

**CHAPTER XVII**

**WORKING OF TRAINS ON  
ELECTRIFIED SECTIONS OF  
RAILWAYS**

**17.01. Applicability of General Rules.-** All rules referring to the working of trains shall also apply to the electrified sections except as otherwise provided in the rules contained in this chapter.

**SR 17.01.01.-** (a) All Subsidiary Rules which control the movement and operation of diesel trains shall apply to the movement and operation of electric trains, except as otherwise provided in these rules.

(b) All officials connected with movement of electric rolling-stock shall have a thorough knowledge of these rules. They shall also be responsible for ensuring that staff working under them are thoroughly conversant with the instructions relating to their work and the correct procedure to be followed under normal conditions as well as in an emergency

(c) Every railway employee, supplied with these rules shall make himself thoroughly acquainted with the rules and shall be held responsible for knowledge of and compliance with them. Ignorance of the rules will not be accepted as an excuse for non-compliance.

**17.02. Special definitions applicable to this Chapter.-**  
In these rules, unless the context otherwise requires.-

(1) "Electrical way and works" means the traction installations including overhead equipment and other connected works provided on the electrified sections of the railway;

(2) "Feeding post" means a supply control post, where the incoming feeder lines from grid sub station are terminated;

(3) "Neutral section" means a short section of insulated and dead overhead equipment which separates the areas fed by adjacent sub stations or feeding posts;

(4) "Power Block" means blocking of a section of line to electric traffic only;

(5) “Supply control post” means an assembly of interruptors, isolator switches remote control equipment and other apparatus provided for controlling power supply to overhead equipment. It includes feeding posts, sectioning and paralleling posts, sub-sectioning and paralleling posts and sub-sectioning posts;

(6) ‘Tower wagon’ means a self-propelled vehicle which is used for the maintenance and repairs of overhead equipment;

(7) “Traction Power Controller” means a competent railway servant who may for the time being be responsible for the control of power supply on the traction distribution system.

**SR 17.02.01.-** (1) “Assistant Loco Pilot” means the duly certified Assistant Loco Pilot of a single or multiple unit train or of an electric engine.

(2) “Brake Valve” means a valve which operates the automatic brakes of the train.

(3) “Conductor’ means a body or substance which offers a low resistance to the passage of an electric current.

(4) “Phase Conduct’ means a conductor which carries current to the traction overhead equipment.

(5) ‘Return Conductor’ means conductor which carries return current from the tracks to the Sub-station.

(6) “Dead Equipment’ means any electrical equipment which is not electrically alive.

(7) ‘Dead Man’s Handle” means an emergency safety device fitted in the handle of a Master Controller which, when released, automatically cuts off the supply of electrical energy to the traction motors, and applies the brakes.

(8) “Distribution System” means a system of electrical equipment by means of which electrical energy in the form of alternating or direct current is distributed over a given area.

(9) “Traction Power distribution System” means a distribution system provided for traction purpose. This is also referred to as “Power distribution system”.

(10) ‘Motorman” means the duly certified Loco Pilot of an Electric Single or Multiple Unit coach (EMU).

(11) “Driving Trailer” means a coach which has a driving compartment and which is not a motor coach.

(12) ‘Earth” means the conducting mass of the earth or of any conductor in direct electrical connection therewith.

(13) “Earthed” or ‘Connected to Earth” means connections with the general mass of earth in such a manner as to ensure at all times an immediate discharge of energy without danger.

(14) ‘Earth” for the purpose of the overhead equipment only, includes the track return circuit and the structures supporting the overhead equipment, provided such structures are connected to “earth’ or track return.

(15) “Electrical equipment” means any apparatus which is used for generation, transmission or utilization of electrical energy.

(16) “Feeder” means a conductor connecting (a) a generating station with Sub-station or feeding point, or (b) a Sub-station with a feeding point.

(17) “Feeder” also means a conductor connecting a supply control post to a grid Sub-station and a supply control post or switch gantry to a feeding point.

(18) “High voltage” means a voltage which under ordinary working conditions may exceed 650 volts.

(19) “Voltage” means the difference of electric potential measured in volts between any two conductors or between any part of either conductor and the earth as measured by a suitable voltmeter.

(20) “Independent Air-Brake Handle” means a removable handle controlling the independent air-brake apparatus of electric engines.

(21) “Insulator or Insulating material’ means material which offers relatively high resistance to the passage of an electric current.

