

FOREWORD

Safety is the paramount responsibility of each and every Railway employee. Individual executive and technical departments look after and are accountable for safety within their own departments. The Safety department assists the management in monitoring the implementation of safety measures on the Railways and in developing strategies to improve the safety record. The department keeps a vigil over the safe transportation of men and material to detect lacunae in working, conducts inspections to determine if the rules and procedures governing the running of trains are being followed, and maintains liaison with all departments concerned with train operations. The safety department also gets inquiries conducted into accidents and monitors the follow up action that results from such inquiries.

Safety consciousness amongst Railway employee is promoted through man to man counselling, safety circulars, safety seminars and safety drives. The Public is made more aware of their role in improving Railway Safety through distribution of posters and pamphlets, plays, advertisements in the local media, cinema slides etc.

Regular reviews of the rules and systems of working are conducted with a view to improving safety and efficiency.

Safety Inspection and for that matter all inspections are to be conducted meaningfully and diligently not only to detect the shortcomings and failures at the individual levels but more importantly at the system and procedure level. Continuous introduction of new technologies in all fields connected with train running viz. Track, Loco, Signalling, OHE etc. calls for up gradation of knowledge and procedures. Inspecting officials can play very important role in this regard.

The exhaustive check lists of various safety inspections and short-cuts prepared by Safety Department are contained in this Safety Diary. I am sure will go a long way in ensuring that quality of inspections of Officers and Supervisors of all Departments connected to running of trains is of very high order.

Wishing you and your family a Happy, Peaceful & Prosperous New Year- 2014.

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CHAPTER - I

DUTY LISTS OF SAFETY OFFICERS AND SAFETY COUNSELLORS

1.1.1 SAFETY SUPER CHECKS / INSPECTION SCHEDULE OF SR.DSOs/DSOs/ADSO.

Sr.No	Inspection	No. of Inspections
i)	Safety Audit of 1 units in a month (for 2 days each)	2 days
ii)	Safety Inspection of Station/Yard in respect of Safe operation, maintenance of track P&C, Signalling, OHE, etc. complete	One station in a month (One full day)
iii)	Surprise Foot Plate inspection Goods (Night) (At least 3 hours between 00 hrs. – 4.00 hrs.)	1 in a month
iv)	Surprise Foot Plate inspection Mail Express / Passenger (Day/Night) At least for 3 hours	1 in a month (alternately)
v)	Surprise L.C. Gate Inspection (day)	1 in a month
vi)	Surprise L.C. Gate Inspection (Night)	1 in a month
vii)	ART Inspection (Quarterly)	(Para 611 of Accident Manual)
viii)	ARME Inspection (Quarterly)	(Para 611 of Accident Manual)
ix)	Safety Inspection of Tower Wagon / Deptt. Material Train/Track Machine/RCRV	At least one in a month
x)	Surprise Safety Inspection of SLRs/Pantry Cars/Brake Van	At least one each in a month
xi)	Inspection of Loco shed/C&W depot/P.Way Gang/Work site/Signalling Gang (day/night)	At least one workplace each in a month
xii)	Ambush check at unmanned LCs	1 in 2 months
xiii)	Inspection of Running Room / Lobby	1 in a month
xiv)	Control / Loading point	1 in 2 months.
xv)	Super checks of coaching / Goods Train	1 in a month (alternately)
xvi)	Joint Inspection with Officers/Staff of Civil/S&T/Mech./Elec./Traffic	1 in 3 months (by rotation)
xvii)	Trolley / Motor Trolley I Inspection	1 in 3 months
xviii)	Mock Drill	Once in a year
xix)	Joint Foot plate Inspection all sections	Once in a year

1.2 BROAD GUIDELINES FOR ENSURING QUALITY OF SUPER SAFETY CHECKS / INSPECTIONS

- i. The purpose is to check the implementation of laid down systems and instructions. Each Department has specified the detailed check list of various types of inspections. It shall be seen and ensured that these have been implemented and corrective action is being taken wherever required.

- ii. The quality and compliance of inspection items (concerning safety) by the staff and officers as pending of the concerned branch shall also be scrutinized besides those of Safety Branch.
- iii. It shall be examined that Safety critical checks are conducted by inspecting officials.
- iv. Safety test checks shall be invariably done.
- v. Surprise inspections especially between zero hours and 4.00 hrs. at night to observe the performance of staff in actual working condition in the field shall be done.
- vi. Maintenance depot and other activity centres shall also be covered under night inspections.
- vii. Safety Audits by Multi disciplinary team shall be done for making in depth assessment of Safety system with the main purpose of checking only safety critical items and to identify generic short comings. The Safety Audit shall be done in the worst section first.
- viii. During the inspection of any unit it shall be examined that the equipment failure are being properly investigated, and then classified as avoidable/unavoidable and corrective action taken.
- ix. The Safety super checks should be reasonably distributed geographically as well as over a period of time so that concern for Safety is all pervasive in entire division all the time effectively.
- x. Inspections Reports should have 3 parts as following:
 - i) Part I : A brief on compliance of outstanding inspection notes concerning safety.
 - ii) Part II- Generic Short comings/system failure noticed.
 - iii) Part III Fresh inspection notes.
- xi. A computerized data base should be prepared at the Divisional Headquarters to assess the efficacy of field inspections and monitoring the same.
- xii. The unique serial No. to each Safety checks/inspection item may be given at the Divisional level and continuous monitoring during periodic Safety meetings held by DRM shall be done. No item howsoever old should miss the follow up unless decided for dropping/closing by DRM.
- xiii. The reports should be put up to DRM on a separate file. Part III should be sent to respective PHOD and CSO.

Duty List of Safety Counsellors

1.3 DUTY LIST OF SAFETY COUNSELLOR/ TRAFFIC

- i. He must know at least 10 different types of case histories of accidents, which occurred due to unsafe practices by Traffic staff. He should similarly also know at least 10 case histories wherein accidents were saved by the traffic staff. Such case histories should be then cited to convince the staff to be counselled.
- ii. He must be up to date in his knowledge of Traffic safety instructions and must have readily available copies of such instructions.
- iii. During any inspection Safety Counsellors must critically take note of shortcomings, items of ignorance, short cut method in use, safety instructions being ignored. Pay special attention to staff who are indulging in this.
- iv. Identifying 10 station staff per month who need maximum counselling and give proper guidance till satisfactory level is achieved.
- v. Compile category 'C' and 'D' staff for the entire division and give personalized attention and counselling in such a way that they improve to A & B category.

- vi. Identifying at least 10 staff per month who have confusion/ignorance about the safe working methods and remove their doubt in such a way that they adopt safe working methods.
- vii. Identifying such staff who are having bad habits viz. drinking while on duty or off duty, sleeping on duty, leaving work place, long absenteeism, careless working, etc. and counsel them about the demerits of such habits and instill enthusiasm into them for safety. Also keeping a special watch on them over a period of time.
- viii. Detailed inspection of station and cabin to identify short comings and counselling staff to improve.
- ix. Inspection of 2 Traffic level crossing gates for identifying shortcomings and counselling of gateman for proper working.
- x. 2 surprise night inspection of station to identify staff who sleep while on duty or are not alert and counselling.
- xi. 2 surprise night foot plate inspection by goods train to monitor exchange of all right signal by station staff proper use of Walkie-talkie etc. and those found not properly alert should be given counselling.
- xii. Inspection of all running rooms and lobbies once in every 3 months for identifying shortcomings and follow up action.
- xiii. 4 Brake van inspections and counselling of those guards/staff who are not maintaining break vans properly.
- xiv. Counselling of at least 10 shunting staff in one yard every month proper and safe working.
- xv. He must detect cases of any uneven/overloading in wagons or improper loading in SLRs etc.
- xvi. He must inspect at least 2 pantry cars in a month for ensuring measures being taken to prevent fire.
- xvii. He must inspect /visit control office whenever in divisional HQ to check the following items: -
 - a. Paper line clear working, if any with proper precautions
 - b. Frequent changes in the planning are not done by sectional controls as this creates misunderstanding at the stations.
 - c. Any cases of invalid BPC, if being allowed.
 - d. Restrictions for any rolling stock being adhered to. For example, movement of 4 wheeler oil tank wagon on oops, movement of flat wheel rolling stock etc.
- xviii. Conducting one safety seminar per month.
- xix. Report as many system inadequacies as possible.
- xx. Attending accident site and accident enquiries.
- xxi. Safety Counsellors must make out a register indicating his observations date-wise, staff counselled name wise, while lighting action required for further follow up. This register should be put up to the concerned branch officer of operating through Sr.DSO so that the corrective action required is relentlessly pursued.
- xxii. Any other work as directed by Sr.DSO/ADSO

1.4 DUTY LIST OF SAFETY COUNSELLOR / MECHANICAL

- i. He must know at least 10 different types of case histories of accidents, which occurred due to unsafe practices by Mechanical staff. He should similarly also know at least 10 case histories wherein accidents were saved by the Mechanical

staff. Such case histories should be then cited to convince the staff to be counselled.

- ii. He must be up-to-date in his knowledge of Mechanical safety instructions and must have readily available copies of such instructions.
- iii. Identifying 10 Mechanical staff per month who need maximum counselling and give proper guidance till satisfactory level is achieved.
- iv. Identifying at least 10 staff per month who have confusion/ignorance about the safe working methods and remove their doubt in such a way that they adopt safe working pattern.
- v. Identifying such staff who are habitual of bad habits viz. drinking while on duty or off duty, sleeping on duty, leaving work place, long absenteeism, careless working, etc. and counselling them about the demerits of such habits and instill enthusiasm into them for safety. Also keeping special watch on them over a period of time.
- vi) Super check of rakes intensively examined within the division. 4 goods loads and 4 Mail/Express rakes to be checked per month at different locations.
- vii. Checking of BPCs of goods trains originating on division with actual brake power available on train. 8 goods trains to be checked per month at different locations and foot plating.
- viii. Examination of Close Circuit Rakes after termination and before originating at the maintenance depots. 4 rakes per month.
- ix. Check of Brake Power of through, passing trains. 8 goods trains and 4 Mail/Expresses to be checked per month at different locations.
- x. Checks of SLR equipment such as Fire Extinguishers, PCP sets, Electric Kit Box, First Aid Box, Vacuum/Pressure Gauges etc. 8 Checks to be conducted per month at different locations for originating through trains on the division. 4 Brake van inspections and counselling of staff concerned who are not maintaining properly.
- xi. All ARME/ART rolling stock to be checked once in 3 months.
- xii. Super check on sick line out train 2 checks per month for wagons and coaches.
- xiii. Night Inspection of working place, 2 nights per month.
- xiv. To make out a list of important T&P items which are either not available or not in working order in yards, sick lines, platforms and washing lines.
- xv. Counselling of gate man to make them conversant with method of detecting. Hot Axles, Bearing spring broken or any other hanging part 4 gate man to be counselled per month on the any one section.
- xvi. Check availability of Safety items in coaching/goods depot.
- xvii. Analysis of 100 day's sick marking in coaching depot.
- xviii. Compliance of Inspection report by various Officers.
- xix. During inspections lists should be prepared indicating the following:-
 - a) Shortcomings noticed.
 - b) Items of ignorance
 - c) Safety precautions ignored.
 - d) Short cut methods used.

- xx. Conducting/attending one safety seminar per month.
- xxi. Report as many system inadequacies as possible.
- xxii. Attending accident sites and accident inquiries.
- Xxiii He must inspect at least 2 pantry cars in a month for ensuring measures being taken to prevent fire.
- xxiv. Safety Counsellors must make out a register indicating his observations date-wise, staff counselled name wise, duly acknowledge and while highlighting action required for further follow up. This register should be put up to the concerned branch officer of Mech. Deptt. (Sr.DME/DME/ADME) through Sr.DSO/DSO so that the corrective action required is relentlessly pursued.
- xxv. Any other work as directed by Sr.DSO/DSO/ADSO

1.5 DUTY LIST OF SAFETY COUNSELLOR MECHANICAL (LOCO)

- i. He must know at least 10 different types of case histories of accidents, which occurred due to unsafe practices by Loco staff. He should similarly also know at least 10 cases in histories wherein accidents were saved by the Loco staff. Such case histories should be then cited to convince the staff to be counselled.
- ii. He must be up to date in his knowledge of Loco safety instructions and must have readily available copies of such instructions.
- iii. During any inspection Safety Counsellors must critically take note of shortcomings, items of ignorance, short cut method in use, safety precautions being ignored. Pay special attention to staff that is indulging in this.
- iv. Compile category 'C' (Red Card) staff for the entire division and personalized attention and counseling in such a way that they improve to A & B category.
- v. Identifying at least 10 staff per month who have confusion/ignorance about the safe working methods and remove their doubt in such a way that they adopt safe working methods.
- vi. Identifying such staff who are having of bad habits viz. drinking while on duty or off duty, sleeping on duty, leaving work place, long absenteeism, careless working, etc. and counselling them about the demerits of such habits and instil enthusiasm into them for safety. Also keeping a special watch on them over a period of time.
- vii. Foot plating and counselling of drivers having poor enginemanship. 1 driver of each LI to be covered every 3 months.
- viii. Foot plating and counselling of 4 drivers having good enginemanship per month regarding use of Dynamic Brake.
- ix. 2 surprise night foot plate inspection per month by goods train to monitor exchange of all right signal by concerned staff, proper use of Walkie-talkie etc and those found not properly alert should be given counselling.
- x. 1 Ambush checks per month regarding the following: -
 - a) Exchanging of all right signal with the station staff.
 - b) Whistling at unmanned L-Xing gates.
 - c) Observance of Temporary Engineering Speed Restrictions.
- xi. Inspection of all Driver Running Rooms and Driver Lobbies once in every 3 months.
- xii. He must inspect /visit control office whenever in divisional HQ to check the following items: -
 - i) Any cases of invalid BPC if being allowed.
 - ii) Restrictions for any rolling stock being adhered to. For example movement of 4 wheeler oil tank wagon on loops, movement of flat wheel rolling stock etc

- iii) In divisions where Automatic block system of working is in force he should examine and counsel the loco pilots and assistant loco pilots in the rules applicable.
- iv) During inspections lists should be prepared indicating the following.
 - a) Shortcomings noticed.
 - b) Items of ignorance
 - c) Safety precautions ignored.
 - d) Short cut methods used.
 - e) Compliance of inspection report by various officers.
 - f) Analysis of repeated Loco failure.
 - g) Check availability of safety items in shed/Loco etc.
- xiii. Report as many system inadequacies as possible.
- xiv. 1 Seminar per month at different driver Hdqtrs. station and counselling Driver/Asstt. Driver / Shunters about various circulars in force.
- xv. Attending accident sites and accident inquiries.
- xvi. Safety Counsellors must make out a register indicating his observations date-wise, staff counselled name wise, and while highlighting action required for further follow up. This register should be put up to the concerned branch officer of Mechanical through Sr.DSO so that the corrective action required is relentlessly pursued.
- xvii. Any other work as directed by Sr.DSO/DSO/ADSO

1.6 DUTY LIST OF SAFETY COUNSELLOR P.WAY

- i. He must know at least 10 different types of case histories of accidents, which occurred due to unsafe practices by P.Way staff. He should similarly also know at least 10 case histories wherein accidents were saved by the P.Way staff. Such case histories should be then cited to convince the staff to be counselled.
- ii. He must be up to date in his knowledge of P.Way safety instructions and must have readily available copies of such instructions.
- iii. Identifying 10 P.Way staff per month that need maximum counselling and give proper guidance till satisfactory level is achieved.
- iv. Compile category 'C' and 'D' staff for the entire division and give personalised attention and counselling in such a way that they improve to A & B category.
- v. Identifying at least 10 staff per month who have confusion/ignorance about the safe working methods and remove their doubt in such a way that they adopt safe working pattern.
- vi. Identifying such staff who are having bad habits viz. drinking while on duty or off duty, sleeping on duty, leaving work place, long absenteeism, careless working, etc. and counsel them about the demerits of such habits and instill enthusiasm into them for safety. Also keeping a special watch on them over a period of time.
- vii. Covering 75 Kms./month by push trolley covering 4-5 different sections.
- viii. During the push trolley inspection the following items should be checked :-
 - a) Work sites and safety precautions
 - b) Engg. Gangs and safety equipments available.
 - c) Points and crossings.
 - d) L-Xing gates.
 - e) LWR/CWR

- f) IMR/OBS rails
 - g) Bridge and bridge approaches.
 - h) Sharp curves
 - i) Push trolley competency available with staff.
 - j) Gap survey in SWR.
- ix. Footplate Inspection of the same sections each month before and after the push trolley inspections.
 - x. Inspection of 2 Engg. level crossing gates for identifying shortcomings and counselling of gateman for proper working.
 - xi. Night inspection of Engg. L-Xing gates, one gate in each I/C PWI's jurisdiction every month in rotation.
 - xii. Conducting one ambush check at Unmanned Level Crossing Gate covering each I/C PWI's in rotation.
 - xiii. 2 surprise night foot plate inspection by goods train to monitor exchange of all right signal by station staff, proper use of Walkie-talkie location of SR boards, bad locations etc. and those found not proper should be given counselling.
 - xiv. Inspection of all running rooms and lobbies once in every 3 months for identifying shortcomings and follow up action.
 - xv. Inspection of P.Way materials on all ARTs once in 3 months.
 - xvi. Inspection of all track machines once in 3 months.
 - xvii. During inspections lists should be prepared indicating the following:-
 - a. Shortcomings noticed.
 - b. Items of ignorance
 - c. Safety precautions ignored.
 - d. Short cut methods used.
 - e. Compliance of previous inspection notes of Officers and supervisors.
 - xviii. Conducting one safety seminar per month.
 - xix. Report as many system inadequacies as possible.
 - xx. Attending accident site and accident enquiries.
 - xxi. Safety Counsellors must make out a register indicating his observations date-wise, staff counselled name wise, while highlighting action required for further follow up. This register should be put up to Sr. DEN (HQ). through Sr.DSO so that the corrective action required is relentlessly pursued.
 - xxii. Any other work as directed by Sr.DSO/DSO/ADSO

1.7 DUTY LIST OF SAFETY COUNSELLORSIGNAL

- i. He must know at least 10 different types of case histories of accidents, which occurred due to unsafe practices by S&T staff. He should similarly also know at least 10 cases in histories wherein accidents were saved by the S&T staff. Such case histories should be then cited to convince the staff to be counselled.
- ii. He must be up to date in his knowledge of S&T safety instructions and must have readily available copies of such instructions.
- iii. Identifying 10 S&T staff per month that need maximum counselling and give proper guidance till satisfactory level is achieved.
- iv. Compile category 'C' and 'D' staff for the entire division and give personalised attention and counselling in such a way that they improve to A & B category.
- v. Identifying at least 10 staff per month who have confusion/ignorance about the safe working methods and remove their doubt in such a way that they adopt safe working pattern.

