iii) A caution order indicating -
 - a) The line on which single line working has been introduced
 - b) The kilometrage at which obstruction exist on the other line
 - c) Speed restriction if any.

An endorsement shall also be made in the caution order issued to the Driver of the first train after introduction of the single line working to stop and inform all gate men ,

gang mates and key man about the introduction on single line working specifying the line on which trains shall run.

- b) Subsequent trains run in right line shall be allowed to follow to each other on the indication of Automatic signals.

Special instructions-

- 1 For right line trains** - All fixed departure signals can be taken off and the trains also can be admitted on signals at the next station.
- 2 For wrong line trains-** All trains shall be polited out with **T/A-912** and the trains shall also be polited in at the next station by **T-509** after it has come to a stop opposite first stop signal of the right line or last stop signal of the wrong line, which ever comes first and whistle the horn.

Speed First train 25 kmph and subsequent train may run normal speed.

h)

**ON SINGLE LINE AUTO SECTION PANNEL WORKING IS
SUSPENDED BUT COMMUNICATIONS ARE AVAILABLE (S.R.9.12.07)**

AUTHORITY

- (i) A line clear ticket on prescribed form(**T/C-1425** for up train & **T/D-1425** for DN train)

- (ii) An authority on prescribed form **(T/A -912)** indicating the individual number of Auto- matic /semiautomatic/manually operated signal to be passed at 'ON'.
- (iii) Caution order **(T/B- 409)**.

ACTION

- (i) Loco Pilot should be very cautious while passing level crossing gates. He must ensure that gates are closed and locked against the road traffic and proceed hand signal displayed by the gateman.
- (ii) Train may be admitted on signal or piloted in at the next station.

Speed:- 25 kmph for the first train, subsequent trains may run at normal speed.

i)

WORKING OF TRAIN IN AUTO BLOCK SYSTEM ON SINGLE LINE WHEN DIRECTION OF TRAFFIC IS ESTABLISHED BUT LAST STOP SIGNAL IS DEFECTIVE (B.W.M. 6.23)

AUTHORITY –

- (i) **T/511**
- (ii) **T/A-912.**
- (iii) Displaying hand signal at the foot of the defective signal.

SPEED – Not exceeding 15 or 10 KMPH as per the visibility up to the next Auto Stop Signal.

AUTHORITY TO PROCEED IN AUTO BLOCK SYSTEM –

Under normal working on double line or single line –taking 'OFF' of the last stop signal.

LESSON 15

ACCIDENTS

15.1

Accidents and their classifications

ACCIDENT: Any occurrence which does or may affect the safety of the railway/loco/rolling stock/permanent way/Passenger/railway servant or which does or may cause delay to the train movement or loss to the railway is called the accident.

SERIOUS ACCIDENT

Every railway accident to a train (whether carrying passenger or not) which is attended with loss of human life or with grievous hurt as defined in the Indian Penal code or with serious damage to the railway property of the value exceeding 2 crores of rupees and every accident such as a land slide, breach by rain or flood or derailment etc., which causes the interruption of any important crew line of communication for at least 24 hours shall be deemed to be a serious accident.

AVERTED COLLISION

An averted collision is a circumstance under which but for the vigilance shown by any person or person, a collision would have occurred either in the block section or within the station limits between two trains or a train and an obstruction.

Further that such an occurrence may not be treated as an averted collision:

- i) If outside the station limit, the distance between the two trains or the train and obstruction at the time the train or trains have finally come to a stop in 400 meters or more.
- ii) If within the station limits there is an intervening stop signal at danger governing the moving train and compliance by the moving train with indication converted by the stop signal averted the collision between the trains, however between the train and obstruction.

CLASSIFICATION OF ACCIDENT:

There are 16 classes of accident i.e. “A” to “R” except “I” and “O”

- | | | |
|----|-----------|--|
| 1 | Class “A” | Collision |
| 2 | Class “B” | Fire on train |
| 3 | Class “C” | Train running into road traffic or traffic running into train at L/C |
| 4 | Class “D” | Derailed |
| 5 | Class “E” | Other train accident |
| 6 | Class “F” | Averted collision |
| 7 | Class “G” | Breach of block rules |
| 8 | Class “H” | Train passing signal at danger |
| 9 | Class “J” | Failure of engine and rolling stock (train parting, stalling) |
| 10 | Class “K” | Failure of permanent way |
| 11 | Class “L” | Failure of electric equipment (no tension on line) |
| 12 | Class “M” | Failure of signal and telecommunication |

13	Class "N"	Train wrecking, explosion ,sabotage
14	Class "P"	Casualties
15	Class "Q"	Other incidents
16	Class "R"	Miscellaneous (cattle run over)

15.2

DUTIES OF LOCO PILOT AND ASSISTANT LOCO PILOT IN CASE OF SERIOUS ACCIDENT:

- i) Note down the time of accident and KM number
- ii) Protect the adjacent line and front portion of the train as per GR 6.03 .
- iii) In the event of any disability of guard it will be responsibility of the train driver to ensure the protection of the obstructed/adjacent line and the train in rear as per GR 6.03/9.10 and to give quick information of the accident to the controller/SM after securing the train.
- iv) Take such precautions as may be necessary as prescribed by special instruction to render the locomotive safe.
- v) Render all possible assistance to the guard in relief measure to the injured and particularly in the assessment of damage to the rolling stock, permanent way, locomotive, OHE and nature of assistance required and in giving quick information to the controller/SM regarding the accident.