(22) “Live Equipment” means any electrical equipment which is electrically alive.

Electrical equipment is alive when a difference of potential exists between it and earth or when it is connected to another conductor or circuit in which such a difference of potential exists.

(23) “Master Controller” means a controller in the driving compartments of electric engines, motor coaches and driving trailers, which is not included in the main circuit of the controlled motor or

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motors but which operates other controllers or contractors by means of a control circuit, thereby controlling the supply of electrical energy to the traction motors.

(24) “Motor Coach” means a coach equipped with traction motors and with the necessary control and power apparatus for operating them.

(25) “Multiple Unit Train” means a train consisting of two or more single unit trains coupled together and operated as one train.

(26) “Off Position” means the position of the reversing handle whereby a Master Controller is locked “Off”, and whereby the dead man’s handle, if provided, is rendered in effective.

(27) “Overhead Equipment” means the electrical conductors over the tracks together with their associated fittings, insulators and other attachments by means of which they are suspended and registered in position.

All overhead electrical equipment, distribution lines, transmission lines and feeders may be collectively referred to as overhead lines’

(28) “Bond Impedance” means a bond, installed by S & T Deptt. which provided a low impedance path for the traction return current and relatively high impedance path for track-circuit current.

(29) “Bond structure” means a bond connecting a traction mast, structure or support to a rail by a mild steel strip of approximately 200 sq. mm section.

(30) “Pantograph” means a collapsible device mounted on and insulated from the roof of an electric engine or motor coach and provided with a means for collecting current from the overhead equipment.

(31) “Permit-to-work” means a form of declaration signed and given by an authorised person to a person incharge of work to be carried out on or adjacent to any electrical equipment, for the purpose of making known to such person exactly what equipment is dead and earthed and safe to be worked on or adjacent to.

(32) “Rail Bond” means an electrical connection across a joint in or between adjacent lengths of rail.

(33) “Bond Continuity” means a rail bond used for maintaining continuity of the rail return circuits at points and crossings.

(34) “Bond Cross” means a rail bond used for connecting together two rails of a track or rails of adjacent tracks.

(35) “Bond joint” means an electrical connection across a joints between two adjacent lengths of rail as part of the track return.

(36) “Reversing Handle” means a handle which control the forward and reverse running of the tractor motors and is fitted in such a manner that it can only be removed when the Master Controller is locked ‘off’.

(37) “Single Unit Train” means the combination of a motor coach or motor coaches and coaches adopted by a Railway Administration as an operating unit.

(38) “Switch Electrical’ means a device for opening or closing an electrical circuit.

(39) “Switch, Alternate Feed’ means a switch used for connecting the overhead equipment of a loop or siding or crossover to alternative sections of the overhead equipment.

(40) “Switch Double Pole, Gang operated, Earth type” means a special switch used in Electric Loco Sheds, inspection pits and watering sections for feeding two section and for making both sections dead simultaneously and earthing one.

(41) “Switch, Inter-connecting Section or Isolator” means a switch used to connecting or disconnecting adjacent elementary sections of overhead equipment.

(42) “Switch gear” means Isolator switches, Circuit Breakers, Interruptors, Cut-outs and other apparatus used for the operation; regulation and control of electrical circuits.

(43) “Transmission Line” means bare overhead conductors supported by Steel Structure by means of which electrical energy is transmitted between various points of a distribution system.

(44) “Apparatus” means electrical apparatus and includes all machines, fittings accessories and appliances in which conductors are used.

(45) “Assistant Electrical Engineer (Traction Distribution) A.E.E. (Tr. D)” means an Assistant Executive Officer, incharge of maintenance and repairs of the power distribution system in a division or in an area and responsible to the Sr. Divisional Electrical Engineer (Traction Distribution).

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(46) “Assistant Electrical Engineer (Roiling Stock), A.E.E. (RS)” means an Assistant Executive Officer incharge of maintenance and repairs of electric rolling-stock in a division or in an area and responsible to the Senior Divisional Electrical Engineer (Rolling-Stock).

(47) “Assistant Electrical Engineer (Rolling Stock Operation) A. E. E. (OP)” means an Assistant Executive Officer-in-charge of operation and outstation maintenance of Electric Rolling Stock in a division or in an area and responsible to the Senior Divisional Electrical Engineer (Rolling Stock Operation) or Divisional Electrical Engineer (Traction).