- vi. Identifying such staff who are having bad habits viz. drinking while on duty or off duty, sleeping on duty, leaving work place, long absenteeism, careless working, etc. and counsel them about the demerits of such habits and instil enthusiasm into them for safety. Also keeping special watch on them over a period of time.
- vii. Foot plate Inspection of sections to see items concerning signals i.e. visibility focusing etc. complete.
- viii. Inspection of Stations for the following items: - 8 Stations per month.
 - a) Detailed inspection of station and cabin to identify shortcomings and Counselling staff to improve.
 - b) Testing of Signals, Points, Lever frames, SM's slide control frame and block instruments.
 - c) Double locking of relay rooms, cabin basements and checking of records.
 - d) Points and Crossings including Point Motors. Joint Inspection register of points & Xing.
 - e) Locking and seating arrangements of all S&T gears.
 - f) Work sites and safety precautions.
 - g) Disconnection and reconnection memos.
 - h) Testing of PCP sets and telephones in cabins etc.
 - i) Repeaters. Voltage checking of signals.
 - j) Motor/Push trolley competency available with staff.
 - k) Memos for RRBU operations.

It should be spread out to cover entire division.
- ix. Inspection of Level Xing gates both Engg. and, interlocked traffic gates:- 6 per Month.
- x. 2 surprise night inspection of station to identify staffs that sleeps while on duty or are not alert and counselling them.
- xi. 2 surprise night foot plate inspection by goods train to monitor exchange of all right signal by station staff proper use of Walkie-talkie etc. and those found not properly alert should be given counselling.
- xii. Checking of Competency Certificate for ESMs and MSMs
- xiii. Inspection of S&T materials of all ARMEs & ARTs once in three months.
- xiv. Night Inspection of MSM/ESM Hd. Qrts. having shift duty. (2 nights per month.)
- xv. Report as many system inadequacies as possible.
- xvi. During inspections lists should be prepared indicating the following:-
 - a. Shortcomings noticed.
 - b. Items of ignorance
 - c. Safety precautions ignored.
 - d. Short cut methods used.
 - e. Compliance of previous inspection notes of Officers and supervisors.
- xvii. Conducting one safety seminar per month.
- xviii. Attending accident site and accident enquiries.
- xix. Safety Counsellors must make out a register indicating his observations in detail date-wise, staff counselled name wise, and action required for further follow up. This register should be put up to the concerned branch officer through Sr.DSO so that the corrective action required is relentlessly pursued. They will keep two registers one each for odd and even calendar months.
- xx. Assist to Sr.DSO /DSO for conducting Safety Audit.
- xxi. Any other work as directed by Sr.DSO /DSO/ADSO.

1.8 DUTY LIST OF SAFETY COUNSELLOR ELECTRICAL

- i. He must know at least 10 different types of case histories of accidents, which occurred due to unsafe practices by Loco staff. He should similarly also know at least 10 cases in histories wherein accidents were saved by the Loco staff. Such case histories should be then cited to convince the staff to be counselled.
- ii. He must be up to date in his knowledge of Electric Loco safety instructions and must have readily available copies of such instructions.
- iii. During any inspection Safety Counsellors must critically take note of shortcomings, items of ignorance, short cut method in use, safety precautions being ignored. Pay special attention to staff that is indulging in this.
- iv. Compile category 'C' (Red Card) staff for the entire division and give personalised attention and counselling in such a way that they improve to A & B category.
- v. Identifying at least 10 staff per month who have confusion/ignorance about the safe working methods and remove their doubt in such a way that they adopt safe working methods.
- vi. Identifying such staff who are having of bad habits viz. drinking while on duty or off duty, sleeping on duty, leaving work place, long absenteeism, careless working, etc. and counselling them about the demerits of such habits and instil enthusiasm into them for safety. Also keeping a special watch on them over a period of time.
- vii. Foot plating and counselling of drivers having poor engineman ship. 1 driver of each LI to be covered every 3 months.
- viii. Foot plating and counselling of 4 drivers having good engineman ship per month regarding use of Dynamic Brake.
- ix. 2 surprise night foot plate inspection per month by goods train to monitor exchange of all right signal by concerned staff, proper use of Walkie-talkie etc and those found not properly alert should be given counselling.
- x. 1 Ambush checks per month regarding the following: -
 - a Exchanging of all right signal with the station staff.
 - b Whistling at unmanned L-Xing gates.
 - c Observance of Temporary Engineering Speed Restrictions.
- xi. Inspection of all Driver Running Rooms and Driver Lobbies once in every 3 months.
- xii. He must inspect /visit control office whenever in divisional HQ to check the following items: -
 - a) Any cases of invalid BPC if being allowed.
 - b) Restrictions for any rolling stock being adhered to. For example movement of 4 wheeler oil tank wagon on loops, movement of flat wheel rolling stock etc
- xiii. In divisions where Automatic block system of working is in force he should examine and counsel the loco pilots and assistant loco pilots in the rules applicable.
- xviii. Inspect 2 passenger rakes per month for ensuring anti fire measures by checking leakages in current, fire extinguishing equipment etc. completely.
- xv. During inspections lists should be prepared indicating the following.
 - a. Shortcomings noticed.
 - b. Items of ignorance
 - c. Safety precautions ignored.
 - d. Short cut methods used.

- e. Compliance of inspection report by various officers.
 - f. Analysis of repeated Loco failure.
 - g. Check availability of safety items in shed/Loco etc.
- xvi. Report as many system inadequacies as possible.
- xvii. 1 Seminar per month at different driver Hdqrts. station and counselling Driver/Asstt. Driver / Shunters about various circulars in force.
- xviii. Attending accident sites and accident inquiries.
- xix. Safety Counsellors must make out a register indicating his observations date-wise, staff counselled name wise, and while highlighting action required for further follow up. This register should be put up to the concerned branch officer of Electrical through Sr.DSO so that the corrective action required is relentlessly pursued.
- xx. Any other work as directed by Sr.DSO/DSO/ADSO.

CHAPTER – I

1.1 INSPECTION OF ACCIDENT RELIEF TRAINS

I. **Condition of Rolling Stock:**

- i. Whether due/overdue POH
- ii. Present condition
- iii. Brake gear and brake system continuity
- iv. General cleanliness.

II. **Hydraulic re-railing equipment:**

- i. Running of Power pack under load and no load conditions, pressure setting.
- ii. Whether consumables and other spares are available in sufficient numbers and action taken for procurement.
- iii. Availability and condition of hydraulic oil.
- iv. Condition of wire ropes.

III. **Generators – fixed or portable:**

- i. Check running conditions of brushes and availability of spares.

IV. **Lighting equipment:**

- i. Check all lighting stands, reflectors, conditions of cables, switches.

V. **Petromax:**

- i. Check proper burning/lighting, spare mantles, pins, pumping equipment.

VI. **S&T equipment:**

- i) Whether public address system is in working condition.
- ii) VHF sets for proper working.
- iii) Walkie-talkie sets for working, condition of dry cells.
- iv) Field telephones for proper working and condition of Cables.

VII. **Fire fighting equipment:**

- i) Refilling dates, general condition.

VIII. **Detonators**

- i) Availability and replacement due time.

IX. **Compressor**

- i) Check for working and availability of spares.

X. **Gas cutting equipment:**

- i) Condition of torches, availability of acetylene and oxygen cylinder. There should at least be 4/8 cylinders and 4 torches.

XI. Availability and adequacy of other tools like jacks, hard wood packing, camera, kitchenware, first aid equipment.

XII. **Cold cutting equipments**

Check working, availability of spares disc, spark, plug and maintenance tools, ask for demonstration and see if staff are conversant with its use.

XIII. **Cranes:**

- i. Working of main and auxiliary cranes.
- ii. Propping beam and its hydraulic piston jacks and its seats for leakage.
- iii. Hydraulic and hand brakes for operation.
- iv. All wire ropes and slings.
- v. Whether all maintenance schedules have been carried out on line.

- vi. Condition of all brakes.
- vii. Condition of coal and adequacy.

XIV. 140T cranes:

- i. Check whether the "special precautions for operation of 140T cranes" are prominently displayed in the Loco Pilot's cab both in English and vernacular. Refer Board's letter No. 99/M(M&P)7/8 dt: Aug. 11, 1999.
- ii. Availability of consumables for the crane.
- iii. Availability of at least two sets of well trained operating staff.

1.2 INSPECTION OF ACCIDENT RELIEF MEDICAL EQUIPMENTS TRAIN / ARME

I Condition of Rolling stock:

- i. Due/overdue POH
- ii. Due/overdue maintenance schedule.
- iii. Mechanical condition (Brake gear, wheel etc.)
- iv. Cleanliness.

II Cold cutting equipment (HRD)

- i. Whether in working order, physical trial to be done.
- ii. Availability of spares (disc, spark plug) and tools.
- iii. Availability of cutogen and DA and O2 cylinder
- iv. Working to be checked by physical trial.

III Generator :

- i. Whether in working order (actual trial to be done by starting it)
- ii. Availability of petrol/ diesel.
- iii. Condition of brushers, and
- iv. Availability of spares.

IV Lighting equipment:

- i) Check availability of lamps, reflectors, stands, cable, and switchboard.
- ii) Trail to be done to check working.

V Availability of drinking water and eatables:

- i) Check availability of water, date on which it was filled.
- ii) Check availability of milk powder, biscuits, coffee, tea leaf and their expiry dates.
- iii) Availability of proper plates, cups and saucers.

VI Check availability and functioning of jacks, digging equipment, tools, Patromax, fire extinguisher, stove, kettle, etc. to scale.

VII Check the availability of Accident Manual, G&SR etc.

VIII Check availability of Red and green banners, detonators, torch, cell transition coupling, tent etc

IX Operation theatre

- i) Cleanliness
- ii) Availability of proper lighting arrangements.
- iii) Availability of proper operation facilities.

X Medicines and Drugs

- i) Availability
- ii) Expiry dates

XI Existing of any loose or temporary connection hanging wires etc.

XII Movement Register

- Mock drill, at least once in 6 months.

XIII Implementation of fire prevention measures as prescribed by RDSO.

XIV List of ARME equipments.

CHAPTER - II

OPERATING

2.0 DETAILED STATION INSPECTION

2.1 SM'S OFFICE

- List of Safety equipments to be physically verified. Whether the same has been displayed prominently.
- Performance of control phone and its failure. If provided with TPC telephone test alertness of TPC.
- Staff in proper uniform with badges and alert on duty.
- Whether unauthorized person operates the block instruments?
- Essential equipments are as per Appendix "E" of SWR and whether these are in working order?
- After receiving train, reception signal shall be kept in ON position/ points of that line should be set in reverse direction.
- Clamps/cotter bolts and other essential equipments in ASM's office.
- Whether key of block instruments and other keys along with private number book are in personal custody of ASM on duty ?
- Whether signal correctly lit / focused and clearly visible
- The block instruments whether sealed and locked ?
- First aid box, list of first aids and list of doctors and hospitals.
- Stock of K. Oil & pad locks etc.

2.2 WORKING OF THE STATIONS

- Observe reception and dispatch of at least 2 trains, whether G & SR and SWR's followed.
- Whether complete arrival of the trains and clearance of fouling marks observed.
- Test knowledge of staff about the system of working block section, station section & gate.
- Test knowledge of staff about abnormal working.
- Test knowledge of staff about Visibility Test Object (VTO).
- Competency and knowledge of staff regarding panel operations.
- Whether SWR and diagram is correct and upto date? SWR's due/ revision /modification required /suggested. Suggestions for improvement in lay-out of interlocking.
- Simultaneous reception/dispatch facilities. Is there any bottle neck?
- Ask suggestions/recommendations for improving working, increasing efficiency and reducing cost.
- Any proposal to increase traffic and steps to increase sectional capacity.
- Scrutinize TSR timings of engine arrival and departure of stabled released/back loaded trains to ensure that Loco Pilot and guard jointly examine the train before departure from a non TXR station. Whether a copy of the manuscript BPC has been prepared and keep at Station where incoming trains came without valid BPC or incoming trains came with valid BPC but integrity of the rake has been tampered with beyond prescribed limit?
- Cross check TSR timing of the last train of the shift with adjacent stations as also handling overtime in "Station Diary / Charge Book (T 7 B)" to ensure observance of SR 5.01 and 5.02.
- Whether short cut methods being adopted by SM for rectifying S&T gears, cabin basement / relay room kept under locks and its register properly maintained.
- Memos served by ASM to S&T staff for S&T failures.

- Cross check signal failure register with T / 369 (3B). Also timings of preparation of T / 369 (3B) from TSR to ensure sufficient time for the points man, p/porter for following provision of GR.
- Cross check shunting order T / 806 with attaching /detaching register.
- Cross check private number with adjacent block station, cabins and gates.
- Cross check caution order book and caution order register.
- Detention to trains outside signal.
- Cross check crank handle register with signal failure register.
- Cross check number of emergency counters with the register.
- Whether Axle Counter failure register maintained and how clearance of line ascertained in case of Axle Counter failures.
- Total failure of communications and No. of trains started without line clear cross check T / B 602 / T / C 602 with TSR.
- Accident register, follow up action against accident prone staff and suggested remedies / measures if any.
- SM's night inspection and safety meetings, effective or not.
- Scrutinize station inspection book and follow up action thereto.
- Watch cases of loose/rough shunting. Explain to staff about dangers involved therein.
- Adequate communications and lighting facilities in yard.
- Possibilities of reducing detention to stock and shunting engine hours.

2.3 RULE BOOKS REGISTER AND CHARTS

- Whether Rule book / Manuals and SWR's have latest amendment slips?
- Cross check assurance register for SWR's with attendance register.
- Are Safety Bulletins and Safety Circulars maintained properly and assurance of staff taken? Cross check with assurance register kept for this purpose.
- Cross check rostered duty chart with actual attendance. Whether mutual arrangements being resorted to?
- Cross check Bio-data register with competency / medical certificates. Whether staff is due for.
- Competency (Block Automatic territory)
- Periodical medical examination.
- Safety Camp / Ghat Rules etc.
- Line admission book for reception of goods trains.
- Validity of fog signals and knowledge of staff in their use. Assurance of fog signalmen in the fog signal register.
- Cross check disconnection/reconnection register with counter foil of S & T (T / 351)
- Whether joint inspection of points and crossing carried out by SI, PWI & TI/SS.
- Monthly summary of signal failures in register being signed by SI, PWI & TI/SS.
- Sanctioned strength, staff on roll register. Indicate surplus staff, if any, and suggest possible redeployment.
- Whether wagon exchange register and wagon card index is maintained properly?
- Average detention of wagons. Old dated and unconnected wagons register.
- Replacement/detention to sick stock register.
- Cross running of empty stock.
- Whether large number of empties have been shown rejected as unloadable in wagon loading register.
- Originating trains load register.
- Adequate availability of stationary, forms and stores.

2.4 CABINS

- Essential equipments of cabins and their condition.
- Whether points are set against the blocked line?
- Whether cabin man ensures clearance of line and puts back dispatch signal to "ON" before releasing slot for home signal?
- Ensuring clearance of fouling mark in case of stopping trains.
- Whether lever collars on the relevant levers of blocked/obstructed line are being used?
- While shunting over emergency cross over, whether the facing point of emergency cross over is cotter bolted/pad locked in addition to locking them from cabin?
- Test knowledge of cabin/leverman in G&SR/SWR and other instructions pertaining to his duties.
- Cross check private numbers exchanged between the cabin/leverman and ASM as well as with other cabin and adjacent stations.
- Whether signals for conflicting movements may be taken off? - Cross check slide/slotting arrangements with conflicting movements.
- Cleanliness of cabin, lever handles etc.