15.3

TYPE OF ACCIDENT RELIEF EQUIPMENTS

Following types of accident relief equipments are provided in this railway.

- i) Accident relief medical equipment (ARME)
- ii) Accident relief train (ART)

SOUNDING OF HOOTER FOR TURNING OUT OF RELIEF TRAIN/ARME VAN IS AS FOLLOWS:

Equipments	No. of blast	Duration of Each blast	Gap between two consecutive blasts
Relief Train with ARME	5	60 seconds	10 seconds
Relief train without ARME	3	60 seconds	10 seconds
ART with crane	4	60 seconds	10 seconds
OHE brake down	1	60 seconds	-----
Yard derailment	2	60 seconds	10 seconds

TARGET TIME FOR THE TURN OUT OF ARME/ART

- i) The ARME van must be dispatched to the site of accident within 15 minutes from the base station, after sounding the hooters with double exit siding and 25 minutes in case of single exist siding with the first available engine.
- ii) The ART be turned out/dispatched from the base station to the site of accident within 30 minutes by day and 45 minutes by night after sounding the hooters.

15.4

RUN OVER CASES

A) WHEN THE PERSON IS ALIVE

- iv) When a railway employee finds an injured person near the railway track he shall "Render first Aid"
- v) Take the injured person to the nearest station in the direction of run and hand over to the station master for further medical aid with the memo showing time and place of incident, make declaration if the condition is found dangerous with the following items. Name, Age, Sex, father/Husband's name, caste, village, how he or she happened to be on the track, cause of accident, time, KM No. (where the injured was found).
- vi) The statement should be signed by guard/driver and a responsible person as a witness if available and to be handed over to the SM
- vii) If the person is found to be in serious condition, the dying statement should be recorded.

B) WHEN THE PERSON IS DEAD

- (i) When a dead body is found on or near the track by Railway servant he shall keep the evidence intact specially the fingerprint.
- (ii) The dead body should not be removed until the arrival of police. However to clear the line for the movement of subsequent trains, the body may be re- moved to some minimum requirement.
- (iii) The dead body should be left in charge of a village Chowkidar/Lineman/ Gateman/other responsible Person with a memo stating the following particulars –
 - (a) Line (up or down)
 - (b) Km. No., where the body was found.
 - (c) Time
 - (d) Position of the body in relation to the track, blood Stains in the ballast or on the engine.
 - (e) Cause of injury whether by a train or otherwise.
 - (f) Position of clothing found on or near the track.
- (iv) Loco Pilot's name and address to be given in the memo for further disposal.

15.5

TRAIN ENTERED IN BLOCK SECTION WITHOUT PROPER AUTHORITY

(SR6.06.01)

I. Duties of Loco pilot Or Motorman

When a LP/MM, first becomes aware of the fact that he does not have an Authority to proceed while in the block section, following action shall be taken:--

1. Loco Pilot shall stop the train immediately,
2. Loco Pilot shall sound the prescribed code of whistle reputedly (0---0) one short one long one short, which shall be acknowledged by the Guard by waving red hand signal up and down.
3. Thereafter, the Guard and LP shall arrange to protect the train as per GR 6.03(1) (i) (g) and SRs thereunder.
4. Information may be sent on the portable telephone or any approved means of communications ,if available , or by sending ALP or any other railway servant to the nearest station to obtain written permission or by sending information thorough the Guard/LP of train passing over the adjacent line with the request to send written permission through one of the staff.

II. Duties of SM:

1. The SM who receive such information on VHF or any other approved means of communication regarding the train entered into block sections without authority he shall at once inform the SM in advance and the section controller. He shall issue a written authority ,in consultation with the SM at the other end of the block section, to the LP of the train to go ahead to the next Station or to push back to the station from Where the train started , by issue of Caution Order.
2. **When a train enters after passing approach (C Class Stations) and or departure signals of a station and enters into the block section without Authority to proceed,**
SM will immediately advise the station in advance by giving prescribed bell code six pause five on double line and six pause Four on signal line, on block phone saying Train running without Authority to proceed loudly.
3. **On electrified Section,** the traction Power Controller shall be either directly or through the section controller, under exchange of private number informed immediately to switch off the OHE power of the affected section (If TPC phone is available) Wherever necessary . In case, TPC has been directly informed first, Section controller to repeat this to TPC when he gets such information first, without fail. On getting information, TPC will switch off the concerned section OHE immediately.
4. **Advance Station SM** in the train going direction will immediately ensure that all signals are in ON position and the route is set and locked for the clear line preferably main line, and arrange to place 3 detonators 10 meters apart as far away from the started signal (between home and a starter) as possible. The train shall not be turned into dead end siding or derailed, unless it is necessary to do to avoid a more serious accident. Vehicles which contain passengers or live stock much not be derailed in this manner.
(See BWM paras 2.07,Sr 4.42.02(d) and 6.11.02 for detailed guidelines.)
5. In the mean time, if train arrives and stops at or outside First Stop signal of next station , reception of the train should be done as per rule. He can then arrange to remove detonators placed on the line before admission of the train on that line.