(48) Crew Controller means a Sub-ordinate Supervisor who is responsible for nomination for booking Electric Crews in his shift and sanctioning periodical rest to the Electrical Crew under him. He shall also be responsible for exhibiting the roster for each day at the booking office. He shall also be responsible for ensuring that the running staff when signing on duty is in the knowledge of the road of the train for which he is booked has studied circulars, notices, caution order books and possesses two pairs of spectacles, if required under medical advice. He also inform the control about defective signals observed by incoming crews immediately and details of time loss on loco account and other duties assigned to him.

(49) JE-I when qualified as-

(a) “Overhead equipment -OHE” means sub-ordinate of the area concerned responsible to the Sectional Engineer for inspection and maintenance of traction overhead line, rail bonds and for the staff employed thereon.

(b) “Power Supply Installations-(PSI)” means a sub-ordinate of the area concerned responsible to the SSE (PSI & RS) for inspection and maintenance of power supply installations at all supply control posts and auxiliary transformers provided at different places for the purpose of signalling and other purpose and for the staff employed thereon.

(c) “Sub-Station Equipment-(SS)” means a sub-ordinate of the area concerned responsible to the SSE (Sub- Station) for inspection and maintenance of sub-station owned by the Railways, rail bond connected to the Sub-station for return current and for the staff employed thereon.

(d) “Rolling Stock - RS” means a Sub-ordinate of the area concerned responsible to SE (Rolling Stock) for the maintenance of rolling stock and for the staff employed thereon.

(e) "Remote Control equipment-(R. C)" means a Sub-ordinate of the area concerned responsible to the SSE (RC & PSI) for inspection and maintenance of remote control and allied equipments and for the staff employed thereon.

(50) "Bare" means not covered with insulating material.

(51) "Cable"-(a) means a length of insulated single conductor (solid or standard) or of two or more such conductors, each provided with its own insulation which are laid up together.

(b) Such insulated conductor or conductors may or may not be provided with an overall mechanical protective covering.

(52) "Caution Notice" means a notice attached to or placed near live equipment calling attention to the danger of touching or interfering with such equipment and bearing the words "Caution-Live Equipment."

(53) "Junior Engineer" means an authorised person in charge of a gang of workmen, authorised to work on specific types of traction equipment such as overhead equipment, electric rolling-stock, etc.

(54). (a) "Circuit" means an arrangement of conductor or conductors for the purpose of conveying electrical energy and forming a system or a branch of a system.

(b) When they form a closed path through which a current can circulate, the circuit is referred to as 'closed'. When the path is not closed, the circuit is referred to as 'Open'.

(55) (a) "SSE(OHE)" means a senior Supervisor under the control of Senior DEE (TrD)/DEE (Tr-D)/AEE (Tr.D), who is responsible for the proper and safe maintenance of 25 KV AC Traction over-head equipment and return conductors.

(b) "SSE (PSI & RC)/SE (General)" means a Senior Supervisor working under the control of Senior DEE /DEE (Tr.D)/ DEE (SS)/AEE (Tr.D) and directly responsible for proper operation and upkeep of the power supply installations and remote control equipments which are vital for the efficient operation of the electric traction system.

(c) "SSE (SS)" means a Senior Supervisor working under the control of DEE (SS) and directly responsible for the operation and up keep of the sub-station equipment including the maintenance of the return conductors from the traction substation to the feeding posts.

(d) "Chief Traction Power Controller-(CTPC)" means a Senior Supervisor working under the control of Senior DEE (TrD)/ DEE (Tr-

D)/AEE (Tr.D) and directly responsible for the proper operation of remote control switches in order to maintain reliability in the power supply to the over-head equipment, arranging detection of the faulty sections in the event of failures or break-down and a close co-ordination with the operating department. He shall also be responsible for arranging the electric power block required by maintenance staff.

(56) "Circuit Breaker" means advice for closing and opening an electrical circuit under all conditions unless otherwise specified, and so designed as to open the circuit automatically under abnormal conditions.

(57) "Competency Certificate" means a certificate issued to a person by the Railway Administration, authorising him to carry out specified duties pertaining to his employment.

(58) "Contact Wire" means an overhead conductor from which electric power is supplied to electric rolling stock.

(59) "Cut-out (fuse)" means any appliance for automatically interrupting the transmission of energy through any conductor when the current rise above a predetermined value.