2.5 GUARDS EQUIPMENTS

- Guards essential equipments of at least two stopping trains, viz. rule books with latest amendment slips, HS lamp, tail lamp/board, current working time table, a red flag / a green flag.
- First aid box, fire extinguishers and Emergency train lighting box and Portable Telephone set of passenger trains. Test knowledge of guard about use of Emergency Train Lighting box and Portable Telephone.
- Currency of fog signals.
- Complete bio-data available or not.
- Additional equipments i.e. one spare red flag, 2 vacuum hose pipe washers, no. of pad locks as prescribed, one vacuum/pressure indicator gauge.
- Accident relief bands for mail/ Exp. guards only.

2.6 INSPECTION OF LOCO PILOTS AND GUARDS LOBBIES

- Whether crew are called under rest?
- Whether breath analyzer machines are in working order?
- Speed restriction boards available or not.
- Caution in force, got noted by the staff.
- Safety literatures viz. posters pamphlets, bulletins/circulars displayed kept in the lobbies.
- Unusual occurrence register maintained or not. Whether the irregularities recorded by Loco Pilots are conveyed to CTNL office.

2.7 RUNNING ROOM INSPECTIONS

- General sanitation of running room, surroundings are clean and healthy rooms are airy and ventilated.
- Whether beds, linen, mattresses, pillows, blankets are adequate and clean?
- If maintenance of kitchen and dining room satisfactory and sufficient crockery and utensils kept in clean and good condition?
- If there is adequate supply of water in bathroom and lavatories?
- Whether strength of cooks and bearers is adequate?
- Whether magazines/news papers are supplied regularly?
- Complaint book being checked or not, by running room in-charge.
- Whether safety bulletins/circulars kept?

- Whether running rooms are used by outsiders/unauthorized persons?
- Stand by lighting arrangements.

2.8 FOOTPLATE INSPECTION

- Functioning of head light, marker light and flasher light of engine, speedometer, Speedo graph, hand and other brakes.
- Loco Pilot's essential equipments.
- Whether upto date rule book & current working time table available?
- Whether adequate brake power and vacuum/air pressure available?
- Whether T / 409 (Caution Order) issued correctly?
- Bio-data of Loco Pilot regarding competency, periodical medical examination and safety camp etc.
- If Loco pilot wears spectacles, another/pair of spectacles kept or not.
- Calling and repeating aspects of signal by Asstt. Loco Pilot/and Loco Pilot.
- Whether Loco Pilot conducts brake feel test in First block section?
- If Loco Pilot observes the speed restrictions and other speed limits of the section.
- Exchange of all right signal between station staff and the crew.
- Visibility of fixed signals whether extinguished or drooping.
- Whether Loco pilot looks back from time to time to ensure train is running in safe and proper manner.
- Whether Loco pilot stops for 1"/2" on red automatic signal during day/night respectively, exchanges all right signal with guard and proceeds at 15/10 KMPH speed upto next stop signals ?
- Test the knowledge of Loco pilot and Asstt. Loco pilot about protection of train disabled in block section, especially in case of accident when on double line adjacent line is blocked & other relevant rules.
- Whether Loco pilot leaves engine unmanned and permits unauthorised person to drive the engine?

2.9 SURPRISE NIGHT INSPECTION OF STATION AND LEVEL CROSSING GATE.

I) AT STATIONS.

- Incognito check of alertness and vigilance of staff whether sleeping or alert on duty in proper uniform.
- Exchange of all right signals by Loco pilot and guard with station staff.
- Whether SM himself exchanges signals or deputes points man for the same on his behalf.
- Whether proper staff, as per roster, is on duty or staff are unauthorizedly exchanging duty with their colleagues?
- Show red signal to guard of through passing train for checking his alertness.
- Any other short comings.

II) AT LEVEL CROSSING GATE

- Incognito check-whether gateman is alert, vigilant and in proper uniform ?
- Gateman is looking for hot axle, spring breakage, hanging parts and other dangerous conditions on the through passing trains.
- Loco pilot and guard is looking for danger signals from the gateman, check alertness of guard by showing red signals.

- Condition of gate leaves, leaf catchers, lifting barriers with bell, speed breakers, road signs, clearance of channels between stock rail and check rail etc.
- Checking of gate parameters with the standard list issued by the division.

2.10 DETAILED LEVEL CROSSING GATES INSPECTION

- Availability of essential equipments. List of safety equipments to be physically verified. Whether the same has been displayed prominently.
- Check the bio-data of gateman working at the gate.
- Check the knowledge of gate working rules and use of fog signals and LED based H S Lamp.
- Whether the gate kept in its prescribed normal position.
- Whether gateman looks for hot axle, hanging part, spring breakage and other unsafe conditions on the passing trains ?
- Test knowledge particularly where he should stand when any train passes and action to be taken when anything unsafe noted.
- Guards response if danger signal is shown to him.
- Action to be taken in case of defective gate signals/barriers.
- Test about practical application of placing detonators and showing danger signal.
- Action to be taken in case a train noticed running in 2 or more parts.(Train Parting)
- Are leaves of gate, catches OK?
- Duty roster and vacancy position.
- If lifting barriers work properly and check ringing of bell.
- Road surface and depth of channel between stock and check rail.
- Channels between stock and check rail are clean.
- Condition of road signs/speed breakers whether of standard design.
- Visibility of gate from the road and track.
- Hand signal and gate lamps are clean and bushes trimmed and lit at night.
- Is interlocking justified ?
- Complaint books particularly detention to road traffic.

2.11 AMBUSH CHECKS AT AUTOMATIC SECTIONS, IBS AND LEVEL CROSSING GATES.

I) AT LEVEL CROSSING GATES.

- Loco pilot and guard look for gateman danger signal.
- Guard's response if danger signal is shown to him.
- Whether Loco pilot stops 1" during day 2" during night if gate signal is "ON"
- Whether Loco pilot continuously whistles at 'WL' board upto the unmanned level crossing gate ?

II) AUTOMATIC SIGNALLING TERRITORY

- Whether Loco pilot stops for 1"/2" at red automatic signal during day and night respectively.
- Loco pilot exchanges all right signals with guard before starting.
- Loco pilot proceeds at 15/10 KMPH speed upto next automatic signals.

III) AT I. B. S.

- Whether Loco pilot stops at I. B. S. signals at danger ?

- Whether Loco pilot blows whistle to apprise guard ?
- Whether Loco pilot tries to contact ASM of station in rear on phone provided on the signal post?
- Whether Loco pilot waits for 5 minutes in case phone is defective ?
- Whether Loco Pilot blows whistle and exchanges all right signal with guard before start and proceed at 15 KMPH if visibility is good and 8 KMPH if visibility is impaired upto 1st stop signal of next station ?

2.12 CASUAL INSPECTION OF STATIONS

- Check the alertness and vigilance of the staff.
- Check if staff is habituated to friendly and short cut methods?
- Whether unauthorized person operates the block instruments ?
- Exchange of all right signals with crew and guards of passing trains. Whether ASM himself exchanges all right signal or deposes porter for that ?
- Guards response if danger signal is shown to him.
- Whether keys of block instruments and private number book kept in personal custody of ASM on duty.
- Use of lever collars/ Stop collars.
- Relay room kept double locked.

2.13 CONTROL OFFICE INSPECTION

- Test audibility of control phone and frequency of control failures.
- If proper procedure followed in case of running trains without brake van ?
- Proper guidance to SMs in case single line working on double line and engine failure in block section.
- Cases of bad controlling and action taken.
- Arrangements of powers and heavy detention to engines.
- Frequency of change of trains arrangements.
- Caution order register, power/traffic block register.
- Ask controllers if any special facility i. e. crossing stations, additional loops on any section improve operations and speed of trains.
- Dy. Controller's diary, whether entries are carried forward and follow up action taken therein.
- Whether power controller is maintaining the engine-turn-round register properly.
- Register of damaged/sick wagons at road side stations. Whether suitable action taken for early clearance?
- Promptness in arranging ART/Medical Van in case of accidents.
- Provision of section diagram indicating important installations.
- Cross check voice recorder of some section for 15 minutes each.

2.14 ART INSPECTION

- Joint check with Mech. & Medical officers once in three months. Engine, speedometer, Speedograph, hand and other brakes.
- List of equipments to be physically verified.
- Personal verification of working of each tool and equipment.
- Last inspection officer may be held responsible if any equipment fails at site.

2.15 Schedule of Inspection of Officers -- PHODs to Sr. Scale is as under :--

- Safety Inspections by General Manager accompanied by CME, CSTE, CE, CEE and CSO at least once in two months.
(Rly. Board's letter No. 96/Safety-1/7/3 dated 27-11-96).
- Safety Inspections by DRMs accompanied by Sr. DME, Sr. DSTE, Sr. DEN, Sr. DEE and Sr. DSO at least once a month.

(Ref : GM's DO No. T 257/0 (policy) dated 4-2-97).

- Safety Inspections both during day as well as night as per advance weekly programme.

At Divisional level -- (i) By all Officers (Monitoring by Controlling officers)

(ii) By Branch officers (Monitoring by ADRM/DRM)

At HQ level

-- By all Officers of JA grade & above
(monitored by PHOD/ nominated HOD)

(Ref GM's DO No. T 257/0 WKLY, INSP, SCH, dated 17/21-12-93)

- Inspection of Safety and Passenger Amenity items at important stations:--
"One 'A' type station be inspected every week by a team of JAG/SS officers of Civil, Electrical, Mechanical, S & T and Traffic departments on each Division. Similarly one 'B' type station be Inspected every week by a team of SS/JS officers of Civil, Electrical, Mechanical, S & T and Traffic Departments on each Division -- *emphasis on Safety and Passenger Amenity items and Issues*"

(Ref. : CRB's DO letter No. 99/Safety-1/18/3 dated 22-3-99).

2.16 Schedule of Safety Inspections by Operating Officers and Transportation Inspectors

Sr No	Type/Nature of inspections	Sr. DOM/ DOM	Sr. DOM(G)/ DOM(G)	Area Manager/ Area Officer	AOM(M)	AOM(G)	TIs
1	Detailed Inspection - (Half yearly)	2 major stations	2 major stations	2	2	2	All stations twice in their jurisdiction
2	Safety Inspection- (Every month)	2	4	4	2	6	All stations in their jurisdiction
3	Surprise Inspection- (Minimum every month)	1	4	4	2	4	6
4	Level Xing Inspection during day time(Every month)	1	1	1	1	2	3
5	Surprise road Inspection (Every month)	1	1	1	1	1	1
6	Footplate inspection (Every month)	1	2 (One each by Coaching & Goods train)	2 (One each by Coaching & Goods train)	2 (One each by Coaching & Goods train)	4 (Two each by Coaching & Goods train)	4 (1 = Coaching & 3 = Goods train)
7	Night-Inspection i Level Xing ii Station iii Footplate (Every month)	1 1 1	1 1 1	1 1 1	1 1 1	2 2 2 (1 goods train)	3 3 3 (2 goods train)
8	Joint Footplate Inspection	2 in one year	All sections to be covered within one year	All sections to be covered within one year	All sections to be covered within one year	All sections to be covered within one year	Covering entire jurisdiction once in six months including Up/ Dn day/night .
9	Brake-van Inspection (Every month)	1	2	2	1	3	5
10	Surprise speed checks (Every month)	1	2	2	1	3	5
11	Joint Running Rooms Regular Inspection	1 major running room as identified by DRM- once a year (along with Sr. DEN and Sr. DEE	1 major Traffic running room as identified by DRM- once a year (along with Sr. DEN and Sr. DEE	1 major running room as identified by DRM- once a year (along with local officers).	1 running rooms (along- with AEN & AEE).	All Traffic running rooms once a year along with AEN and AEE	Each running room under their jurisdiction once in a month along with concerned Supervisors
12	Ambush Checks in Automatic signalling territories (Every month)	1	2 One during day and one during night.	2 One during day and one during night	1	2 One during day and one during night	2 One during day and one during night.
13	Loco Shed Inspections	1 every 3 months	--	1 every month.	1 every month	--	--
14	Depot Inspection	1 every 3 months	--	1 every month.	1 every month.	--	--
15	Accident Relief Medical Equip-ment (ARMES)	1 every six months.	--	1 every six months.	1 every 6months	--	--
16	Accident Relief Trains-(ARTs)	1 every six months	--	1 every six months	1 every 6months	--	--

CHAPTER III
COMMERCIAL

3.1 Commercial Aspects to be seen-

- No over-crowding in Passenger trains is taking place.
- No roof travelling is taking place.
- No unauthorised vendors are selling their products in passenger compartments.
- In Pantry car no unauthorised cylinder and gas stove kept.
- Authorised cylinders/stoves kept in secured place.
- Over loading and uneven loading of parcel should not be touching Electrical installation of SLR/VPU.
- Luggage portion of SLR should be locked.
- Passengers should not use cigarettes, bedi, alcoholic drinks etc.
- No un-authorized luggage is kept in the exit gate of the passengers coaches.
- To see whether the rules laid down for the booking, handling, dispatch, storage and delivery of various items of traffic, including explosives and other dangerous goods are being carefully observed.
- Over loading of Parcel Van Parcel body in SLRs.
- Over loading of Wagons, in Goods shed/sidings.
- Availability of Fire Fighting equipments at Booking offices, Parcel offices and Goods shed.. To check whether, Fire Extinguishers are in order, sufficient sand and buckets with water available at goods sheds etc.
- Whether Tea Stall/Refreshment halls or other vending units are following all safety norms including issues related with fire.
- Checking proper storage, loading and transportation of inflammable articles and dangerous goods by Goods train.
- Whether the Movement of Parcel trolley, RMS trolley likely to endanger to safety of passenger train.
- Whether commercial Publicity Board are likely to endanger Safety by obstructing signal visibility or by falling on track/train due to mild rain / wind /strom.

CHAPTER IV
ELECTRICAL

4.1 Checklist for Inspections of TRD installations

4.1.1 HUMAN RESOURCE UTILIZATION

- i) Availability of man power
- ii) On Roll
- iii) Actually Present
- iv) Unauthorized absent

4.1.2 TECHNICAL KNOWLEDGE OF STAFF

- i) Availability of Technical Circulars / Details in the Depot
- ii) Knowledge/ Skill of staff.
- iii) Knowledge of staff of their assigned job.
- iv) Safety Consciousness among staff.
- v) Review of training of staff in Depots.

4.1.3 (A) SAFETY CHECKS ON TRD INSTALLATIONS OHE

- i) Schedule maintenance of OHE
- ii) Availability and condition of equipments in Tower wagon and with TRD gangs with test reports. Discharge rods, Emergency telephone, protective helmet, safety belts, ladders, HS flags, Banner Flags, Detonators and HS lamps.
- iii) Availability of tools and equipments with date of testing. (Tirfor, Pull lifts, Slings, Pulleys, Ropes & tool bags.
- iv) Protective screen & Earthing / Bonding under over line Structures & Tunnels.
- v) Provision of Power block working limit boards.
- vi) Overdue refresher course and periodic medical examination of tower wagon Loco Pilots.
- vii) Competency certificates of ASM and their knowledge.
- viii) Proper entry in the key register duly signed by ASM and TRD staff for power block.
- ix) Regular monthly examination of tower wagon by TXR

4.1.3 (B) PSI (Power Supply Installations)

- i. Scheduled maintenance of PSI equipment.
- ii. Availability of number plates on equipments on all sides.
- iii. Proper fencing, its earthing and display of caution boards and notices.
- iv. Checking combined and independent values of earth resistance.
- v. Check the interlock of equipments and associated isolators.
- vi. Working and operating time of CB and protective relay in limits.
- vii. Check silica gel of breather and oil leakage if any.
- viii. Records of specific gravity and voltage of Pilot cell.
- ix. Checking of records of DGA, BDV and other tests as per ACTM.
- x. Checking of lightning arrestor.

4.1.3 SCADA (C) (Supervisory Control and Data Acquisition)

- i. Proper fencing of RCC and RTUs. No mal-functioning.
- ii. To follow proper procedure for granting power block as per ACTM.

4.1.4 AVAILABILITY OF MATERIALS

- i. Availability of Emergency stores and breakdown equipment in OHE depots.
- ii. Availability of materials in the tower wagon as per list.
- iii. Condition of materials lying in the depot.

4.2 Checklist for Inspections in Electric Loco Shed / Trip Shed

I HUMAN RESOURCE UTILIZATION

- i) Availability of man power
- ii) On Roll
- iii) Actually Present
- iv) Unauthorized absent

II DEPLOYMENT OF STAFF

- i) Availability of Technical Circulars in the shed.
- ii) Knowledge/ Skill of staff. (few staff to be interviewed)
- iii) Knowledge of staff of their assigned job.
- iv) Safety Consciousness among staff.
- v) Review of training of staff in Depots.