6. Till the vehicles or train reaches to next station or clears the block section affected both end block instruments shall be kept at “ train on line “ position and signals at ON of the line concerned.

III. Duties of Guard

In case the LP fails to stop and runs through disregarding approach signal (in case of C – Class Station) and or departure signals(in case of other stations), the station staff should try to attract the attention of the Guard. The guard on receiving danger signal from the station staff or gateman, will try to attract the attention of LP and stop the trains as per GR 4.45.

TRAIN PARTING, INABILITY OF THE ENGINE TO HAUL THE FULL LOAD

TRAIN PARTING (G.R.6.08)

ACTION –

- (i) If a train is parted on run, the Loco Pilot should keep the first portion in motion if possible, till such time the rear portion comes to a stop to avoid collision between the two portions (but do not pass any stop signal at ‘ON’ for doing this).
- (ii) Loco Pilot should give engine whistle code (– 0 – 0) one long one short one long one short, to inform the guard and put ‘ON’ the flasher light to stop an approaching train on adjacent line if required.
- (iii) Guard will apply hand brake or drop the vacuum/air pressure to stop the second portion and will show a green flag by day. While light by night, up and down vertically as high and as low as possible and protect the train in rear and front portion as per G.R.6.03.
- (iv) When both portions of parted train are brought to a stand, try to couple up both portions if possible with due caution with the hand signal from the guard and couple the train.
- (v) If the coupling is not possible then work the train into two portions. The guard will allow 1st portion mentioning last vehicle number advising SM to arrange to clear the 2nd portion left in block section. With written memo on prescribed form no- T/609.
- (vi) On single line section, Loco Pilot shall hand over the token to the guard and obtained a written receipt. He shall bring his train to a stop at the first stop signal at next station and sound one long one short one long one short whistle. The station master to arrange to receive the train on piloting in on convenient line.
If asked for by the guard after dropping the first portion the driver will return to the spot to clear the second portion on guard’s written authority.
- (vii) If first portion already reached the block station in advance the Loco Pilot will give parting whistle code (- 0 - 0) repeatedly to warn the cabin man and station staff and stop the train without clearing the fouling mark (F.M.) of the station.

- (viii) In single line section do not hand over the tangible authority if any to the S.M.
- (ix) If there is a banking engine on train, the Loco Pilot of banking engine shall arrange to stop the rear portion and he will give one long one short one long one short (-0-0) and will arrange to protect the second portion in rear as per G.R6.03.
- (x) The guard will protect in front as per GR6.03
- (xi) An engine will be sent by ASM with Block ticket to clear 2nd portion, which was left in block section.

PRECAUTION AND PROCEDURE WHEN TRAINS STOP IN 1 IN 150 (1/150) OR STEEPER GRADIENT IN SECTION FOR MORE THAN 15 MINUTES DUE TO ANY REASON **SR 5.23.01 also to be incorporated**

- (i) Apply hand brakes of the loco in addition to air brake.
- (ii) In case of roller bearing stock on a section 1/150 gradient or plane bearing stock on a stock 1/100 gradient, the following additional precaution to be taken.
 - (a) **PASSENGER TRAIN** – Guard will apply hand brake of the brake van and put sprags and wedges or scotch block in the wheels of two vehicles nearer to the down gradient.
 - (b) **GOODS TRAIN** –
 - (i) Asstt. Loco Pilot will apply hand brakes of 10 wagons in rear of loco and guard will apply hand brakes of brake vans and 5 wagons from the brake van side or 1/3 of the total wagon whichever is more.
 - (ii) When train is ready to start create/charge normal air pressure and again apply the brake.
 - (iii) Remove the sprags /wedges, release the hand brakes of wagon.
 - (iv) Recreate or recharge air pressure and then start the train after exchanging signal with guard.