(60) "Danger" means danger to health or to life or any part of body from shock, burn or other injury to persons, or property, or from fire or explosion, attendant upon transmission, transformation, conversion, distribution or use of electrical energy.

(61) "Danger Notice" means a notice attached to dead equipment to convey a warning against such equipment being made alive and bearing the works "Danger-Men working".

(62) "Danger zone" means the zone, lying within 2 meters of any live equipment, in which no work is permitted, when the equipment is alive, notwithstanding the above, the Loco Pilot of an electric loco is permitted to change the head light bulb of the loco while standing on the buffer beam projection at the floor level of the cab.

(63) (a) "Divisional Electrical Engineer (Traction Distribution), DEE (Tr.D) is the officer in immediate charge of the traction distribution section in a division, responsible for all technical and organisational matters connected with the efficient maintenance and operation of the power supply installations, OHE and RC equipment.

(b) "Divisional Electrical Engineer (Sub-Station)-DEE (SS)" means an Officer in immediate charge of 25 KV AC Traction Sub-station equipments in a division, responsible for all technical and



organisational matters connected with the efficient maintenance and operation of the sub-station equipments.

(c) “Senior Divisional Electrical Engineer (Rolling Stock)”- means an executive officer responsible for all technical and organisational matters connected with the maintenance of electric Loco/Electric Multiple Units (EMU rakes).

(d) ‘Senior Divisional Electrical Engineer (Rolling Stock-Operation)-Sr. DEE (RS-OP)’ means an executive officer responsible for dealing all technical and organisational matters connected with the operation of electric rolling stock on behalf of the electrical department and a liason officer between electrical and operating department.

(e) ‘Senior Divisional Electrical Engineer (TrD). -Sr. DEE (TrD)’ means an executive officer responsible for dealing all technical and organisational matters connected with the efficient maintenance and operation of the power supply installations, OHE and RC equipments and dealing all technical and organisational matters connected with the operation of electric rolling stock on behalf of the electrical department and a liason officer between electrical and operating departments in a division.

(64) “Dropper” means a fitting used in overhead equipment construction supporting the contact wire from the catenary.

(65) “Electrified Track” means track provided with overhead equipment.

(66) “Emergency Telephone” means a telephone circuit provided for contacting the Traction Power Controller.

(67) “Grid Sub-station or Sub-stations” means an Electrical installation interconnected with each other and equipped with transformer and switch-gear from which power is supplied for Electric Traction.

(68) “Guarded” means covered, shielded, fenced or otherwise protected by means of suitable casing, barrier, rail or metal screens to remove the possibility of dangerous contact or approach by persons or objects to a point of danger.

(69) ‘Insulated (Air-gap)-Overtap Span’ means an arrangement of overhead equipment over a track where two sets of traction conductors overlap each other for a short distance providing for a smooth passage for the pantographs of Electric Rolling Stock, the two sets of wires being insulated from each other by an adequate

air gap of 50 cms.

(70) "Interruptor" means a single phase oil circuit breaker without an automatic tripping device.

(a) "Bridging Interruptor" means an interruptor which is provided at a neutral section to enable one sub-station to feed a sector of the overhead equipment normally fed by another substation during emergencies or when the latter is out of use. This interruptor normally remains in the open position.

(b) "Sectioning Interruptor" means an interruptor which connects adjacent sub-sector together to maintain continuity of supply. This interruptor normally remains in the closed position.

(c) "Paralleling Interruptor" means an interruptor which connects overhead equipment of two different tracks. This interruptor normally remains in the closed position to reduce voltage drop.

(71) "Junior Driving Inspector-(JDI)" means a supervisor responsible for monitoring, counselling and educating the electric Loco Pilots/Asstt. Loco Pilots on line for their knowledge in technical, safe working rules and the trouble shooting technique of electric locos in case of defect/failures of them on line.

(72) "Linesman" means a person authorised to inspect and work on the overhead lines and switches in relation therewith.

**Note.** - This is the lowest grade of employee who is allowed to enter an unattended supply control post unaccompanied by his superior.

(73) "Operator" means a person on duty who is in charge of a supply control post.

(74) (a) "Remote Control Centre" means the centre from which the equipments at various supply control posts are remote controlled by the Traction Power Controller.

(b) "Remote Control Cubicle" means a room in a supply control post in which remote control equipment and batteries are erected for remote operation of switch-gear located at the post.