III SAFETY CHECKS ON ELECTRIC LOCO

i) DRIVING CAB – INSIDE & OUTSIDE

- a) Speedometer working in both cabs
- b) Front and back headlight working.
- c) Front and back Flasher light working.
- d) Working of auto flasher system.
- e) Front and back both sides marker light working
- f) Both cabs – Cab light
- g) Both low tone and High tone horns working
- h) Both looking glass wipers working.

ii) Hand brake working

iii) Availability of fire extinguisher duly filled

iv) Availability of wooden wedges 4 Nos.

v) Availability of Emergency phone

vi) Availability of CBC coupling

vii) COUPLER AND SIDE BUFFERS

- a) Buffer height and CBC height at both ends of the loco.
- b) Proper functioning of all the parts of coupler
- c) Availability of palm coupling
- d) Availability of coupling washers

viii) UNDER – GEAR INSPECTION

- a) Proper level of sleeve bearing oil.
- b) Availability of CCF compound.
- c) Intactness of Traction motor junction box covers and inspection covers.
- d) Availability of safety chains and their proper use.
- e) Leakage of transformer oil, compressor oil etc.
- f) Proper fitting of cables

ix) BATTERY AND BATTERY CHARGER

- a) Battery Voltage
- b) Electrolyte condition
- c) Battery lugs
- d) Distilled water topping
- e) Other maintenance of batteries.
- f) Proper functioning of battery charger.

x) VISUAL INSPECTION

- a) Wheel flattening
- b) Axle box temperature
- c) Sleeve bearing temperature.
- d) Noise level from different auxiliaries.

- e) Transformer oil spilled over in HT compartment
- f) Oil in compressor tray

IV SAFETY ITEMS WITH LOCO PILOTS

- a) VHF set in proper working condition
- b) Detonators-10 Nos.
- c) Proper and valid Brake Power Certificate (BPC)
- d) Red & Green flags Separately available with Loco Pilot / Asstt. Loco Pilot
- e) Hand signal Lamp
- f) Short Circuiting clips (for Automatic Section)
- g) Palm Coupling
- h) Torch with cells

V AVAILABILITY OF MATERIALS IN LOCO SHED AND TRIP SHED

- a) Availability of materials in the depot as per list
- b) Condition of materials / assemblies lying in depot
- c) Non – Availability of vital and safety items
- d) Upkeep of materials

4.3 Checklist for Inspections of Coaching

I HUMAN RESOURCE UTILIZATION

- i) Availability of man power
- ii) On Roll
- iii) Actually Present
- iv) Unauthorized absent

II TECHNICAL KNOWLEDGE OF STAFF

- i) Knowledge/ Skill of staff. (few staff to be interviewed)
- ii) Knowledge of staff of their assigned job.
- iii) Safety Consciousness among staff.
- iv) Availability of Technical Circulars in the shed.
- v) Availability of proper tools.
- v) Review of training.

III SAFETY CHECKS IN AC / TL COACH

i) ALTERNATOR AND REGULATOR

- a) Alternator suspension bracket on bogie including nylon bush.
- b) Front and back headlight working. Alternator pulley fixing locking screw and lock washer.
- c) Alternator suspension pin with nuts and cotter pin.
- d) Alternator safety chains complete with nuts and split pins.
- e) Axle pulley fixing nuts, bolts and split pins including rubber pads, measurement of pulley gaps.
- f) Any shifting mark on axle pulley

ii) BATTERY AND BATTERY BOX

- a) Suspension arrangement of battery box with nuts and split pins.
- b) Battery safety rod and split pin.

- c) Battery box cover fixing hooks, nuts / fly nuts
- d) Battery fuse

iii) UNDERFRAME EQUIPMENTS

- a) Condition of Anti Vibration Mounting pad (AVM) of compressor motor bed.
- b) Safety meshes for compressor Motor assembly.
 - c) Safety meshes for compressor fan blades.
 - d) AVM's & nuts/bolts/split pins for condenser fixing in U/S coaches (suspension arrangement)
 - f) Fixing nuts and bolts of condenser motors & fan blade.
 - g) Suspension arrangement of battery chargers.
 - h) Any other item.

iv) Cable /Fuse etc.

- a) MCB's & HRC fuses on power / Ac panels
- b) Use of fuse wire, if any.
- c) Cable terminal lugs.
- d) Any joint in cables.
- e) Cable fixing arrangements.

v) OTHER ITEMS

- a) Vane relay working
- b) Nuts and bolts of covers of RMPUs.
- c) M.S. Strip ensuring proper fixing of covers of RMPU
- d) Condition of Inter Vehicle Coupler (IVC)

IV PASSENGER AMENITY ITEMS

- a) Working of Lights.
- b) Working of Fans.
- c) Working of Emergency Lights.
- d) Working of Pantry Equipments.

V WORKING CONDITIONS

- a) Condition of pit.
- b) Illumination level
- c) Availability of pre-cooling points.
- d) Availability of Charging points.

VI Availability of Vital and Safety Items

4.4 Checklist for Inspections of Power Installations

I HUMAN RESOURCE UTILIZATION

- i) Availability of man power
- ii) On Roll
- iii) Actually Present
- iv) Unauthorised absent

II TECHNICAL KNOWLEDGE OF STAFF

- i) Knowledge/ Skill of staff. (few staff to be interviewed)
- ii) Knowledge of staff about their assigned job.
- iii) Safety Consciousness among staff.
- iv) Availability of Technical Circulars /SMIs

- v) Availability of proper tools.
- vi) Review of training.

III SAFETY CHECKS

i) PUMPS

- a) Capacity of HRC fuses on power panels.
- b) Earthing arrangement.
- c) Display of work instructions.
- d) Condition of cable terminal lugs.
- e) Stand by arrangement.

ii) SUB STATION

- a) Working of Safety relays
- b) Capacity of HRC fuses on power panels.
- c) Capacity of cables
- d) Condition of cable terminal lugs.
- e) Earthing arrangement.
- f) Display of work instructions.
- g) Availability and condition of safety items e.g. sand buckets, fire extinguishers, respiration chart, first aid box etc.
- h) Vegetation growth and spreading of pebbles, painting of fencing and equipment.

iii) POWER PANEL

- a) Capacity of HRC fuses on power panels.
- b) Capacity of cables.
- c) Earthing arrangement.
- d) Any short cut method used e.g. by passing of fuse, meters etc.
- e) Condition of cable terminal lugs.

iv) ART/ARME

- a) Availability of materials as per list.
- b) Knowledge/ Skill of staff. (Few staff to be interviewed)

v) M&P

- a) Earthing arrangement.
- b) Condition of cable terminal lugs.
- c) Capacity of cables.
- d) Display of work instructions.
- e) Knowledge/ Skill of staff. (Few staff to be interviewed)

vi) Air Conditioning plants

- a) Earthing arrangement.
- b) Condition of cable terminal lugs.
- c) Capacity of cables.
- d) Capacity of HRC fuses on power panels.
- e) Display of work instructions.
- f) Knowledge/ Skill of staff. (Few staff to be interviewed).

vii) LIFTS

- a) Earthing arrangement.
- b) Condition of cable terminal lugs.
- c) Capacity of cables.
- d) Capacity of HRC fuses on power panels.

- e) Condition of wire rope.
- f) Working of limit switch and other safety items.
- g) Display of work/ Safety instructions.
- h) Knowledge/ Skill of staff. (Few staff to be interviewed).

viii) Transformer

- i) Oil and Winding temperature – Present and maximum
- ii) Oil Level in conservator tank
- iii) Abnormal humming
- iv) Oil leakage
- v) CB & Control Panel
- vi) Relays and their functioning

IV Availability of Vital and Safety Items

V Working of various meters on panel board

4.5 Checklist for Inspections in EMU Car Shed / Stabling Yard

I HUMAN RESOURCE UTILIZATION

- i) Availability of man power
- ii) On Roll
- iii) Actually Present
- iv) Unauthorized absent

II TECHNICAL KNOWLEDGE OF STAFF

- i) Knowledge/ Skill of staff. (few staff to be interviewed)
- ii) Knowledge of staff about their assigned job.
- iii) Safety Consciousness among staff.
- iv) Availability of Technical Circulars /details in shed.
- v) Availability of proper tools.
- vi) Review of training.

III SAFETY CHECKS ON EMU RAKES

i) DRIVING CAB

- a) Head light
- b) Blinker / Flasher light
- c) Availability of Fire extinguishers.

ii) Visual inspection of under gears.

iii) Brake System --

- a) Function of brakes- EP & auto
- b) Drainage of Reservoirs.

iv) Functioning of PA System

v) Functioning of TMS (Train Management System).

vi) Functioning of audio visual in Ladies compartment. (Connected with ACP).

vii) Compliance of items of defect cards.

viii) Isolation of any traction equipment.

IV PASSENGER AMENITY ITEMS

- a) Cleaning of Rakes.
- b) Functioning of carriage fans/ tube lights / windows etc.

c) Functioning of Emergency lights in Coaches.

V WORKING CONDITIONS

- a) Condition of Pits (for Shed).
- b) Condition of Stabling lines (for stabling yards).
- c) Illumination level.

VI AVAILABILITY OF MATERIALS

- a) Availability of materials in the depots as per the list.
- b) Condition of the materials/ assemblies lying in the depots.
- c) Non- availability of safety and vital items (for shed)
- d) Upkeep of material storage.

4.6 Checklist for Inspections of MEMU rakes in Shed / Stabling line.

HUMAN RESOURCE UTILIZATION

- i) Availability of man power
- ii) On Roll
- iii) Actually Present
- iv) Unauthorised absent

II DEPLOYMENT OF STAFF

- i) Availability of Technical Circulars in the shed.
- ii) Knowledge/ Skill of staff. (few staff to be interviewed)
- iii) Knowledge of staff of their assigned job.
- iv) Safety Consciousness among staff.
- v) Review of training of staff in shed and terminals/ Stabling lines

III SAFETY CHECKS ON MEMU

i) DRIVING CAB – INSIDE & OUTSIDE

- a) speedometer working in both cabs.
- b) Headlight in working order.
- c) Flasher light in working order.
- d) Tail lamp in working order.
- e) Cab light in working order.
- f) Both low tone and High tone horns working
- g) Wiper in working order.
- h) Parking brake working
- i) Availability of fire extinguisher duly filled
- j) Availability of wooden wedges 4 Nos.
- k) Availability of Emergency phone

iii) UNDER – GEAR INSPECTION

- a) Intactness of Traction motor junction box covers and inspection covers.
- b) Availability of safety chains and their proper use.
- c) Leakage of transformer oil, compressor oil etc..
- d) Proper fitting of cables.
- e) Drain cock operation to drain out water.

iv) BATTERY AND BATTERY CHARGER

- a) All DMC's battery Voltage
- b) Electrolyte condition

- c) Battery lugs
- d) Distilled water topping
- e) Other maintenance of batteries.
- f) Proper functioning of battery charger.
- g) Working of COS (Charge over switch)

v) VISUAL INSPECTION

- a) Tyre heating / Crack
- b) Proper application and release of brakes.
- c). Axle box temperature.
- d) Sleeve bearing temperature.
- e) Noise level of different auxiliaries.
- f) Transformer oil spilled over in HT compartment
- g) Oil in compressor tray

VI SAFETY ITEMS WITH LOCO PILOTS

- a) VHF set in proper working condition
- b) Detonators 10 Nos.
- c) Proper and valid Brake Power Certificate (BPC)
- d) Red & Green flags Separately available with Motorman.
- e) Hand signal Lamp
- f) Short Circuiting clips (for Automatic Section)
- g) Palm Coupling
- h) Torch with cells

VII AVAILABILITY OF MATERIALS IN MEMU SHED AND PLATFORM DEPOTS

- a) Availability of materials in the depot as per list
- b) Condition of materials / assemblies lying in depot
- c) Non – Availability of vital and safety items
- d) Upkeep of materials

VIII OHE Fittings

- i) The isolator blade is fully in and also foreign of sparking or overheating.
- ii) Insulators for any chipping/flash marks / damages.
- iii) Sign of heavy sparking on OHE when train passes.
- iv) Whether normal minimum clearance of 500 mm. is available between the two OHE in an insulated overlap and 200 mm in the case of un-insulated overlap.
- v) Check up whether lifting of out-of-run contact wire is correct.

CHAPTER V
MECHANICAL (OP)

5.1 SHED INSPECTION (Diesel)

- i) Cleanliness of shed / Office premises.
- ii) Alertness / Attendance of staff on duty.

5.2 RECORDS

- i) Staff overdue courses viz. refresher courses in traffic and Diesel loco: air brake simulator and safety camp etc.
- ii) Long absentees cases.
- iii) Status of unauthorized occupation of Railway accommodation.
- iv) Staff grievances and follow-up.
- v) Supply of store items i.e. uniform, torch cells, dusters soap etc.
- vi) Genl 164
- vii) Review of excess in the categories of staff.

5.3 SHEDMAN / LOBBY OFFICE

- i) Correct indication of engineering restrictions on engineering restriction board.
- ii) Valid vision board of home and other sheds.
- iii) Breath Analyser.
- iv) "Signing on" and "Signing off" registers.
- v) Signal complaint register and follow up action.
- vi) First aid box and stretcher.
- vii) Loco Pilots and shunters order books.

- viii) Safety bulletins and circulars.
- ix) Loco turn round register.
- x) Abnormality registers.
- xi) Learning Road Register (LRD)
- xii) Staff authorised to wear spectacles.
- xiii) Speed Restriction Board
- xiv) Staff overdue Courses viz. Technical & Safety Refresher Courses.
- xv) Simulator training
- xvi) Long absence cases
- xvii) Periodic Medical Examination overdue register (PME)

5.4 DIESEL SHED

- i) Check of repair books and action taken and being taken on the repairs booked by the Loco Pilots.
- ii) Maintenance facilities to ensure that relevant maintenance procedures are being followed.
- iii) Quality of failure investigations, trend of failures and preventive actions being taken / to be taken.
- iv) Corrective / Punitive action taken in case of failures on account of maintenance lapses.
- v) Inspection of outgoing Locomotives in respect of quality of schedule attention, out of course repairs and items of any special drives based on failure analyses have been carried out and being recorded.
- vi) Attention to and monitoring of high lubricating oil consuming locomotives (LOC).
- vii) Availability of critical spares.
- viii) Position of Locomotive in shed specially which have been waiting for more than 3 days and action being taken.
- ix) Vacancy and attendance position, administrative action being taken for long unauthorized absentees.
- x) Trend of expenditure and economy measures.
- xi) Summer drives, Monsoon drives, if in progress.
- xii) General house keeping of shed.
- xiii) Washing cleaning and radiator blowing of locomotives.
- xiv) Holding of locos and ineffective percentage.
- xv) Cleanliness of premises and pits.
- xvi) Attendance of staff for carrying out booked / schedule repair.
- xvii) Progress of Schedules and out turn.
- xviii) Progress of loco under schedule.
- xix) Reliability of stores.
- xx) Availability of unit exchange items.
- xxi) Availability of Demineralised water and lub oil etc.
- xxii) Tests of water and oil samples in laboratory and availability of chemicals.
- xxiii) M&P whiting jacks, M&P.
- xxiv) Machine shops.
- xxv) EOT
- xxvi) Condition of building, pathway and drainage system.
- xxvii) Lighting system of the shed.
- xxviii) Condition of canteen and test shelter.

5.5 RUNNING ROOMS

- i) General cleanliness of each and every item used in running rooms.
- ii) Facilities like coolers, geysers, cooks and bearers, news paper & periodicals etc.
- iii) Availability of adequate linen, utensils etc.
- iv) Emergency power supply.

5.6 RAILWAY DIESEL INSTALATIONS

- i) Performance of flow meter.
- ii) Electric fuel pump.
- iii) Diesel pump.
- iv) Availability of fire extinguishers, sand and water buckets.
- v) Changing of filters of filter housing.
- vi) Condition of decanting pipe and fueling pipe.
- vii) Locking arrangements of fuel points.
- viii) Disposal of spilled HSD oil.
- ix) Missing tank wagons.
- x) Decanting of TPs.
- xi) Accountal of HSD oil.
- xii) General cleanliness and upkeep.

5.7 FOOTPLATE INSPECTION

5.8 LOCO REPAIRS AND DEFICIENCIES SPECIALLY

- i) Availability of portable control phone (PCP0 set).
- ii) Fire extinguisher.
- iii) Working of Flasher light.
- iv) Availability of 4 wooden wedges.
- v) Speedometers in working order.
- vi) Working of Dynamic brake.

5.9 PERFORMANCE OF CREW

The following marking pattern should be used to evaluate the performance of crew.

i)	Handling of locomotive immediate application of brakes in face of danger and brake feel test.	3
ii)	Observation of speeds on temporary engineering restrictions on turn outs	2
iii)	Knowledge of G&SR and safety rules.	2
iv)	Knowledge of time table.	2
v)	Calling out of signal aspects looking back frequently on curves to ensure safe running of the train	2
vi)	Personal equipment viz. spectacles, detonators, flags, hand signal lamps, and tools etc.	4
vii)	Knowledge of trouble shooting in Diesel / Electric locos and location of components.	5
viii)	Observation of horn codes, to sound horns on W/L boards and while passing through stations.	2
ix)	Knowledge of rules regarding automatic signaling system and ghat	4

	rules	
x)	Knowledge in loco examination while making over /taking over charge, Continuity test between Loco Pilot and guard of vacuum/air pressure	2
xii)	Personality and uniform.	1

Grading is done in the following manner.

- Marks obtained 21 & above will be taken as good. =A
- Marks obtained 15 & below are satisfactory. =B
- Marks obtained below 15 are bad. =C

NOTE: Bio data of the crew is to be checked regarding next due for vision test/glasses, refresher courses, competency certificate to work in Automatic signaling territory and rule books.