Securing of vehicles A&C 87

SR 5.23.01 (a) :

- 1) Station Master are responsible for seeing that vehicles are secured in such manner that they cannot be moved so as to obstruct any running line. If for any reason, vehicle are allowed to remain on a running line for sometime, a clear remark in red ink should be made immediately in the train register indicating time and number of running line on which vehicle are stabled.
- 2) A record thereof shall be made in the station diary also. At stations where cabin asst. Station Masters/Switchmen are in charge of cabin, they shall intimate the fact to each other under exchange of private numbers and record in the train register in red ink and in addition, comply with SR 5.04.01 (a) & (b)
- 3) When the engine (s) of a train which has arrived at a station is/are detached or continue to remain on load in shutdown condition, following precautionary measures shall be taken so as to prevent rolling down.
- 4) Station Masters shall ensure that hand brakes of least six vehicles at each end of the rakes and of all the wagons, if the number is less than 12, are firmly pinned down by the incoming ALP at the engine end and the incoming Guard at the Brake van/ Match Truck end of the train.
- 5) In addition, the train brake (A-9) and the hand brake of the engine (if Attached) shall be applied and the wooden wedges available in the engine shall be put under the wheels of the engine by the LP/ALP and also the hand brake of the brake van shall be pinned down by the Guard.
- 6) In case of coaching vehicles in similar circumstances, it shall be ensured that the air/vacuum brakes are applied and holding effectively, failing which Guard's hand brake shall be applied.
- 7) The train crew and the Guard shall personally ensure this and certify jointly in a written

memo for having complied the same before they leave the train.

- 8) Points shall be set against the occupied line wherever feasible complying GR 3.38(2) and SR 3.51.06 by the person in charge of operation of these.
- 9) Skids/Wooden wedges shall be put by station staff at ends of the rake as well as after every twenty wagons.
- 10) If the train/rake is likely to remain stabled/continue to remain with engine on load in shut down condition, for more than 3 hours, the station staff under the direct supervision of the ASM/SM/AYM/YM, as the case may be, shall tie two safety chains, one at each end of the rake and padlock it. They safety chains shall be passed around the axle twice and after tying the ends, they shall be locked such that no station falls on the padlocks.
- 11) The hand brakes, whether side operated or end operated, shall be fully tightened
- 12) When one/some loose vehicle (s) is/are to be allowed to remain on the line, the vehicle(S) shall be secured in the manner described above, if the number of loose vehicles is more than one, all such vehicles shall be coupled together. In this case, the responsibility of securing the vehicles will devolve on the station/yard/shunting staff as the case maybe, under the supervision of ASM/SM/AYM/YM Shunting supervisor.
- 13) Coaching stock not fitted with hand brakes, when not formed as a train with brake vans attached shall be secured by wedges/sprags and safety chains in the manner described above.
- 14) When scotch blocks or details are provided, Vehicles shall be placed within them and the scotch blocks or derails locked across the line.
- 15) As a safeguard against stormy weather while shunting is being performed special care must be taken to secure the vehicles, which might be left unsecured during shunting. This shall be secured through placement of sprags, wedges and skids near the entrance point I of each pair of lines on which the shunting is being conducted.
- 16) Particular care must be taken to remove the chains, sprags, wedges and skids before wagons are moved or coupled to trains by the person responsible for conducting shunting.
- 17) In case of big yards where vehicles remain stationery on the yard lines other than running lines, the above precautions may be relaxed, however hand brakes and skids shall be used at the end of the yard where the rolling down of vehicles is apprehended.

15.9

Precautions and preventions while vehicles (not Containing passengers or live stock) escaped from station. SR 6.11.02 (a)

SM to immediately advise the station in the direction in which the vehicle(s) has escaped by sending the prescribed signals on the block instruments, where provided and also advise him on the telephone/ block phone.

- a) Both the SMs Shall immediately place signals at ON relating to the block section into which the vehicle(s) has escaped and maintain them in this position until they have satisfied themselves that the block section is clear.
- b) On double lines sections, if the vehicles (s) has escaped on the wrong the line, stop trains proceeding in the direction on the right line, until it has been ascertained that the escaped vehicle(s) is not fouling the adjacent line.
- c) The SM of the station towards which the escaped vehicle(s) is travelling shall make every endeavour to stop it by covering the rails heavily with sand earth or small stones for as great a distance as possible. If he does not succeed in this attempt, he shall try

to divert the vehicle into clear loop or siding. Alternatively, the vehicle (s) may be permitted to run through the next station provided the block section in advance is clear and is not on a falling gradient. Next station should be advised immediately and the vehicle running away signal must be given to the station ahead.

- d) The vehicle may as a last resort, be derailed by placing a sleeper or other obstacle on the line.

LESSON 16

MISCELLANEOUS

16.1

WORKING ON ELECTRIFIED SECTION

- i) When any defects of the OHE which is likely to interfere with smooth movement of pantograph or cause or damage, it is noticed ahead, the Loco Pilot shall trip DJ and lower pantograph immediately. The train be brought to stop short of such place.
- ii) If the damage of OHE is slight, the Loco Pilot may coast through such damaged section if possible.
- iii) In all cases, the defects shall be reported to TPC (Traction Power controller).

16.2

APPLICABILITY OF GENERAL RULES

In electrical section special precaution should be taken by controllers, TPC, Station master

and train crew when a section of OHE found faulty.