(75) "Senior Loco Inspector-(SLI)" means a Supervisor for checking and testing electrical Loco Pilots on line, conducting enquiries, assisting DEE(OP) in all technical and operating matters, conducting load trials and inter-section running timings of goods and coaching trains, testing the performance of electric locos on line and reporting

their behaviour to sheds and any other duties assigned to him by Sr. Divisional Electrical Engineer (TRD) /Sr. DEE (OP).

(76) “Section Insulator” means a device for dividing a contact wire into electrical sections while maintaining mechanical continuity and a continuous path for pantographs.

(77) “Sector” means a section of overhead equipment of a track from a feeding post to a sectioning post.

(a) “Sub-sector” means the shortest section of overhead equipment which can be isolated by opening of interruptors.

(b) “Elementary Section” means the shortest section of overhead equipment which can be isolated from the rest of the system by switching operations.

(78) (a) “Sectioning and Paralleling Post-(SP)” means a supply control post situated mid-way between two feeding posts at a neutral section and provided with bridging and paralleling interruptors.

(b) “Sub-sectioning and Paralleling Posts-(SSP)” means a supply control post where sectioning and paralleling interruptors are provided.

(c) “Switching Station-(SS)” means a supply control post over a single line section where only sectioning interruptors are provided.

(79) “Track Return” means the track rails when used as the return conductor for the traction return current to the sub-station.

(80) “Traction” means electric traction.

(81) “Engine Examiner” means an official responsible for inspection and maintenance of Electric Rolling Stock at outstation Maintenance Depot.

(82) Section Engineer (SE) as qualified,

(a) ‘Overhead equipment-(OHE)’ means a subordinate of the area concerned responsible for the operation and maintenance of overhead equipment and for the staff employed thereon.

(b) “Rolling Stock-(RS)” means a subordinate responsible to Assistant Electrical Engineer (Rolling-Stock) for the maintenance and/ or inspection of electric rolling-stock and for the staff employed thereon.

(83) ‘Crew Controller’ means an official who is incharge of Electric Crew and their establishments and responsible for the out-station maintenance of Electric Locos.

(84) (a) “Traction Loco Controller-(TLC)” means an official under the control of Senior Divisional Electrical Engineer (OP)/ Assistant Electrical Engineer (Rolling-Stock-Operation) who will be responsible for booking of electric locomotives and running staff to meet the requirement of the traffic.

(b) “Assistant Traction Loco Controller-(ATLC)” means a Supervisor under the control of Traction Loco Controller responsible for charting the movements of Electric Locos, checking the terminal/ sectional detention and utilisation of Electric Locos and assisting TLC in all other respects.

(85) (a) “Traction Power Controller-(TPC)” means an official who is responsible for ensuring continuity of power supply and operations appertaining thereto on the traction power distribution system. He co-ordinates the requirements of traffic and electric power supply and arranges for the issue of permits to work on or adjacent to overhead lines, cables and switchgear connected thereto.

(b) “Assistant Traction Power Controller-(ATPC)” means an official deputed for assisting the TPC.

(86) “Traffic Block” means blocking of a track against movement of all traffic.

**17.03. Inspection of electrical way and Works.-**The electrical way and works shall be inspected regularly in accordance with special instructions by officials nominated for the purpose and in accordance with the duties assigned to them.

**SR 17.03.01.-** (a) The duties of JE/SE/SSE(P way) under rules 15.01 to 15.17 wherever applicable to electrical way and works shall devolve on the SSE (Over Head Equipment) and JE-II (Over Head Equipment).

(b) Inspection/Maintenance of electrical works other than Over Head Equipment shall be carried out by the SSE (Power Supply Installation and Sub-station) and SSE (Remote Control) as may be applicable to them and as such specified in paras 0400 and 0617 of A C Traction Manual.

(c) The duties of Gangmate, Keyman and Trackman wherever applicable to overhead equipment shall devolve on the overhead equipment linesman.

**SR 17.03.02.-** (a) It shall be the responsibility of every railway servant to report immediately any abnormalities which may come to his notice on the OHE such as :-

(i) the whole or part of the OHE or a feeder or a cable falling down, and or persons, animals or vehicles coming in contact with or likely to come in contact with live equipment;

(ii) a damaged catenary or contact wire fouling the vehicle gauge;

(iii) pantograph of an electric rolling stock getting damaged and/or entanglement of the same with the OHE ;

(iv) damage to the track or structures of the overhead equipment;

(v) derailment or any other traffic accident ; and

(vi) any defect/breakdown in the continuity bonds, joint bonds, cross bonds and impedance bonds.