5.10 VISIBILITY OF SIGNALS

- i) Any obstruction impairing visibility of signal, permanent or temporary.
- ii) Illumination of signals and focusing.

5.11 GATES

- i) Alertness of gatemen and their presence with hand signals.
- ii) Illumination of side lamps of manned L-xing gates.

5.12 RIDING

- i) Uneven riding on any portion of track. Any unusual occurrence during the trip.

5.13 AMBUSH CHECK

- i) Blowing of horn by the crew on W/L board while approaching unmanned and manned L-xings.
- ii) Observance of speed limits by the Loco Pilot if some engg. Restriction is imposed.
- iii) Condition of L-xings as regards road across the track and caution boards for road users.
- iv) Proper equipment on the gate.
- v) Safety chains, use of fog signals and NVT of the gateman.
- vi) Proper exchange of private number by the gateman with SM if telephone is provided.
- vii) Displaying of hand signal by the gateman to an approaching train.
- viii) Timely closing and opening of gates.

5.14 CONTROL ORGANISATION

- i) To keep watch on the performance of locomotives on line for punctual running of trains by PCR.
- ii) Arranging relief crews for goods trains locos.
- iii) Balancing of powers and crews.
- iv) Issue and receipt of messages for prompt action.
- v) Arrange relief loco in case of loco failure on line.
- vi) Arrange ART in case of accident / derailment.
- vii) Maintain/loco failures records of the division.
- viii) Study graph of each section from time to time and minimize terminal detentions to locomotives of goods trains.

- ix) Arrange fuelling and lub oil in case of exigencies.

5.15 RAKE INSPECTION

5.16 SAFETY

- i) Brake power
- ii) Alarm chain apparatus.

5.17 SECURITY

- i) Door latches/Catches.

5.18 SSE(DSL)/CWS OFFICES

- i) Transfer of Material from shed to shed Register of Tools and Plants and dead stock Register.
- ii) Clothing and Uniform Register.
- iii) Periodical verification of stores
- iv) Detention of rolling stock specially for want of materials.

5.19 (C & W)

The following documents / register should be checked.

1. Kacha seal wagon checking register.
2. D D message Register.
3. RP (UP) Act register.
4. Malkhana Register.
5. IRA Register.
6. Arms ammunition register.
7. Duty roster.
8. Muster roll.
9. Key register in case of inspection of workshop.
10. Staff grievances register.
11. Roznamcha.
12. Adequacy of pit examination time
13. Availability of berthing slots.
14. Pit lights for night examination.
15. Condition of M&P items such as Air brake Test Rings, Compressor, EOT Cranes, Generator, Lifting Jacks
16. Over due coaches if any.
17. Repair schedule of coaches 'A', 'B' & 'C'.
18. Availability of Safety items
19. Coach Failure Analysis

5.20 ACCIDENT RELIEF TRAINS

- i) Examination of BD crane and its periodical schedules.
- ii) Test certificates of wire-ropes and chains.
- iii) Working of MFD equipment.
- iv) Training of staff to handle equipments.
- v) Training of staff attending to locked axle of DSL/Elec. Locos.
- vi) Testing of generators.
- vii) Testing of Fire extinguishers.
- viii) Regular maintenance and upkeep of ART stocks.

- ix) Overdue POH stock
- x) Water and lighting arrangements of ART
- xi) Inspection of ART by Sr. Subordinates and branch officers.

5.21 PANTRY CAR

- i. Securing arrangement of gas cylinders in gas room.
- ii. Gas pipe fittings.
- iii. No gas cylinder is permitted in kitchen area.
- iv. Four gas burners in kitchen area.
- v. Proper flooring in pantry cars.
- vi. First Aid/Medical boxes in pantry car.
- vii. General hygienic conditions.
- viii. Safety certificate from authorized gas agency.

5.22 WAGONS AND DEPOT

5.23 Brake Gears

- i. Brake gears free movements.
- ii. Hand brake proper working.
- iii. Examination of DV (Distributor valve)
- iv. Isolating cock operation.
- v. DV release valve operation.
- vi. Angle cock examination for operation and lubrication.
- vii. Brake Pipes and joints for leakage.
- viii. Guard's emergency Brake Valve whether in operating condition.

5.24 Bogie (CASNUB)

- i. Side frame for cracks and extra wear, liners.
- ii. Bolster for liners.
- iii. Centre pivot bottom for excessive wear and ensuring C.P.Pin etc.
- iv. Bolster springs for proper size and group of springs.
- v. Adopter/CTRB (Cartage roller bearings) for excessive wear.
- vi. E/Pad for proper size.
- vii. Spring gear of UIC bogie.
- viii. Slack Adjuster for proper working.
- ix. Brake Block for excessive wear and proper fitment.

5.25 CBC (Centre Buffer Coupler)

- i. Coupler body for condition and cracks.
- ii. Shank wear plate, striker casting wear plate.
- iii. Knuckle and knuckle pin for excessive wear.
- iv. Buffer height.

5.26 Wheel and Axle

- i. UTS records.
- ii. Flat tyre, wheel wear, wheel profile.
- iii. Axle and cap screw, locking plate.

5.27 Tank Wagon

- i. Dome fitting of LPG.

- ii. Barrel for leakage or dent marks.
- iii. Barrel fitment with cradle.
- iv. Safety valve for proper operation.
- v. Discharge valve for leakage.
- vi. Pipe fittings of Discharge pipe for leakage.
- vii. Infrastructure facilities of depot.
- viii. Water availability/storage.
- ix. First Aid and Fire fighting provisions.
- x. Safety items/Must change items.

CHAPTER – VI **ENGINEERING**

6.1 Rail joints

6.1.1 Sleepers

- i. Should be serviceable and sound , preferably steel sleeper

- ii. Should be 380 mm for the joint sleeper and 610 mm for the 1st shoulder sleeper. For the 2nd shoulder sleeper, spacing should be between 610 mm and normal spacing in the section (Para 244 of IRPWM).
- iii. Sound packing no tilting of joint sleepers.
- iv. Percentage of unserviceable sleepers should not be more than 20%.

6.1.2 Rails

- i. No Battering / chipping of rail ends
- ii. No wear on fishing surface
- iii. No hogging of rail ends
- iv. Gap should not be jammed and not more than 12mm
- v. Minimum 75 Minutes block required to do one AT weld.

6.2 Fish Plate

- i. No plastic Deformation
- ii. Fish plate should be fishing fit
- iii. No wear on the fishing surface
- iv. No cracks

6.3 Condition of fish bolts and nuts.

- i. No bending and denting of bolts and these should not be corroded
- ii. Bolts should be complete.
- iii. Bolts should be tight.

6.4 Fish bolts Holes

- i. Check date of last rail and examination
- ii. conduct test check on the rail ends by opening.
- iii. No cracks in the bolt holes.
- iv. The bolt holes to be properly chamfered

6.5 Oiling and Greasing

- i. Should not be over due.

6.6 Ballast

- i. Ballast should be clean under sleepers as well as to the shoulders.
- ii. No blowing/pumping joint
- iii. Drainage to be good.

6.7 Insulated Joints.

6.7.1 Sleeper spacing.

- i. As per the normal spacing of sleepers in the section.

6.8 Condition of fittings

- i. Head of dog spikes should not touch the fish plates.
- ii. Spikes should not protrude below the sleeper
- iii. Side of pandrol clips should be ground so that it does not touch the fish plates.

6.9 Condition of Rail End.

- i. Rail end should be square

- ii. Battered rail end must be put right.
- iii. Rail ends should be free of burrs.
- iv. Rail ends be kept free from dirt, dust, sand and other materials.

6.10 Creep in Joints

- i. Regular assessment and adjustment of creep.
- ii. One rail length on either side to be box anchored.
- iii. Creep in excess of 150 mm shall not be permitted(para 242(6) IRPWW)

6.11 Condition of end post in Glued joints.

- i. Top of end post to be flush with the rail top.
- ii. Gap, if any, due to wearing out of end post to be filled up with insulated material like epoxy to avoid ingress of dirt, dust, sand, etc.,

6.12 Others.

- i. Ballast in vicinity of glued joints should be clean
- ii. No relative movement between rails and fish plates.
- iii. Twist – on straight and curved track other than on transition – 2 mm per meter except at isolated locations this may go upto 3.5 mm per meter. and on transitions of curves local defect should not exceed 1 mm per meter except that at isolated locations this may go up to 2.1 mm per meter. Para 607 (2) (iii)

6.13 Inspection of SEJs.

6.13.1 Condition of Sleepers.

- i. Should be good and proper size i.e. 300 mm x 150 mm.

6.13.2 Spacing of sleepers.

- i. The gap between the sleepers should be 700 mm centre to centre as per drawing No.T-1412 for B.G. Track
- ii. Sleepers should be square.

6.13.3 Packing of sleepers.

- i. Sound packing. No tilting of joint sleepers.

6.13.4 Condition of Tongue.

- i. No battering/hogging of tongue rails.
- ii. Look for cracks in the neck of stock rails.

6.13.5 Condition of fittings.

- i. All the fittings and spikes on SEJs should be complete and light.

6.13.6 Ballast.

- i. Ballast to be clean under sleepers as well as in shoulders.
- ii. No blowing/pumping
- iii. Drainage to be good.

6.13.7 Position of REF, Post.

- i. The reference mark on the reference should be 30 mm towards the stock rail from centre of the sleeper.
- ii. The reference post should be firmly fixed in the ground preferably embedded in concrete.
- iii. Reference post should be sufficiently away from the centre of the track so that machine work does not affect the reference post.
- iv. Reference post should be painted red on top for easy identification.
- v. Reference mark should be clearly punched on top for easy identification.

- vi. Reference mark should be clearly punched on top of the rail post.

6.13.8 Measurements.

- i. Measurement of gap to be done on tongue rail and stock rail side from the reference line and recorded on the LWR register. Total gap as per limit prescribed in Annexure XIIIB of LWR manual.
- ii. All abnormal movements to be recorded on LWR register and corrective action taken.

6.14 Inspection of Gang.

6.14.1 Gang Chart.

- i. The gang chart should be seen thoroughly to see on what works the gang has been engaged.
- ii. Check strength of the gang in previous days.
- iii. Check scope of the work done and the scope of work left.
- iv. Check advance planning for 3 days marked on chart.

6.14.2 Gang Diary

- i. How long the PWI has stayed with the gang.
- ii. How the instructions been given to the gang.
- iii. Whether the gang work has been checked properly or not.
- iv. Whether tools and plants are sufficient and in good condition.
- v. Check strength of the gang vis-a-vis muster sheet and utilization of men.
- vi. The awareness of the gang about the features of its beat, bad spots and the spots requiring frequent attention. Special features such as trespassing areas, curves, turn outs. SEJs should be checked.
- vii. The previous days work of the gang be checked for its quality.
- viii. Quality of work completed on the day of inspection to be commensurate with the laid down scale.
- ix. Knowledge of the gang about the safety rules.
- x. Personal as well as admn. difficulty of the gangmen.

6.15 Curves.

- i. Calculation of SE, Versines, Permissible speed etc. as per IRPWM.]
- ii. Permanent speed restrictions if any.
- iii. Curve markers as per P 409 of IRPWM.
- iv. Painting of curve at stations, versines, SE.
- v. provision of vertical curves (P 419 of IRPWM)
- vi. Recording of versines, S.E. in the register.
- vii. Extra clearance for curves for Electrified sections.
- viii. Checking of actual cant, cant deficiency, cant gradients w.r.t. permissible limits.
- ix. Details of transition length and speed potential for curves.

6.15.1 Versine variation – Service limit for station to station Versine variation for 3 speed groups viz. 120kmph and above, below 120 kmph and upto 80 kmph and below 80 kmph and upto 50 kmph is as follows:-

Speed Range	Limit for station to station variation in (mm)
120 Kmph and	10 mm or 25% of the average Versine on circular curve whichever is

above	more.
Below 120 Kmph and upto 80 Kmph	15 mm or 25% of the average Versine on circular curve whichever is more.
Below 80 Kmph and upto 50 Kmph	40 mm or 25% of the average Versine on circular curve whichever is more.

In case exceedence of the above limit is observed during inspection local adjustments may be restored to in cases where the variation of versines between adjacent stations is only at few isolated locations, at the earliest possible. If, more than 20% of the stations are having versine variation above the limit prescribed, complete realignment of the curve should be planned within a month. **PARA 421 IRPWM**

6.15.2 LATERAL WEAR OF RAILS ON CURVES-

SECTION	GAUGE	CATEGORY OF TRACK	LATERAL WEAR
CURVE	BG	Group A&B route	8 mm
		Group C&D route	10 mm
	MG	Group Q&R route	9 mm
straight	BG	Group A&B route	6 mm
		Group C&D route	8 mm
	MG	Group Q route	6 mm
		Group R route	8 mm

Lateral wear is to be measured at 13 to 15 mm below the rail top level.

Para 302 (iv) IRPWM

Rly Board letter No. Track/ 21/ 2002/ 0110/ AT policy dated 14/10/2004.

6.16 Points and Crossing

All the point mentioned in the point and crossing register to be thoroughly checked in addition following items be inspected.

- i. Whether the length of T/out is standard.
- ii. Whether the location of stock joint is correct.
- iii. In case of cross over TNC to TNC distance to be theoretical as per calculations.
- iv. Gauge to be measured even in the switch portion for both the settings of T/out, normal and reverse, to know proper setting of switches and correctness of sleeper used.
- v. T/out to be properly numbered.
- vi. All sleepers are numbered, off sets are mentioned. Same thing should be done on the case of turn in curve and trap.
- vii. Whether the stock rail and switch rail are correct i.e. RH rail or LH rail.
- viii. Requisite bend has been provided on the stock rail.
- ix. Gauge should be checked personally.
 - a) 3 sleepers before the crossing up to the nose of crossing.
 - b) 3 sleepers before the toe of switch upto the switch.
- x. Sleepers in the crossing portion should be radial.
- xi. Alignment should be checked keeping a straight chord stretched throughout the length of T/out and at least one rail length on both sides of T/out.

- xii. Combination joint if any, should be at least one rail away from SRJ and back of Xing. The combination joint should be gap less and all the bolts should be complete.
- xiii. Physical condition of tongue rail, stock rail and crossing should be sound.
- xiv. All the fittings are as per standard, particularly, the spherical washers. In track circuited areas, proper insulated/GFN liners etc.

6.16.1 Points and crossing Register.

- i. Proforma for inspection for JE/SE/SSE & AEN available on the top of register.
- ii. Date of various inspection carried out at the level of JE/SE/SSE & AEN should be entered in the first page.
- iii. Compliance of various points noted during the last inspection be recorded.

6.17 Level Crossing.

6.17.1 Manned Level Crossing

- i. Condition of gates, locking arrangements and turn styles.
- ii. Working of gate leaves. Whether catches and stops working properly.
- iii. Focusing of gate lamps should be checked from an adequate distance by standing in the middle of the road.
- iv. Safety equipments like H.S. flags, H.S. lamps, detonators, pad locks and safety chains should be complete and in proper working order.
- v. Check rail clearance.]
- vi. Check block; whether held tight.
- vii. Track gauge and cross levels.
- viii. Adequacy and condition of tools and equipments with the gateman.
- ix. Whether sufficient quantity of k.oil. wicks and matches available at the gate.
- x. Knowledge of gateman in safety rules.
- xi. Duty roster and gate calendar. Whether the gateman on duty is as per duty roster.
 - xii. Vision test records of gatekeepers.
 - xiii. Competency and school attending records.
 - xiv. Visibility from the road and for the trains.
 - xv. In electrified section, the clearance between height gauge and the road surface.
 - xvi. Are the road signs on the approaches properly maintained.
 - xvii. Are the whistle boards existing on both sides of level crossing.
 - xxviii. Speed breakers/Rumble strips are existing on both sides of level crossing
 - xix. Condition of approach track of level crossing.
 - xx. Condition of gate lodge.
 - xxi. General get up of gate lodge and surroundings.
 - xxii. Water supply arrangements.]
 - xxiii. Date of last overhauling
 - xxiv. Date of last inspection.]
 - xxv. Whether distinct indication are provided for guiding the gateman to place the detonators in case of emergency.
 - xxvi. Whether the protection diagram has been exhibited at gate.
 - xxvii.

6.17.2 Unmanned Level Crossing

- i. Whether the road surface is well maintained between gate posts and approaches as regards level and gradient.
- ii. Visibility for the road users should be checked from a distance of 5m from the centre line of the nearest track. It should be clear for a distance of 600m on either side along the track.
- iii. Are the road signs and stop boards on the approaches properly maintained.
- iv. Speed breaker are properly maintained on both the sides of level crossing.
- v. Whistle boards at a distance of 600m from level crossing on either side and 350 m on single line where visibility is clear.
- vi. In electrified section, the clearance between height gauge & road surface.
- vii. Check rail clearance.
- viii. Check blocks whether held tight.
- ix. Track gauge & X-level
- x. Condition of approach track of level crossing.
- xi. Date of last inspection.
- xii. Date of last overhauling.