DEFECTS ON OHE

It shall be the responsibility of every railway servant to report immediately any abnormality, which may come to his notice on the OHE such as

- i) The whole or part of the OHE or a feeder or a cable falling down and or persons, animals or vehicles coming in contact with or likely to come in contact with live equipment.
- ii) Pantograph of an electric rolling stock getting damaged and entanglement of the same with OHE
- iii) A damaged catenary or contact wire falling on the vehicle
- iv) Damage to the track or structure of OHE
- v) Derailment and any other traffic accident

Railway servant noticing the above shall at once report the same to the TPC either directly or through station master over nearest available phone.

16.3

SPECIAL DEFINITIONS

POWER BLOCK

It means blocking of section of line to electric traffic only.

FEEDING POST

It means a supply control post where the incoming Feeder line from grid sub-station is terminated.

TOWER WAGON:

It means a self-propelled vehicle which is used for the Maintenance and repair of OHE.

TRACTION POWER CONTROLLER:

It means a competent railway servant who may for the time being be responsible for the control of power supply on the traction distribution system.

OHE(OVERHEAD EQUIPMENTS)

It means the electrical conductor over the track together with their associated fittings insulators and other attachment by means of which they are suspended and registered in position.

EMERGENCY TELEPHONE:

It means a telephone circuit provided for contacting the traction power controller

TRACTION LOCO CONTROLLER (TLC/LC)

It means an official under the control of Sr. DEE (OP)/OP/ADEE (OP) who will be responsible for booking of electric locomotives and running staff to meet the

requirement of the traffic.

SECTION INSULATOR:

It means a device for dividing the contact wire into electrical sections while maintaining mechanical continuity and a continuous path for pantographs.

ASSISTANT LOCO PILOT:

Assistant Loco Pilot means duly certified assistant loco pilot of single or multiple unit train or of an electric engine.

16.4

RULES FOR ELECTRIFIED SECTION (SR 17.09.01)

- i) In the event of OHE failure, the traction power controller shall immediately locate the faulty section and isolate the same, in case of double line or multiple line section he shall also isolate the healthy section on adjacent track on the same route length. As the faulty section, then he advises the section controller about the same.
- ii) On receipt of the information from TPC, the section controller shall immediately inform the stationmaster, if the station who are concerned with the working of train in which healthy OHE temporarily is isolated. They shall not allow any train to leave their stations unless both the drivers/guards of the first train have been issued a caution order to proceed at speed of 35 KMPH by day and 20 KMPH by night subjected to observance of other speed restrictions exercising great caution.

16.5

ELECTRICAL SAFETY

SAFETY RULES CONCERNING 25 KV AC

- i) Do not approach to 25 kv AC directly or indirectly within a radius of 2 meters.
- ii) On line before going to the roof of the loco take emergency power block first by exchanging private No. With TPC and ground the loco, OHE on both side of loco by earthing poles and cables. After that climb on the roof of the loco.
- iii) Do not enter in the high-tension compartment of loco until loco is grounded.
- iv) Do not perform roof inspection in shed, stations or yards until correct isolating switches are opened and grounding switch is closed. Put your personal pad lock on the isolating switch for more personal safety.
- v) Do not project part of body above the roof of the loco while changing head light bulb.
- vi) Do not project jet of water towards OHE.
- vii) Do not touch any conductor line near the electrified track.
- viii) Do not throw any conductor on the OHE from over bridge.
- ix) Do not walk between track and under OHE.

16.6

PRECAUTIONS WHEN A TRAIN IS DETAINED IN SECTION FOR MORE THAN 5(FIVE) MINUTES DUE TO NO TENSION ON LINE:

When ever any train gets held up for more than 5 minutes in the block section on account of no tension, the Loco Pilot of the train shall depute his Assistant Loco Pilot to check the train in order to look for any abnormality and to advise the guard for no tension on line (in OHE) together with Assistant Loco Pilot the guard shall check the entire train.

If in the mean time power supply restored the Loco Pilot shall call back the Assistant Loco Pilot to the locomotive and resume journey

Otherwise after the train is checked the Loco Pilot/Guard inform the section controller/TPC of the details of abnormality if any or otherwise an assistant required to the nearest emergency telephone socket or by other available means.

The Loco Pilot and Guards shall arrange protection of line to the affected line in accordance with GR 6.03 in auto section as per GR 9.10.

Further the journey will be resumed as per decision regarding recharging of OHE by TPC/ section controller.