(b) The railway servant noticing any breakdown or defects mentioned in sub-rule (a) above shall at once report the same to the Traction Power Controller either directly or through any Station Master or Section Controller or through the nearest available telephone.

(c) In case of breakage of an overhead line, the railway servant detecting it shall also ensure that no person comes in contact with the line until an authorised official of the Electrical Traction Branch arrives on the spot. The authorised official shall take immediate action to make the affected line dead & earthed.

(d) If the damage to the OHE is heavy or the standard moving dimension is infringed, the person observing such damage or infringement shall take steps to show stop hand signal and place detonators in terms of GR 3.62.

(e) The Station Master to whom such breakdown or defects are reported shall convey the information at once to the TPC either directly or through the Section Controller as the case may be. In case of failure of communication he shall use his discretion to ensure safe movement of the traffic & advise the nearest Traction official.

(f) The TPC on receiving the information about any breakdown/ defect shall immediately arrange to cut off supply to the section affected and advise the Section Controller of the section made dead by him. The Section Controller in turn shall arrange with the concerned Station Master for protection of the dead section in terms of SR 17.04.16.

**SR 17.03.03.-** (a) When any defect on the overhead equipment which is likely to interfere with the smooth movement of the pantograph or cause damage to it, is noticed ahead, the Loco Pilot/Motorman shall trip the circuit breaker and immediately lower the pantographs by placing the pantograph handle in "lower" position. If necessary, the train should be brought to a stop short of such place.

(b) If the damage to the overhead equipment is slight, the Loco Pilot/ Motorman may, if possible, coast through such damaged section.

(c) In all cases the defects so noticed shall be brought to the notice of Traction Power Controller.

**17.04. Permit-to-work on electrical equipment.-** If work is to be carried out adjacent to the electrical equipment or any other part thereof by other than the competent railway servant, such work shall be done only when and for such time as the person-in-charge of the work has obtained a written permit-to-work, duly signed and given by the railway servant authorised for the purpose by special instructions. He, in turn, shall issue the same only with the knowledge of the Traction Power Controller.

**SR 17.04.01.-** Before commencing the work on any part of the over head equipment, or within 2 metres of live overhead equipment, a permit-to-work shall be obtained from the Traction Power Controller or authorised person. Detailed instructions regarding power block and pennit-to-work are given in the rules here under.

**SR 17.04.02.- Traffic and Power Block.-**There are generally two types of blocks required for maintenance work on Electric Traction Installations.-

(a) Traffic block.-Where a line is blocked against movement of all vehicles/trains either hauled by Electric or Diesel Locomotives. This will be required whenever heavy repairs have to be carried out on the OHE installations and shall be granted by the Section Controller in consultation with the Traction Power Controller.

(b) Power Block.-Whenever light repairs to or maintenance work of the OHE have to be carried out and the movement of trains hauled by Diesel locomotives, power blocks are obtained making a section of OHE dead by switching off 25 KV electric supply of the OHE. Power blocks are granted by the Traction Power Controller in

consultation with the Section Controller. Whenever Power blocks are granted on a given section of the OHE no movement of electrically hauled trains shall be permitted on that section but the movement of trains hauled by Diesel locomotives may be permitted provided a caution order is issued to the Loco Pilot and Guard of such train or trains drawing their attention to the fact that the OHE staff are working at the specified kilometreage and that the Loco Pilot should exercise extra caution and sound a long continuous whistle when approaching/passing such section and obey such signals as may be displayed at the place of work.

(i) Power blocks are of three different types.-

(a) Emergency Power Block,

(b) Pre-arranged Power Block, and

(c) Locally arranged Power Block.

**Note :-** Power blocks on the OHE of 'secondary lines' that is siding, yards sheds etc, are arranged by the Station Master, Yard Master, SSE(Loco shed) concerned locally and come under the category (c) above.

**SR 17.04.03.-** Emergency Power Block.- (a) An emergency power block shall be arranged by the TPC and 25 KV supply to the OHE affected shall be cut off by him immediately on receipt of an advice of any serious breakdown of the OHE or injury to persons or damage to property specially when-

(i) The whole or part of the OHE or a feeder or a cable failing down and/or persons, animals or vehicles coming in contact with or likely to come in contact with live equipment.