6.17.3 SPEED RESTRICTION ON UNMANNED LEVEL CROSSING HAVING INADEQUATE VISIBILITY-

As per CTE-CCG's letter No. W350/24 (Visibility) dt.11/12-07-94 for reduction of visibility distance commensuration with the reduction in maximum sectional speed as shown in the statement below:

Visibility Distance for Road users (Mts)	Permitted speed of train (Kmph)
600	100
550	90
500	80
450	75
400	65
350	55
300	50
250	40
200	30
150	25

6.18 Bridges.

- i. Steps to be provided for inspection.
- ii. Guard rail clearances: Ends to be buried in ballast with wooden block.
- iii. Clearing of water way.
- iv. PDL Marks : As per RDSO guidelines No.RBF/MOL AT 20-9-89 Circulated under No.EW/641.BRN.1 GOA(C)/IV of 7-11-89.
- v. Spacing of sleepers in approaches of major and important bridges (60 cm. upto 100 cm on either side).

- vi. Warning Board on approaches of important bridges for photography and tress passing prohibited.
- vii. Flood gauge to be painted.
- viii. Inspection of bridge. Bridge register
- ix. Painting/O&G, date of painting on girder bridges.
- x. Trolley refuges.
- xi. Foundation plaque Painting on piers and
- xii. Name Board abutments
- xiii. H.F.L. Marking)
- xiv. Gauge on every sleeper to be recorded.
- xv. Provision of hook bolts: arrow marking
- xvi. Locking of the openings: for inspection purpose.
- xvii. Expansion gap arrangements : clean.

6.18.1 Statement in the format to be submitted :

Sr. No	Km.	Span	Type	Freeboard available	Vertical clearance available	Min. clear as per structure code	Infringement or any other action taken.
1	2	3	4	5	6	7	8

- i. Calculations for water way.
- ii. Load test on pile foundations: Details.
- iii. Design calculations for sub-structures, super structure.
- iv. Certificates for fabrication of bridges girders and welding alongwith details of testing.
- v. Loads deflection tests as per "Rules" for opening of Railway.
- vi. Protection arrangements for flooring, abutments and approaches.
- vii. Completion drawings – neatly drawn.
- viii. Table showing the strata met with in foundation for pier and abutment wing and return.

6.19 USFD –

6.19.1 Frequency of testing for all BG routes is given as under. For other section Chief Engineer of railway may adopt a frequency at his discretion.

ROUTE	FREQUENCY	
All BG routes	After passage of 8 GMT subject to max interval of 1 year as per table below	
	GMT	Testing Frequency
	UPTO 8	12 Months
	>8 <12	9 Months
	>12 <16	6 Months
	>16 <24	4 Months
	>24 <40	3 Months
	>40 ≤60	2 Months
	>60 ≤80	1.5 Months
	>80	1 Months

PARA 6.6.1.1 of Manual for Ultrasonic Testing of Rails and Welds.

6.19.2 Action to be taken after detection of defects: Following action to be taken in respect of defective rail:

- i) In case of Immediate Removal (IMR) / IMRW both faces of web , three cross with red paint to be painted.
- ii) **Action taken:** The flawed portion should be replaced by a sound tested rail piece of not less than 6 mts. Length within 3 days of detection.
- iii) **Interim action** - PWI /USFD shall impose speed restriction of 30 Kmph or stricter immediately and to be continued till flawed rail/weld is replaced. He should communicate to sectional PWI about the flaw location who shall ensure that clamped joggled fish plate is provided within 24 hrs.

6.19.3 In case of observation (OBS/OBSW) one cross with red paint on both faced of web to be painted.

Action Taken: The rail / weld to be provided with clamped joggled fishplate within 3 days. PWI/USFD to specifically record the observation of the location in his register in subsequent round of testing

Interim Action - PWI / USFD to advise sectional PWI within 24 hrs. about the flaw location. Key man to watch during his daily patrolling till it is joggled fish plated

PARA 6.4 of Manual for Ultrasonic Testing of Rails and Welds.

6.19.4 **In case of defective weld, painting on both the faces of weld with two cross with red paint to be painted.**

Action to be taken –

PWI/ USFD shall impose speed restriction of 30 kmph or stricter immediately. He should communicate to sectional PWI about the flaw location who shall ensure following

- i) In case of DFW(O) protection of defective weld by joggled fish plates using minimum 2 tight clamps,/ 2 far end tight bolts one on each side with chamfering of holes with in three days after which speed restriction can be relaxed to normal.
- ii) In case of DFWR the protection of weld has been done with the same method described as above but care should be taken that DFWR shall be replaced with in three months of detection.

PARA 8.14 of Manual for Ultrasonic Testing of Rails and Welds.

CHAPTER VII

SIGNAL AND TELECOMMUNICATION

7.1 Relay room /cabin Basement /Block instrument key

- (a) Relay room key is not taken more than once a month for schedule maintenance & supervisor takes it.
- (b) Switch on Relay Room Door is as per standard arrangement & spurious locking is not there.
- (c) Crosscheck relay room register with data logger records and mechanical counters / S&T control records – No. of times key taken and duration shall match.
- (d) Key for Construction work is taken as per the programme agreed by Sr. DSTE.
- (e) Construction staff have given memo of the work done for each occasion of key taken.
- (f) Block instrument key is not taken or instrument opened when it is on TOL/ line clear position.
- (g) Double locks at all places are effective and it is not possible to open without the proper key. Try with all available keys with S&T staff.
- (h) Check for duplicate keys in ESM/MSM duties room, tool box/bag.
- (i) ESM/MSM duty room key in with ESM and Section SI only.
- (j) Relay Room key of S&T lock remains in custody of ESM of Station/Section
- (k) Exceptional report from data loggers to be checked if provided for point failure, signal failure and delay in signal going to ON after occupation of controlling TC.
- (l) All relays are properly sealed with screw fully tightened and an impression on seal is proper.

- (m) Spare relays are kept sealed in Relay Room.
- (n) Data Loggers / modem or its reset is shifted outside, wherever feasible.
- (o) Panel, lever frame, SM frame, Block testing / overhauling is done.
- (p) In Relay Room loop or extra wire are not kept.

7.2 Signal Failure Register

- (a) Signal Failure Memo is issued for each failure recorded in SFR.
- (b) Each memo issued by SM is acknowledged.
- (c) Put right time and cause of failure are entered properly by SM and S&T staff respectively.
- (d) Signal failures, which could have been attended from outside but relay room key taken.
- (e) Trains passed on signal during signal failure.
- (f) Train passed on signal when relay room key was taken during signal failure.
- (g) Total trains passed during failures as per TSR and SFR and T87B actually issued.
- (h) T87B cancelled during signal failure and otherwise.
- (i) Analysis of AWS, Axle Counters, BPAC, Re-setting, Signalling failures : Review every month - corrective action to be taken
- (j) Precautions at work site : Issue of dis-connection memo - Check list to be followed as per para 11.4.2 Annex. 3 of SEM

7.3 Disconnection Memo-

- (a) Total Nos. and adequacy of duration for the type of work done.
- (b) No. of trains passed on signal during disconnection.
- (c) Cross check the functioning of the disconnected gear with data loggers report and the work, if any done after reconnection.
- (d) Reconnection of Construction work on existing gear is after testing by open line.
- (e) All Supervisors and Maintainers are aware of the activities to be done with and without disconnection.

7.4 Panel

- (a) Panel testing is as per schedule of 3 years.
- (b) Record of panel testing is kept at site, check the LT/ST on which testing done and signed by testing official.
- (c) Date of testing is painted on panel
- (d) Cable from relay room to panel is in protected Pipe
- (e) RRBU lock is not free
- (f) Physical checking & cleaning of Panel, Panel Buttons, Lamps etc.
- (g) Testing of all Panel counters, SM's Key and emergency crossover operation.
- (h) Functional testing for all circuits as per selection table and conflicting movements.

7.5 Counters

- (a) Check all the counters are in working conditions and increment by one only.
- (b) RRBU cancellations are done after receipt of memo from SM and all memos kept serially numbered in guard file.
- (c) EBPU operation during TC failure – corresponds with SFR record.
- (d) ERRB cancellations are not too many and analysis of it.
- (e) Proper procedure of Axle Counter / MUX resetting is followed.

7.6 Points

- (a) Point motors are opened for regular maintenance and not kept sealed throughout

- the year except monsoon.
- (b) Epoxy coating of motor and detector assembly in flood prone area is done. & Visual checks of Points insulation.
 - (c) Ground connection are fitted as per standard drawing.
 - (d) Wear and Tear on machine slides, looseness on pins in ground connection.
 - (e) Motor current under obstruction and normal
 - (f) Friction clutch strips under obstruction.
 - (g) WJR timing for 'N' and 'R'
 - (h) Wards on point motor corresponds with the KLR
 - (i) Cleanliness of carbon brush and availability of chamois leather.
 - (j) Tightening of all nuts, check nuts & bolts, lock nuts holding the detector slides & lock slides with lugs.
 - (k) The setting of switch for having required amount of spring action.
Correspondence test with respect to panel.
Obstruction test - of points with 5 mm test piece to ensure point cannot be locked, detection contacts should not assume the position indicating point closure & friction clutch should slip.
 - (l) Joint check with SE/SSE (P-Way), of points & crossing for leveling, squaring, creeping, packing, clearance of ballast and other P-Way fittings, etc. and measurement of LH, RH switch opening, as per SEM Para 12.40. SE & SSE to carry out every alternate inspection.
 - (m) Checking of NX Switch and its wards, connections and its effectiveness during power operation points.
 - (n) Lubrication of all gears, bearings, slides, rollers and Pins.
 - (o) Cleanliness and smoothness of commutators.
 - (p) The contacts are free from pitting.
 - (q) Tightness of nuts, bolts holding the detector
 - (r) slides and lock slides with lugs kept tight

7.7 ELECTRICAL DETECTOR

- (a) The contacts to Make or break at same time.
- (b) The cross protection contact makes only after concerned detection contact open. sleepers are packed well.
- (c) Tightening of all nuts and screws and nuts on lugs. Wires are neat and tidy.
- (d) Testing and adjusting - for Normal & Reverse setting of point by obstruction test to ensure with 1.6 mm test piece detector contacts just make, with 3.25 mm test piece by fictitious locking contacts just break and with 5 mm test piece point is not locked and detector contacts not make.

7.8 Track Circuit

- (a) Track circuit parameters are within limit.
- (b) Relays are not overdue for overhauling
- (c) Track circuit history card are maintained every six months.
- (d) Track circuit batteries are positively wired in circuit.
- (e) Track circuit in flood prone areas and improvement needed like axle counter in parallel.
- (f) Testing of GJ/IBJ and replacement of IBJ is done as per schedule and procedure

- followed during replacement.
- (g) OHE bands are available on FP/SEJ and track crossing is insulated.
- (h) Replacing corroded bonds.
- (i) Visual check and cleaning of insulated block joints.
- (j) Traction bonds / jumpers do not cause any short circuits with track circuit rails / connections.
- (k) Specific gravity and voltage of battery
- (l) Checking of track bonds and feed set. Checking of effectiveness of transverse and longitudinal bonds, staggering of polarity.
- (m) Checking - for good insulation condition of Tongue rails, Gauge tie plate, Stretcher bar And point rodding.
- (n) Checking & Replacing Track Relays if due for overhauling (Periodicity of overhauling 10 yrs.).
- (o) Checking train shunt resistance at relay, feed end and other parallel portion of TC.
- (p) Checking that excitation with respect to rated pick up voltage, of DC track circuits is minimum 130% and not more than, 250% for self type relays, 300% for plug-in type relays and of AC track circuits is minimum 130% and not more than 200%, in case of AFTC gain setting kept in the dynamic range / as prescribed for different AFTC.
- (q) Joint check with SE/SSE (P-way) of track circuited portion for the condition of rail and insulation at the rail joints, tightness of fish plate bolts, packing of sleepers in the vicinity of IBJ/GJ, ballast & sleepers, abnormal collection of brake dust, rusting of the rail, drainage and position of P-way fittings likely to cause short circuits like spike, pendrol clips and bearing plates.
- (r) Condition of ballast, 50 mm ballast clearance from bottom of the rail flange and availability of anti creep, 'J' clips at GJ / IB, minimum 97 % GFN Liners and Pads for track circuits with PSC sleepers. Carrying out jointly or by Engineering the maintenance work found necessary after joint inspection.
- (s) Wherever needed Zigzag welding work on rusty rails, to be carried out.
- (t) Joint check with traction supervisors for availability of two cross bonds / jumpers in good condition for return rails in single rail track circuits in AC electrified territory and rail bonds effectiveness in DC electrified.

7.9 Signal

- (a) Lamp voltages are not less than 11.2V.
- (b) MECR functions is checked regularly as per schedule.
- (c) Cases of repeated lamp fusing of a signal or particular Make
- (d) Cleaning of inner & outer lenses, housing, signal units and protective wire mesh. Tightness of all adjusting nuts.
- (e) Visual check of insulation of wires and gasket.
- (f) Focusing of signal units and all its aspects.
- (g) Effectiveness of screen earthing.
- (h) Condition of signal post.
- (i) Check infringement of Signal & all its fitting with respect to schedule of dimensions (infringement to be removed, if found).
- (j) Automatic cutting in of the next restrictive aspect When the lamp of one aspect burns out.

7.10 COLOUR LIGHT SIGNAL

- (i) Cleanliness of lenses, housing
- (ii) Lamps are replaced as per extent instruction
- (iii) Lamps are working at 90% of rated voltage
- (v) Holders are having proper tension and fitting

Focusing of signals

7.11

RELAYS

- a Checking & cleaning of dust on relays.
- (b) Effectiveness of anti-tilting arrangement on self-type relays.
- (c) In case of panel using Solid State flasher, its indication on panel is in working condition.
- (d) Accuracy of time delay circuit.
- (e) Overhauling is not more than 10-12 years old for track relays and 15 years for self-type line relays.
- (f) Seals of relays are intact, effective and not tempered.
- (g) Visual inspection of relays. The relay to be checked for defects in respect of – movement of armature and contact carriage, wiping of contacts, arcing of contacts, pitting or charring of contacts, dust accumulation on contacts, electro-plating, corrosion / rusting of components, crack or breakage in components, presence of fungus and ants inside the relay casing, charring of cover near contacts in the case of plug-in-type relays, corrosion of label, absence of tempering of seal, any other abnormal condition.
- (h) Checking the effectiveness of locking of KLCR

7.12

Power equipment, batteries and fuses-

- (a) Battery conditions and year of installation, plan for replacement.
- (b) Battery maintenance SG and voltage.
- (c) Load capacity.
- (d) Redundant fuses are removed.
- (e) Programme switch contacts are made parallel.
- (f) Parallel fuses in relays and other circuits with indication arrangement.
- (g) Charger failure and alarm for TC batteries and other
- (h) Visual checks of power supply equipment, their front panel, fuses and charging of batteries.
- (i) Tightness of battery & load connections.
- (j) Testing of Diesel Generator and Auto Push Button start.

7.13

FUSES

- (a) Checking that all fuses provided are of ND type / 'D' type / 'G' types as per requirement.
- (b) Visual inspection of fuse blown off indications & Replacing with proper fuses if blown off.

7.14

EARTHING

- (a) All earth connections of block earth, Axle Counter, MUX and other equipment earth are intact.
- (b) Earth wire lead is not corroded and is well protected.
- (c) Nut connecting earth wires to electrode are not corroded.
- (d) Any other earth or system earth of electrical is not less than 20 meters away from the equipment earth.
- (e) Separate earth exists for each block.
- (f) Measuring the value of earth resistance of the earthing provided for signaling circuit, improving earth resistance if found > 10 ohms by taking step including as indicated in SEM Para 19.92.
- (g) Keeping records of the earth resistance Measurement and painting its value on earth enclosures / nearest wall.

7.15

BPAC and Axle Counters

- (a) Co-operative reset is effective and for point zone it is from site.

- (b) Resetting of axle counter – analysis, repeated resets and cause thereof.
- (c) Channels voltages are in limit.
- (d) Resetting of MUX and analysis of it.
- (e) Quad cable is terminated on M6 terminals – plan for removing 8-way
- (f) Availability of spares, card, field units and measuring instruments.
- (g) Checking system of spares, put for one work in service.
- (h) Storage of spare cards.
- (i) Axle counter/MUX are provided with better earth through resistance improvement compound.
- (j) Working of trolley protection circuit.
- (k) Outdoor Equipment –
Checking & tightening of all connections & screw couplers on the oscillator / receiver amplifier unit. Observing packing conditions of supporting sleepers and ensuring fittings do not vibrate under train and getting packed if required.
- (l) Evaluator
Checking & tightening screw couplers. Verifying the counting with actual axles of a train. Ensuring Reset switch is sealed & resetting entries tallies with counter.
- (m) **Note** - Interference with power supply, connection of evaluator, oscillator / receiver amplifier and transmitter and receiver coils are likely to cause random counting in the Evaluator and should be done only after ensuring that no train is occupying or approaching the controlled section.

7.16 Cable Testing

- (a) Cable Testing as per maintenance schedule.
- (b) System of monitoring cable testing as per schedule
- (c) Availability of left over spares in existing cables.
- (d) Age and insulation value left.
- (e) Need for replacement of defective cable and quantity.
- (f) Tail cables of all electrical gear are tested as per schedule.

7.17 Signal Failures

- (a) Repeated failure of a gear.
- (b) Repeated and cause
- (c) Broad analysis and input needed for improvement.