16.7

CALCULATION OF WAGON IN TERMS OF UNITS

A) COACHING STOCK

- i) A four wheeler or six wheeler wagon/vehicle 1 unit
- ii) A bogie vehicle i.e. 8 wheeler 2 units

B) GOODS STOCK

- i) A four wheeler wagon 1 unit
- ii) A six wheeler wagon 1 unit
- iii) A eight wheeler wagon 2 units
- iv) A 12 wheeler wagon 3 units
- v) A 24 wheeler wagon 6 units
- vi) KOH/BOBX/BOBS 3 units
- Vii KO/BFR 2 units
- viii) BRH/BOB/BCN/Box N/Box 2.5 units

MAXIMUM PERMISSIBLE SPEED OF GOODS ROLLING STOCK

S/No	Types of wagon	Max. Permissible speed in KMPH	
		Load	Empty
1	CV/KC/CRT/BOX/BOB/ BOBCBOI/BCX/MT/ BV/BOBY/BRH	75	75
2	BOBX	56	56
3	BOBS MARK-1	32 (monsoon)	48 (Non monsoon)
4	BOBS – Mark –II	40 (monsoon)	56(Non monsoon)
5	BOY/TP	65	65
6	BOX 'N'/BCN/BRN/BTPN	75	80
7	BOBR	80	80
8	BCN 'A'	80	80

NOTE: BOBS mark 1 are number below 52110, BOBS mark II are numbered 52110 and above. The speed may change division wise.

RELEASING THE BRAKE BINDING OF AIR STOCK WAGON:

- i) Ensure BP pressure on engine gauge is 5 kg/cm².
- ii) Ensure that there is no air leakage from the affected wagon.
- iii) Ensure that the hand brakes of the wagon are fully released.
- iv) Ensure empty/load handle is on proper position.
- v) If above all items are at right and normal then release the distribution valve (DV) by pulling the releasing valve till brakes are released even after releasing the valve then isolate distributor valve by pulling the isolating handle to the isolate position and then release the QRV.
- vi) If still brakes are not released, operate SAB (Slack adjuster Barrel) in anti clockwise direction.
- vii) If the brake binding still does not release, disconnect the SAB by taking out its connecting pins from the live lever.
- viii) If still does not release, take out pin from long or short pull rod.
- ix) If still does not release, remove the brake block of affected wagon.

BMBS wagon brake binding

SPEED RESTRICTION ON DIFFERENT CIRCUMSTANCES:

Sl.	Rule No.	Speed	Circumstances
1	SR3.40.03	10 KMPH	Passenger train admitting in goods yard
2	SR 3.70.01	15 KMPH	Piloting in and piloting out
3	GR 4.10	30 KMPH	Non interlocked points
5	SR 2.11.03	20 KMPH	When wheel slipping on electric loco then subsequent trains speed
7	SR 4.11.01	50 KMPH 110 KMPH 140 KMPH 160 KMPH	Standard I interlocking Standard II interlocking Standard III interlocking Standard IV interlocking
8	GR 4.12	25 KMPH	Engine pushing
9	SR 4.20.01(a)	25 KMPH	Driver becomes incapacitated, Asst. driver to take the train up to the next station
10	GR 4.12	40 KMPH	Search light special with wagon ahead
12	SR 4.62.05	25/8 KMPH	Material train pushing
13	GR 5.13	15 KMPH	Shunting speed generally
14	SR 5.14.07 (c)(i)	8 KMPH	Shunting with inflammable goods
15	SR 5.14.07(c)(ii)	5 KMPH	All bogie wagons fitted with roller bearing
16	SR 5.14.07(c)(iii)	3 KMPH	When shunting a group of 5 wagon fitted with roller bearing and transition coupling (T.C.)
17	SR 5.14.07(d)(iii)	5 KMPH	The impact speed with rolling down hump yard
18	SR 6.02.01	25 KMPH	S/.L working introduced on D/L speed for the

first train

- | | | |
|----|---------------------|---|
| 19 | SR 6.02.03 (g)(ii) | 15/10 KMPH Train to run on wrong line without introducing S/L working on D/L with an authority BLOCK TICKET (T/A-602) |
| 20 | SR 6.02.02 (a) (ii) | 15/10 KMPH Train is running with block ticket |

Sl.	Rule No.	Speed	Circumstances
21	SR 6.02.03	25 /10 KMPH	Total interruption on D/L absolute block system
22	SR 6.02.04 and SR 9.12.06	15/10 KMPH	During total interruption on S/L section on absolute and auto block system
23	SR 9.12.02	25/10 KMPH	Total interruption on D/L auto block system
24	SR 9.12.01	25 KMPH for 1 st train and booked speed for subsequent trains	Failure of auto signal when communications are available on D/L(Prolonged failure)
25	SR 9.12.03(m)	25 KMPH for 1 st train and booked speed for subsequent trains	Single line working introduced on D/L section
26	SR 15.05.01©	40/15 KMPH	When a patrolman not returned within 15 minutes of his schedule time
27	SR 15.17.02	20 KMPH	Rail fracture less serious in nature
28	SR 15.17.04	15 KMPH	Rail closure shorter than 5.5m.
29	SR 4.10.01	15 KMPH	1 in 12 turnout not provided with curve switch.
30	SR 4.62.06(e)(i)	8 KMPH	Material train pushing when brake van is not leading
31	SR 4.62.06(d)(i)	25/8 KMPH	Engine pushing and brake van is leading of 25 for straight 8 for curve
32	SR 9.02.01	15/10 KMPH	Passing auto stop signal at ON
33	SR 17.09.01	35/20 KMPH 35 kmph by day & 20 kmph by night	On resumption of tension in OHE, train to move after experiencing of no tension on line for 5 minutes or more and TPC could not be Contacted
34		Not exceeding 75 KMPH	Working in thick and foggy weather in absolute block system and auto block system with fog safe device fitted in loco

35		Not exceeding 60 KMPH	Working in thick and foggy weather in auto block system and absolute block system
36	OPM 23.15	30 KMPH	Non air pressure goods train.
37	OPM 23.15	40 KMPH	Non-air pressure passenger train.

- i) Sanctioning authority for non- air pressure goods train is DRM
- ii) Sanctioning authority for non-air pressure passenger train is COM.

16.10

SHUNTING RULES & AUTHORITY FOR SHUNTING

FIXED SIGNAL TO CONTROL SHUNTING

1. Shunt Signal
2. Calling On signal
3. Starter signal (other than last stop signal)

SHUNTING ON THROUGH GOODS TRAIN:

Whenever shunting on a through goods train is to be performed at a station, person in charge of shunting operation shall satisfy himself that at least 15% of hand brakes are applied for the wagons which remains stationary i.e. which are not involved in shunting operation (SR 5.14.02).

LOOSE SHUNTING

It is a shunt movement in which vehicles which have to be moved are given an impetus by an engine (with or without other vehicles attached) and then after allowed to run forward unattached (SR 5.21.01 (a))

FLY SHUNTING (SR 5.21.01(b))

It is a shunt movement in which two or more vehicles to be moved after being given an impetus by an engine (with or without vehicle attached) are separated at the points, by the points being reversed smartly between “cuts” in order to send them on to different lines.

LOOSE /FLY SHUNTING IS NOT PERMITTED IN FOLLOWING CASES:

- i) The wagon on which hand brake is defective
- ii) Loose/fly shunting is prohibited on the face of gradient or dead end siding or an open derailing switch
- iii) During storm or cyclonic weather
- iv) With the wagon loaded with inflammable liquids, explosives, articles/coaching bogies/empty oil tank or the wagons stencilled or

labelled “(NOT TO BE LOOSE SHUNTED)” and ODC wagons also single consignment loaded on more than one wagon.

AUTHORITY OF SHUNTING:

Means the authority which a Loco Pilot may receive during shunting operations. It may either be the taking “OFF” of fixed signals or exhibition of hand signals or even the verbal order.

When there is no fixed signals for controlling the shunting movement, even though shunting is being performed within the station section, shunting authority T-806 shall be issued. T-806 shall also be issued while shunting is being performed by entering into the block section.

SHUNTING AUTHORITY

T-806 (When shunting operation is not controlled by fixed signal) NOTE: T-806 shall be returned after the completion of shunting.

Sl.No.	Rule No.	Circumstances	Authority
1	GR 8.15 SR 5.13.01	When fixed signals are provided for shunting	i) Written permission for shunting ii) By taking OFF shunt signal, calling ON signal, starter (other than last stop signal)
2	SR 5.13.02	When fixed signals are not provided or defective	i) T-806. ii) Hand signal
3	SR 5.16.01 GR 8.06 (iii)	Infringing block section during shunting purpose	i) T-806 with Private No. for block back or block forward or a written advice to perform shunting in rear of travelling away train ii) Hand signal
4	SR 8.15.01 (b)	When shunting is required by obstructing block section on S/L token block system	i) T-806 with private No. for block back or written advice to do shunting in rear of a travelling train
5	SR 5.14.06	Shunting from UP line to DN line or vice versa	i) T806 with Private No. and block back/block forward. ii) Hand signal
6.	SR 5.13.01	SPI defective	T/806

SPEED OF LOCOMOTIVE DURING SHUNTING:

- i) 15 KMPH is the general speed of locomotive during shunting
- ii) Wagons loaded with Petrol, kerosene, liquid fuel, spirit and highly inflammable liquid in bulk or packed in tins or drums – 8 KMPH
- iii) All bogie wagons fitted with roller bearing when shunting a single wagon – 5 KMPH
- iv) Group of five roller bearing fitted with transition coupling (screw coupling at either end – 3 KMPH
- v) When rolling down the hump, the impact speed – 5 KMPH

Extracts of some correction slips

Add the following Para below GR 14.01

SR 14.01.01 The following electrical communication instruments shall be used for obtaining/granting line clear /as per their availability and strictly in order of preference.