7.18 BLOCKS:

7.18.1 General for all types of block instruments

- (a) Locking & sealing.
- (b) Proper working of SM's lock up key.
- (c) The telephone and telephone chord should be proper & in working order.
- (d) Tones of bells are distinct when two or more instruments are provided.
- (e) Instrument is in level.
- (f) Instrument is not due for overhauling.
- (g) Proper condition of electrical and mechanical locks.
- (h) Checking & tightening of all terminal screws, lock nuts and locking screws, and split pins opened.

7.18.2 I - Token Block Instrument - Single Line Neal's

- (a) Token receiver can receive only the token of the correct configuration.
- (b) Effectiveness of 'No Token' lock and handle does not turn to TGT when token indicator shows Red.
- (c) No burr on tokens and free movement of token indicator.
- (d) Token are not damaged / deformed.
- (e) All wiring and the polarity of instruments.
- (f) Locking of pawl and notches in the rack are correctly shaped and square ended.

- (g) Carrying census of working tokens and keeping records in register of Block Instrument & Signal History Book

7.18.3 II – Block Instrument - Double Line

- (a) Checking that LSS cannot be taken OFF without line clear and is automatically replaced to ON when train enters the Block section.
- (b) Checking that the commutator handle is locked first before the "Train On Line" indication appears on the indicator when the handle is turned from "Line Clear" to "Train On Line" position.

7.18.4 III - Token less Block Instrument – Single Line (Push Button type)

- (a) The condition of Block Instruments and are free from mechanical damage, corrosion, etc.
- (b) Push Buttons, Indicators, relays, bell & buzzer all should be in working order.
- (c) Checking that shunting key is released in Line Closed or TGT position.
- (d) LSS cannot be taken OFF without line clear and is automatically replaced to ON when train enters the Block section.
- (e) The Last Stop Signal at the sending station cannot be taken 'OFF' until the receiving station instrument is set to "Train Coming From" condition and the sending station instrument is set to "Train Going To" condition.
- (f) The Line Clear can be granted only when reception signals and the Last Stop Signal are proved at 'ON'.
- (g) The opposing Last Stop Signals of the block section Cannot be taken 'OFF' at one and the same time.

7.18.5 IV- Tokenless Block Instrument - Single Line (Handle type)

- (a) Full deflection of Needle indicator.
- (b) LSS cannot be taken OFF without line clear and is automatically replaced to ON when train enters the Block section.
- (c) Working of all counters. Shunting key is released in Line Closed or TGT position.

7.19 LEVEL CROSSINGS

- (a) The proper working of telephone.
- (b) Checking that Checking of audiovisual & approach warning.
- (c) Checking and cleaning of traffic lights, warning bell, boom light and operating panel.
- (d) Parallel operation and opening of gate.
- (e) The integrity of interlocking & locking of gate boom.
- (f) Proper functioning and interlocking of Emergency Key Chain.
- (g) Availability of gate working instructions in vernacular language & gate working diagram.
- (h) Visual checking, oiling, greasing & graphing of gate mechanism, all moving parts and gate locks.

7.20 MECHANICAL SIGNALLING: -

7.20.1 MECHANICAL POINTS

- (a) Cleaning and lubricating of moving parts. Also checking point chairs are cleaned regularly by Permanent way staff.
- (b) The switches are housed properly against stock rail and checking spring on the switches is equally in the normal & reverse positions.
- (c) The ends of plunger of the lock and notches are square.
- (d) Tightness of Bolts & Nuts and arrange for tightening /replacing missing bolts and nuts of Flexible stretchers. Slack / Loose / crack fittings to be replaced.
- (e) The points for obstruction test with 5 mm test piece & it shall not be possible for the lever working facing point to be latched & point get locked.
- (f) The gauge of the points, opening of the switches and squaring and packing condition of sleepers under gauge tie plate and slide chair-fixing bolts.

- (g) Visual checking regarding the condition of switches, sleepers, and gauge tie plate and condition of insulation of insulated rod joint.
- (h) Checking the cross slides for any undue play. Also checking the detectors are fixed rigidly.
- (i) Lock bars are straight and examining the driving pieces for looseness and lost motion.
- (j) The lock bar clips and stops for tightness and lubricating the bearing of clips. The broken wire locks & test for easy-movement & also checking the point mechanism is butting against its stop in normal & reverse.
- (k) Lock Bar - lock bar lie 38mm below the top of the rail and flush with top of the rail, when lever is in mid stroke position.
- (l) Protecting covers of all mechanisms and detectors shall be kept in good condition and securely fixed.
- (m) Checking - that no two similar wards exist for conflicting trains movements for hand plunger lock, lever lock.

7.20.2

MECHANICAL SIGNALS

- (a) The condition of the post, fittings, level of arms and the posts are properly plumbed and lubricate working parts.
- (b) The founts of signal lamps are in good condition. Check for damaged flame guard, leaky founts and broken burners and non-standard wick. To avoid poor visibility
- (c) The focusing of signals.
- (d) Where signals are slotted, any of the controlling agencies shall be independently capable of returning the signal to 'ON'.
- (e) When a Warner arm is placed below a Stop arm, the slot lever shall be installed so that the Warner cannot be taken 'OFF' unless the Stop Signal above is 'OFF'. When the Stop Signal is returned to 'ON' the Warner shall return to 'ON'.

7.21

SIGNAL MACHINE

- (a) The machine is in good condition, free from dirt, rust and dust, peeling off electroplating.
- (b) All the contacts for cleanliness, freedom from pitting, proper adjustment, the cleanliness and smoothness of the commutators.
- (c) Positive test - Take off signal, observe latching without clutch slipping.
- (d) Negative test – Near 45 degrees & near 90 degrees before hold off device engages, cut off feed –signal should return to 'ON'.
The position of the arm is correctly repeated on the arm indicator, if provided. Lowering is not more than 50 degrees or raising is not more than 90 degrees.

7.22

SIGNAL REVERSERS

- (a) Changing Polarity to the coil of reversers and checking that coil core is not retaining magnetism, reverser is not holding when de-energised.
- (b) Testing that Signal returns to ON when any of the Control is put back.
- (c) Signal does not come to OFF without electrical Control or by manually or by pulling the wire at the signal.

7.23

Lever lock and circuit controller

- (a) Proper adjustment of bands and make in proper position.
- (b) Serrations are holding bands and nut/split pin are intact.
- (c) Lock is effective and releases at the required position.

7.24

ELECTRIC KEY TRANSMITTERS

- (a) Seals are intact.

- (b) Cover is secured.
- (c) Wiring is in good condition & properly protected.
- (d) It is not possible to extract the key transmitter once inserted and locked, unless the control from the other end is received.
- (e) It is not possible to release the key by jerks or any other irregular means.
- (f) The key of one transmitter/key lock does fit in any other key transmitter / key lock at that station except its counter part.
- (g) It is not possible to insert & operate the key transmitter / key lock by any key other than its own.

7.25 SM'S SLIDE & CONTROL FRAME

- (a) Effectiveness of SM's lock slide to lock all the slides both ways and properly sealing & locking of frame.
- (b) Complete overhauling of control frame and mechanical interlocking and then testing.

7.26 CABINS / LEVER FRAMES

- (a) The sealing and locking of interlocking tray, resetting handle box, etc.
- (b) From the operator any defect or discrepancy of the gears.
- (c) The signals are visible from place of operation.
- (d) Bolts and nuts for tightness and opening of split pin.
- (e) Checking the foundations is rigid.
- (f) All badly worn out pins is replaced.
- (g) Operating levers to check that full stroke is transmitted.
- (h) Cabin diagram; pull chart, station working instructions, maintenance's program up to date and warning board.
- (i) The installations as per current plan.
- (j) The lever frame, whether it is due for overhauling.
- (k) Carrying locking Test against interlocking table and yard diagram.
- (l) Attending to slack locking and if exceeds limits, overhauling shall be taken.
- (m) Carrying complete overhauling of lever frame & interlocking

7.27 Double Wire Compensators

- (a) When the transmission is at rest, both the grips of Locking Pawl are disengaged with the teeth of Ratchet Rod. The weights must be floating freely and in level with each other. During lever operation, checking that they engage with the Ratchet Rod Teeth.
- (b) Both weight levers move independently and Adjusting weight levers in such a way that during the hottest period of the day, the lever must not reach the breakage mark on the ratchet rod.
- (c) Point, lock or detector lever clutch does not trip after completion of lever movement.
- (d) With the insertion of a 5 mm test piece between the switch and stock rail at 150 mm from the toe of the switch, it shall be tested that the signal governing the movement over the point is not cleared.
- (e) The tripping of the clutch shall be tested by means of an auxiliary lever and adjustment of the coupling spring checked. To assist trailing or tripping of the lever clutch in case of broken wire, the wedge surfaces of coupling pawl and rope drum shall always be kept clean and slightly greased

7.28 LEVER LOCK AND CIRCUIT CONTROLLERS

- (a) Tightening of all bolts, nuts, terminals & locking screws.
- (b) Checking the cleanliness & proper adjustment of contacts and contacts are not making other than the required position.
- (c) Cleanliness and lubrications of all working moving parts, the forced drop feature of the lever lock, and the notches are square and true.
- (d) Wiring is dressed properly and away from moving parts, Sealing & locking is intact.

(e) All the split pins are split out.

7.29 ARM & LIGHT REPEATERS

- (a) Circuit controllers are rigidly fixed to signal post and its arm is directly actuated by signal arm.
- (b) Wiring is in good condition and properly secured.
- (c) Correct functioning of ALR and ensuring that no conflicting indication is available

**7.30 Inspections of every S&T installation :-
Maintenance**

- (a) Maintenance by ESM is regular and record kept in SMC and site book
- (b) Sectional SI's inspections are regular and record kept.
- (c) Quarterly inspections by SSE and monitoring system by him to ensure quarterly inspection.
- (d) P-6 Schedule by SSE and corresponding. Disconnection memo of adequate duration.

7.31 Inspection of S&T installations as per quota of inspection given to Sr.DSTEs / DSTES / ASTEs :

- (a) Every Month - all officers to carry out inspection and corrective actions to taken.
- (b) All S&T installations in respective jurisdiction of Sr.DSTEs / DSTES / ASTEs to be covered minimum once in a year.
- (c) Inspection of Points, Signals, Track Circuits and other Signalling equipments.
- (d) Points : Inspection of all the functional parameters of points to be completed by Supervisor in-charge once in six months and testing of point motor, cable in a year.
- (e) Signal : Inspection of all the functional parameters of signals to be completed by Supervisor in-charge, minimum once in a six months and annual testing of tail cable, checking of infringement.
- (f) Track Circuits : To be inspected by Supervisor in-charge, minimum once in a six months and axle counters in 3 months.
- (g) Inspection of other signaling equipment's function to be completed by Supervisor in-charge, minimum once in six months.

7.32 Joint inspection of points, crossings and track circuits.

- a) All points and crossings to be inspected jointly by Supervisor of Engg. & S&T every quarter & Track Circuits every six months. Follow up action to be taken for compliance.
- b) Quarterly schedule is followed.
- c) Deficiencies are not carried forward.
- d) Major deficiencies yet to be attended like worn out tongue rail, stock rail, machine sleepers out of square, missing stock bolts and loose packing.
- e) Availability of pad and liner, condition of sleeper.
Drainage system.

7.34 Material availability:-

- (a) Critical stores for regular maintenance
- (b) Torches and cells.
- (c) Tools and measuring instruments.
- (d) Cotton waste, signal bulbs, lubricating and gear oil.

7.35 SSE's Depot

- (a) Safety meetings are schedule every month and all staff attended.
- (b) Signal lamp testing arrangements for 3 hours.
- (c) Material shortage, stock / non-stock items and storage system.
- (d) Staff grievances.
- (e) Competency certificate cum training history book is with each maintainer as issued

- by SBI Training school
(f) Staff is categorized as A, B, C category and 6 monthly review done.
(g) Staff is not due for refresher course.

7.36 Station Staff-

- (a) Competency of operation is available.
(b) Setting of point against stabled/stationery load.
(c) Prescribed practice is followed for treating a point/signal defective till a written advice for its rectification from S&T staff is given.
(d) Point is inspected by SM after its failure.

7.37 SWR/SWRD

- (a) SWR matches with SP.
(b) SP matches with the last work commissioned.
(c) Counselling of station staff is done for the late update of SWR.

7.38 Loco Pilots lobby-

- (a) Signal defects are attended and the remarks are put in
(b) Repeated cases of defects reported.

7.39 Documents

- (a) Completion documents are available at site.
(b) Modification, if any done, it as per approved circuit and approved diagrams for that are available.
(c) All documents as per list are available.

7.40 Communication Network for Operation & Safety :

- (a) **Proper functioning of emergency sockets**
Inspection and checking to be carried out by supervisor in charge, minimum once in 3 months to ensure proper functioning. Monthly joint check by traction & Telecom. Supervisors.
- (b) **Functioning of VHF sets between Guard and Loco Pilot**
Checks to be conducted by supervisor in charge, minimum once in 3 months at lobbies / loading, unloading points to attend defective sets and batteries. Monthly joint checks by Telecom. Supervisors and lobby in charge.
- (c) **Control, Block & Gate Communication**
Check of radio patching by Supervisor in charge to be conducted minimum once every month, to avoid all communication failures.
- (d) **Communications**
- o Availability of INMARSAT, 2 per division and 2 at Zonal HQ to be ensured by Dec.'2003 as per Board's directives. Checks by Supervisor in charge minimum once in 3 months, to ensure proper functioning of IMMARSET terminal.
 - o One ISD connection at each zonal and HQ office.
 - o Specific DOT telephone number for Railway accident information.

CHAPTER VIII

SHORT CUTS TO BE GUARDED AGAINST

The department-wise short cuts / irregularities are listed below:- These are to be guarded against.

1. OPERATING

i) Station Staff

- Non-exchange of signals by Guards with the Crew of Passing trains.
- Non-exchange of Signals by SMs/ASMs with train crew of passing trains.
- Non-exchanging/faulty exchange of Private numbers by SMs/ASMs with Switchman and improper exchange of Private numbers with Gate Keepers of Level Crossing Gates by Switchman. Private numbers are not exchanged in proper sequence and time with concern station and cabins and L.C. Gates.
- Derailing switch points indicator not being lit up during night.
- Over aged detonators not being replaced.
- Non-securing of vehicles stabled at stations.
- Improper maintenance of private number sheets.
- Improper maintenance of Signal failure registers.
- Improper maintenance of weather warning register.
- Non-suspension of lock and block instrument after failure of advance starter on first occasion.
- SMs/ASMs not personally ensuring clamping of facing points before piloting in of coaching trains.
- Not clamping of Trailing end of motor points in case of non signalled movements.
- Handing over Pilot in & Out Memo before ensuring correct setting of route with clamp and pad locking.
- Not supervising clamping of points by the SM on duty in case of piloting In & Out of coaching trains.
- Non-observance of LV Boards of through passing trains by station staff.
- Use of non-standard LV boards by Guards.
- Station staff not counselled of contents of safety circulars but their signature obtained on the acknowledgement sheet.
- Non-disposal of used P. N. Books by SMs/ASMs as per instructions.
- Motor Trolleys are being allowed by sectional controllers /ASMs following goods trains and even after 18.00 hrs following goods trains.
- Non acceptance of disconnection memo by sectional controllers/SM/ASMs from ESM.
- Allowing of train into block section on improper line clear form.
- Inspections by Supervisors are not result oriented. Nothing unusual / deficiency noted repeatedly.
- Non-maintenance of P.N. Books in Safe custody.
- Safety equipments not kept handy.
- Allowing goods train without C&W examinations (BPC).
- By passing of TXR points, and not offering of rakes for C&W examination.
- Non-observance of proper procedure for issuing of disconnection/Reconnection memo. Allowing S&T staff to attend a failure without issuing Failure memo.
- Handing over Relay Room Key to S&T staff before signing of Relay Room Key Register and without taking private number from Signal Control (SI control).
- Allowing S&T staff to interfere with Relay on the plea of saving the failure and detention.

- Allowing S&T staff to repair / renew signals and point gears – violation of SR 3.51.04
- Receiving RE-connection Memo without testing the S&T gears – Violation of SR 3.51.04.
- Trains are being Piloted 'IN/OUT' without making corresponding entries in the Signal failure register.
- SWRs/Gate Working Rules not corrected / updated.
- Staff overdue PME & Refresher Course.
- Leaving duty without being properly relieved – Violation of GR 2.08
- SMs do not check SM Diary, Caution Order Register, Control Order Book properly at the time of taking over charge – Violation of GR 5.01
- Allowing Shunting operation without issuing Shunting Authority.
- Controlling shunting for other movement without withdrawing Shunting Authority.
- Slide collars are not placed on SM's Slide for the blocked lines.
- Lever collars are not placed on concerned levers for the blocked lines.
- Routes are not set against the blocked lines.
- Handling of block instruments by persons not authorized to do so – Violation of GR 5.01(4).
- Not testing of Emergency cross over daily.
- Not checking the correct setting of points physically at the time of shunting operation.
- Not following the Bell Code for signalling of trains – Violation of GR 14.05.
- Not exchanging of Identity for obtaining Line Clear in case of Block instrument failures.
- Non returning Shunting Authority by the Loco Pilot after completion of shunting.
- Signing on Assurance Register without thoroughly reading the SWRs.
- Attaching of banking engines without coupling of brake pipes.
- Banking engines are attached to push is allowed to return back from Mid-section without reaching the next station.
- Preparation of train passing records before hand.
- Not providing light on the BSLB boards during night time.
- Not ensuring the first train number to which the caution order is issued from the notice station after repeating imposition of a new caution order.
- Panel & Block instrument is being operated by unauthorized person.
- Panel is not locked by ASMs while leaving panel for essential emergency purpose locking arrangement exists.
- Shunting instructions at road side station are issued much in advance to actual shunting. Later any change in shunting programme is relayed through Walkie-talkie where as instructions exists for communicating shunting programme to Guard and Loco Pilot in writing.
- Guard and Loco Pilot are not reporting to SM on duty to collect shunting authority and to understand the programme clearly but shunting authority is handed over to guard and Loco Pilot by TPs.
- During single line working the detail message is not relayed to adjoining station.
- Section clearance certificate is not obtained from Loco Pilot & Tower wagon Loco Pilots after returning from blocked line on block ticket.
- During shunting in station yard hand operated points are not clamped and padlocked.
- While stabling vehicles at road side stations hand brake is not applied.
- Guards not undergoing breath-analyzer testing.
- Station staff do not exchange signal both sides.
- Extensive use of Walkie-talkie sets has resulted in adoption of the following short-cuts
- Not exchanging of signals between the Loco Pilot and Guard.
- Communicating change in programme through Walkie-talkie sets without withdrawing the Shunting Authority.

- Advising Loco Pilots to pass defective signals at ON without issuing a proper authority.
- Loco Pilots very seldom use the P.T. set for communicating with the TLC.

ii) **Gate Keepers**

- Exchanging of Private Numbers before physically closing the gates.
- Keeping non-interlocked gates in open condition without exchanging private numbers with the SM on duty. – Violation of SR 16.03.03(b)(iii)(a).
- Opening of Gates before actual arrival of train for which the gate was closed.
- Failure to protect the gates in case of obstruction at the gate.

iii) **Loco Loco Pilots**

- Not checking the correct BPC & Authority to proceed before starting.
- Not checking proper setting of route before starting.
- Not testing the brake power at the first falling gradient.
- Not ensuring smooth start & stop and full release before notching up to prevent train parting.
- Not whistling intermittently while approaching level crossing gates and curves.
- Tri-colour torches are often kept defective and ordinary torch fitted with green glass are used for signal exchanging.
- Technical and Safety Circulars are not acknowledged at the Crew Booking points.
- Not checking availability of different safety items in the engine.
- Not turning up on duty well in advance of TO time as per stipulation.
- Loco Pilots/Asst. Loco Pilots do not often look back on curves and exchange signals with Guards.
- Loco Pilots/Asst. Loco Pilots do not repeat signal aspects pointing at the signals loudly.
- Loco Pilots/Asst. Loco Pilot's record books are often not updated and do not carry in course of their duty.
- LIs seldom counsel the other division Crews working in their divisions.
- Shunters are not counselled by the LIs.
- Loco Pilots very often do not change cabs in Electric Engine in course of shunting operation.
- Leaving of MEMU/Engines energized but un-manned.
- Not stopping of Engine 20 meters away while attaching slip coach / engine on coaching train.
- Loco Pilots found over due Refresher course.
- Non-observance of speed restrictions by the Loco Pilot while negotiating loops at stations and speed restricted locations.
- Loco Pilots not insisting for traffic department to show Green Hand Signal at foot of signal while trains being 'piloted out'.
- Over-aged detonators not being replaced by Loco Pilots.
- Loco Pilots not exchanging signals while on run.
- Failure to switch 'ON' red marker light in rear cab while working a light engine or banking engine.
- After starting from originating station, Loco Pilots are not doing the break test at the first down gradient.
- Driving from rear cab during shunting.
- Non-observance of gate rule after getting caution order from Station Master that level crossing gate in mid-section is in open condition / unmanned.

- Starting the train hoping to get the pilot memo at a place ahead or, accepting an authority/caution order on run.
- Loco Pilots are accepting Private No./ID No. through VHF and starting the train without getting proper authority.
- When getting total loss of tractive effort during cab changing Loco Pilot simply removing the fuse CCLSA and not recording in the loco log book.
- Non recording of loco failures in the Loco Log Book and non reporting of failure message to PCR / TLC.
- Not repeating signal aspect in proper way like condition of the signal / aspect of signal but only saying OK/Yes/Right.
- Failure to report conflicting signals and other irregularities in the defective signal register while signing off.
- LIs are not conducting foot plate inspection on regular basis with their assigned Loco Pilots and counselling in Crew Lobby only. (For the purpose of record – one foot-plate inspection is completed by “signing on” and “signing off” with the Loco Pilot. It is not just riding in the cab of a locomotive for a short stretch of a few block sections.
- Acknowledgements of Asst. Loco Pilots are not being taken in safety, technical and general order book.
- Loco Pilots & Guards are not exchanging signal before starting at a station instead are communicating only on Walkie-talkie.
- Signal aspect and line nomination is being asked on Walkie-talkie by Loco Pilots.
- Trains started with pressure creation by faster pumping method. In such cases pressure is created but without full release of train.
- Trains are accelerated immediately after braking without waiting for release for brakes.
- Diesel Loco with low water are worked by filling of raw water.

iv) Miscellaneous

- Uneven loading – Goods Supervisors posted at loading points do not supervise the uneven loading of wagons as per IRCM, Vol.II, para – 1507 – 1511.
- Excessive loading of parcels in the SLR causing friction of SLR floor with wheels.
- Inadequate supply of fire extinguisher in the Pantry Car and Pantry Car staff not trained in use of fire extinguishers.
- Gas cylinders are not kept in the LPG chamber in Pantry Cars, Pipe line connection is not provided to connect the LPG cylinders kept in the chamber with the ovens.
- Pantry cars used without Explosive clearance for retro fitment of LPG cooking facilities.

2. SIGNAL AND TELECOM

- Mobile Radio Sets not working properly.
- Derailing Switch Indicator not properly oriented.
- Relay Room keys taken without following proper procedure.
- Switches having excess throw.
- Lock Bars not properly resting on stoppers.
- Double locking arrangement of Relay Rooms flouted. Double locking arrangement existing in relay rooms but relay room keys of S&T Dept. is kept in ASMs key box.
- Telephone at Level Crossing Gates not working.
- Stretcher bar found welded. Arc welding on stretcher bar prohibited.
- Repeater Signal / Outer Signal not working.
- Distant signals remaining non functional for a long time.
- Maintenance of Point & crossings is attended to avoid Point failures, Piloting In & Out of trains in collaboration with SMs without asking for disconnection.
- Testing & repairing of cable insulations without asking for disconnection.
- Opening of Block Instruments without asking for disconnection.
- Short circuiting of Track Circuits in water logged areas.
- Detection (EPD) is not set to required standard of 5mm gap to avoid failure of Point Indication due to loose packing.
- Holding bars located far off from cabins are kept disconnected to avoid failure.
- Using of temporary wiring in Relay racks to bypass faulty relay.
- Tilting of shelf type relay to get required pick up.
- Not fixing & shelf type relay to get required pick up.
- Gears are adjusted to maximum stroke instead of replacing the slack gears.
- Lock pawl is kept permanently tied up to prevent the Lever lock from falling in notch.
- Non checking of earthing & combining of earthing of different instruments.
- Track Circuits are directly fed from power supply without using a battery.
- Energising of SR, 3-position Relay by external feed.
- Positive boom locking is not maintained to avoid failure of level crossing.
- Testing points & signals in face of an approaching train.
- Not fixing of reflectors on sighting boards, distant signal posts and level crossing barriers.
- After reflection of signal gear, the rectification memo is not submitted by most of the signal maintainers.
- Failures are attended without receiving failure memo.
- In case of boom hitting at LC gates to avoid piloting in / piloting out interlocking arrangement is disabled and signals are dislinked with locking arrangements.
- Joint inspection of signals by the committee of LIs, DTIs & SIs is not functional
- Joint inspection of points and crossings by PWI & SI is not in fact joint but done separately.
- Signal masts located on right hand side are not reviewed for relocation.
- Data loggers do not generate exception reports, which could help in counseling Loco Pilots and SMs.

3. CIVIL ENGINEERING
i) Level Crossing

- Road Bump, Sign Boards, height gauges, lights of gate lamps, warning bells are not properly maintained.
- Check rails of standard type not provided.
- Pipes for fixing banner flag and H.S.Lamp not provided.
- Gate keepers' equipments deficient and not maintained properly.
- Gate barriers closed but not inter-locked during passage of train
- Gate barriers can be lifted after gate signal is lowered.

ii) At Stations

- Points and Crossing not maintained properly.
- Joint inspection by SI & PWI not done regularly.
- Points giving excess throw and having worn out tongue rails.
- Welding on crossing noses and wing rails done improperly.
- Extra shoulder width of ballast not provided in turn- in curves.
- Cross over rail gauge face not lubricated.
- Gangs working at site without proper protection.
- Poor drainage system at Station Yards.
- Loop lines not maintained properly.
- Scanty ballast on loop line and station/yards.
- Gauge tie-plates under crossing deficient.
- Unserviceable wooden sleepers in points and crossings.
- Incorrect fixing of stretcher bar.
- Rail joints not packed properly. Gap not maintained properly.

iii) Mid Section

- Check rails not provided with 6 curves
- Released materials lying at site in secured position.
- Excess ballast stacked near rail
- Sighting tell-tale marks to caution Loco Pilots during fog/smog not marked during foggy seasons.
- Bad Running due to non-consolidation after track renewal works.
- Deficiency and dropping of keys noticed.
- Curve alignment not maintained properly.
- Rail closures not covered under speed restrictions.
- Rail closures used on joints without proper securing.
- Only one or two fish bolts used in place of four.
- Wooden blocks not placed below 10 year old joints with JFP
- Gas cut rails and Gas cut closures are used frequently – Violation of IRPWM Para 253 (4).
- Quality of through packing not good.
- Proper track protection not done at work site location – Violation of GR 15.09
- Proper caution order not imposed before commencing of work on track – violation of SR 15.08.10.
- Temporary metallic jumper not used while cutting of running rails or discontinuing of rail joints for repairs etc. – Violation of TRPWM Para 284.
- Fixation of Engineering Indicators – Caution Indicators, Speed Indicators, T/P and T/G Board are either not fixed or not provided at correct location – Violation of SR 15.09.02.
- Material Trolley / Rail Dolly working is done without informing the SM and without ensuring proper protection – Violation of SR 15.27.05.
- Rail Dolly / Lorry working done in Track Circuit Zone without informing of SM on duty resulting signal failures – Violation of SR 15.27.05.

- Working of rail dolly is not permitted in sections having gradient steeper than 1 in 200. In absence of traffic blocks for diploirry working rail, rail dolly working is resorted to in sections having gradient steeper than 1 in 200.
- Structural bond on electric masts are not reconnected after Track Machine work – Violation of IRPWM Para 282(3)(c).
- Patrol Chart not provided with the Patrolmen as well as the concerned SMS – Violation of SR 15.05.04.
- Not supplying of Proper equipment to the Patrolman – Violation of SR 15.05.09.
- Compliance of defects recorded in Joint Inspection of Points & Crossings Register not reflected in the Register in time – Violation of JPO.
- Non-availability of Proper Safety Equipment in Track Machines – Violation of IRTMM Para 4.4.1.
- Proper ramp not provided after TRT and PQRS working of track.
- Contractor Labour working without presence of Railway Supervisor at site Violation of IRPWM Para 826.
- Contractor Supervisors deployed at work site without a Competency Certificate of AEN and Safety Training of ZRTC / SNY – Violation of IRPWM Para 826
- Welding of running Rails being done without taking Traffic Block.
- Maintenance /Repair work of track in Track Circuiting area being done without presence of the S&T Staff.
- Maintenance / Repair work done at points and crossings areas without presence of the S&T staff.
- Careless unloading of engineering materials like Sleepers, Rails etc. damaging other fittings like OHE masts etc.
- Fouling boards dislodged during track maintenance work not replaced in its proper place.
- Provision of non-standard Fouling boards.
- Not fixing of required number of fish bolts at the fish plated joints.
- Deficiency of Competency Certificate and Counselling of the Track Machine Operators.
- At Engg. Works site banner flag and detonators not placed at prescribed distance.
- Gateman keeping 'C' class LC gate (non interlocked) half open though it should be kept normally closed road traffic.
- During Mid Section block the PWI does not take ID covers from SMs for their identification.
- While welding, sufficient cooling is not done due to insufficient block .
- The process of one rail joint welding needs at least 11/2-hour traffic block to complete all its operations. In absence of sufficient block, the traffic is passed over the welded joint before giving sufficient time to either grinding or cooling.
- Distressing of LWR is being done in 2 parts instead of SEJ to SEJ as supposed to be done.
- The speed restriction boards provided do not tally with actual caution orders issued to Loco Pilots.
- TP/TG boards are missing at Engg. Works Sites.
- The prescribed distance of speed restriction caution boards are not provided.
- Painting not done under sleepers on Bridge girder.
- Non standard sand hamp provided at stations.
- Patrolmen not exchanging diary or obtaining signature of SM during their patrol. Signatures are taken subsequently.
- Trackmen working in the electrified territory without insulated gloves.
- The loading siding lines cluttered with ore/materials resulting frequent derailment.

4. ELECTRICAL (TRD)

- Practice of providing discharge/earth rod on contact wire during power block working: Discharge rod not fixed on registration tube and the rod not tied with mast.
- Provision of additional earth rod whenever earth rod whenever zone of a particular working gang exceeds one kilometre.
- Staff engaged in work without helmet and hand gloves. Use of safety tools (eg. Protective ropes) should be ensured.
- While working on ladder not wearing tool jacket to avoid supply of spanner and tools by throwing from below.
- Operation of isolator switch not done by using hand gloves and gumboots.
- Isolator operation on load is prohibited as per ACTM. Isolator opened on load for saving time of Power block as well as to minimize the no-tension section.
- Tower wagon movements by verbal order are to be avoided.
- PTW on equipment / elementary section should be issued after receiving confirmation of the concerned equipment / switches.
- Non provision of cross bonds at the level crossing gates.
- Non switching off OHE on the other line in case of tripping of OHE on one line in double / multiple line section.
- Tree trimming exercise not carried out by ensuring 2 m safe zone or under power block condition.

5. ELECTRICAL (GENERAL)

- Sealed E.L. Boxes are not loaded in the SLRs of coaching trains at the originating stations.
- Non-standard fuse is used in place of proper rating HRC fuses.
- Temporary connection is given in case of failure of AC coach by pre-cooling cable instead of introducing IVC system.
- Coach with defective TL equipment, EFT (Emergency Feed Terminal) from adjacent coach is provided without isolating alternator, battery and reduction in load of defective coach.
- Earthing of the supply system is not checked as per schedule.
- Battery topping done with tap water.
- Improper screwed nut-bolt fittings locked by welding.
- Standard fuses replaced by handmade fuses in electric circuits.

6. ELECTRIC LOCO

- P1 & P2 pressure switches are not being calibrated on the same test bench on which pressure gauges are being calibrated.
- Safety chains for SL are not provided in place of safety clamps.
- Cleaning of 'V' cone not carried out.
- Unscreened sand filled in sanding apparatus.
- Auto drain valve not fully overhauled, as kit is not available.

7. MECHANICAL

- TXR uses literate hand to examine rolling stock instead of going himself.
- Defects and deficiencies of wagons noticed by TXR not recorded properly.
- BFR loads are not provided with stranchion rods.
- Maintenance Instructions of rolling stock not available at train examination point.
- Air Compressor defective / not operated for want of power.
- Trains allowed with defective brake gear assembly such as deficient brake blocks, worn out brake shoes, bent brake and pull rods and deficient safety brackets.
- Engineering keys used in place of Knuckle pin in CBC.
- Trains allowed with inadequate brake power. Deficiencies of Distributor valve, Control rod, SAB, brake blocks and pull rods.
- Trains allowed with titled axle box, dropping buffers insufficient springs and deficient 'Load Empty Linkages'.
- Stop Board and Danger Lamp not placed on both side of the train during C&W examination.
- Welding work being done without earthing connected to avoid damage on bearings.
- Not recording the deficiency of Passenger Amenity items in the DRS Card jointly with RPF staff.
- Not ensuring packing and securing of loads while certifying the load inside the Steel Plant.
- Mixing up of different greases during topping up in sick lines.
- C&W staff not informing SM or Guard while attending trouble shooting on line.
- Loco Pilots & Guards are not ensuring full vacuum before starting vacuum train.
- Helmets, gloves and shoes are not used by maintenance staff.
- Excessive piston stroke or non-gripping in CASNUB bogie:- Rather than adjusting the 'A' dimension, end pull road is adjusted or one siphon pipe clip is put at the control rod end.
- Non-standard piece knuckle pin is used with welding a washer on top.
- The CBC locker or toggle is provided with counter weight by welding.
- MS plate is placed at CBC striker casting with welding to compensate for sank wear.
- CBC being uncoupled not by lifting but by gas cutting wagon floor to take out locking pin.
- Log books of major M&P not maintained as a result fuel accountal not kept properly.

An alert person is best Safety Device
“Be Always Alert”