- 1) Block instruments, Track circuits or Axle counters.
- 2) Telephone attached to Block Instrument.
- 3) Station to station fixed telephone wherever available.
- 4) Fixed telephone such as railway auto –phones and BSNL phones (with caller ID facility wherever feasible)
- 5) Control telephone &
- 6) VHF sets

SR 14.01.02

(a) Use of VHF set as the sole means of communication:

- 1) This shall be used only in specified sections and sidings where only freight trains run over sections and where passenger trains run, this shall never be used.
- 2) Wherever GSMR has been/is being provided, the use of VHF sets for the purpose of line clear should not be permitted.
- 3) Identification sheets shall be used during line clear transactions through VHF sets.

b) Use of VHF set during failure of all other means of communication: In case of failure of all other means of communications, leaving VHF sets as the only alternative, it can be used for line clear till restoration of any one of the other prescribed means of communication.

- i) The use of VHF sets for prolonged duration will be permitted only in presence of supervisory staff.
- ii) identification sheets shall be used during line clear transactions through VHF.

A & C No. 56 to GR & SR Book(2005 Edition) of S.E. Railway

Insertion of new SR

The following shall be inserted below SR 3.69.03 as SR 3.69.04

SR 3.69.04 During failure of an approaching stop signal at a station provided with Panel Interlocking, Route Relay Interlocking or Solid State Interlocking arrangements the following procedure shall be followed:

- i) If the route setting can be done correctly yet the signal does not take off, the operator will cancel the route that has been set and try to reset the route. If the signal still does not take off, the alternative route, if any, shall be attempted, taking in to consideration of course, that such diversion will be possible for the train. If the signal does not take off for that route even then, the Station master on duty shall try to allow movements by taking off the calling-on signal in case it is available. If the calling on signal is not available or it fails to take off, then the SM shall reset the desired route and take the following action. At stations, where point lock indication specifically provided on the panel, he shall personally ensure from the indications displayed in the panel that the route is clear, the points are correctly set and the point indication are not flashing, the point lock indication are lit and remained steady and the cancellation of the signal route that caused the above point locking has not

been initiated. The SM shall note down the point lock indication lit on the panel in the Train Signal Resister in red ink and place button collars on the signal buttons. Thereafter, hi will depute a competent railway servant to pilot the train along with a written authority on T/369(3b), for the Loco Pilot to pass the concerned signal at danger.

- ii) At stations, where point lock indication is not specifically provided on the panel or in case the point locking indication fails to appear in the indication panel the SM on duty shall ensure the clearance of the nominated route, proper setting of all points through crank handle operation and clamping and padlocking of all facing and trailing points on the route. In addition, wherever cross overs exist on the route, the other end of the cross over, even though it may not be in the route of the train, shall also be clamped and padlocked before issuing T/369(3b) to the loco pilot to pass the defective signal.

At stations where end panels are provided, the procedure as stipulated in SR 3.69.03(b) shall be followed with the addition that all trailing points shall also be clamped and padlocked and wherever cross overs exist on the route, the other end of the cross over, even though it may not be in the route of the train, shall be clamped and padlocked.

A & C No. 60 to GR & SR Book(2005 Edition) of S.E. Railway

SR 4.32.01

Assistant Loco Pilot will couple up the engines on the trains and uncouple engines from trains whenever required to do so. Normally, for shunting purpose the coupling and uncoupling would be done by the traffic staff. The movement of a train engine manned by a single-man engine crew in a yard will be treated as a shunt movement for this purpose.

The above para shall be replaced by the following:

Assistant Loco pilot, when available in the engine, shall couple up the engine on train and uncouple engine from the train. In all other cases, the responsibility of coupling and uncoupling of engines shall devolve on traffic staff.

Addendum and Corrigendum No. 82 to G&SR (2005) of S.E.Rly

The following new SR may be inserted under GR 3.23, below SR 3.23.01 :-

SR 3.23.02-starter indicators

- a) A Starter indicator may be provided to repeat the aspect of the starter signal to enable the Guard of a train to know the aspect of starter signal, when due to typical yard layout, he is not able to see it from the Guard's compartment. This shall exhibit 'No Light' when the starter it refers is at "ON" and 'yellow light' when it is "OFF" and shall be provided at a convenient place so that it shall be clearly visible from Guard's compartment. This is an aid for Guard and shall never be considered as a signal. No marker shall be provided on it and this shall not be shown on the SI Plan of the station. The details of the starter indicators, where provided shall be mentioned in Appendix-B of the SWR of the concerned station.
- b) Where starter indicator is provided, its "Yellow" aspect indicates to the Guard of a Train starting on the line to which it refers, that the starter is taken "Off" for his train.
- c) Indication of a starter indicator shall be provided on SM's panel. On becoming aware of the failure of the Starter Indicator, the SM shall advise the S&T staff for rectification. The Guard of all trains expected to run over the line provided with 'Starter Indicator' shall be advised about its failure either through a caution order issued from previous notice station/last stopping station or through any available means by the SM of the station where the 'Starter Indicator' has been provided.

No. OPS/50/G&SR/A&C/Pt.I

Dated : 15.05.2012

Addendum and Corrigendum No. 82 to G&SR (2005) of S.E.Rly

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