(ii) A damaged catenary or contact wire infringes height gauges at level crossings.

(iii) An electric locomotive or an Electric Multiple Unit getting damaged & rectification of which the Loco Pilot/Motorman requires the OHE to be made dead.

(iv) Derailment or any other accident to a train on the electrified lines where cutting off of 25 KV supply is considered necessary in the interest of safety.

(b) The person giving information of breakdown on the OHE shall invariably give all essential informations such as his name, designation, kilometreage where the abnormality has been noticed,

the nature of the abnormality & the place of his reporting. The reason for asking for an emergency power block shall be brief and to the point but explicit. He shall not leave the place/telephone without the permission of the TPC.

(c) The TPC on receiving the information shall at once arrange to switch off the supply on the section affected and then obtain the details of defects from the person reporting the same. The TPC shall simultaneously advise the Section Controller on duty about the section(s) made dead under exchange of Private Number. The Section Controller in turn shall arrange with the respective Station Master (s) to take protective measures as per the instructions contained in the Station Working Rules.

(d) Once an emergency power block is imposed except in the case of sub-rule (c) below, no work on the affected lines may be commenced until an authorised OHE official arrives at the site and earths the line at two or more points as required. Power supply to the section concerned shall not be restored by the TPC until the authorised OHE official at the site issues a message supported by a Private Number.

(e) (i) Whenever it becomes necessary for the Loco Pilot of an Electric Locomotive or the Motorman of Electric Multiple Unit train to obtain an emergency power block from the Traction Power Controller for the purpose of inspecting and/or securing the roof equipments including pantographs, he shall ask for such emergency power block giving the particulars as contained in sub-rule (b) above.

(ii) The TPC after making the section dead shall issue permit to work to the Loco Pilot/Motorman supported by a Private Number and advise the Section Controller. The TPC and the Section Controller shall also take actions as per sub-rule (c) above.

(iii) The Loco Pilot/Motorman shall then earth the OHE on both sides of the Electric Rolling Stock before climbing on the roof. For this purpose each Electric Locomotive is equipped with two earthing rods. In the case of Electric Multiple Unit trains the Motorman may obtain two earthing rods either from the Station Master of any station or from the Loco Pilot of another train which may be on the run on the adjacent line. The earthing rods shall be returned to the concerned Station Master/Loco Pilot after the work is over.

(iv) Before asking the TPC supported by a Private Number to restore the power supply on the section so made dead, the Loco Pilot/



Motorman shall ensure that everything is in order, earthing rods have been removed & that no person/material is on the roof of the locomotive.

(v) If the earthing rods could not be provided, the maintenance staff in association with OHE staff will secure the pantograph.

**SR 17.04.04.- Pre-arranged Power/Traffic block.-**

(a) Officials of all departments in the electrified area who requires such power blocks, traffic block or permit-to-work in the danger zone of traction equipment, or who requires overhead line and/or bonding staff to be present at site for schedule maintenance works, shall deliver at the office of the Divisional Electrical Engineer (Traction Distribution) not later than 11 hrs. on every Monday. Statements in the prescribed form showing-

(i) the nature of the work & the date on which it is to be performed;

(ii) by when the work is to be carried out

(iii) location of the work and the sections of the lines to be blocked;

(iv) the trains between which the block is required and

(v) whether the track will be available Diesel traffic.

(b) The requirements of all departments shall be co-ordinated in the office of the Divisional Electrical Engineer (Traction Distribution) and a consolidated statement forwarded to the Divisional Operations Manager concerned by 12 hrs. on every Wednesday for inclusion in the weekly programme of traffic and power blocks.

(c) A weekly programme of work involving traffic block power block and permit-to-work shall be prepared in the office of the Divisional Operations Manager, and despatched to all concerned (TPC, TLC, CHC Station Master (s) Yard Master (s) concerned in addition to the departmental officials who asked for such blocks) by Friday latest, for the week commencing from Monday next.

(d) Works of urgent nature shall however be attended to by obtaining emergency power blocks and permit-to-work from the Traction Power Controller.

**SR 17.04.05. -** (a) After a prearranged power block has been notified as per SR 17.04.04, the TPC on the specified day, shall ascertain from the Section Controller at least two hours before the

commencement of the work whether power/traffic block will be available according to the prearranged programme. He shall then inform the Junior Engineer of the Maintenance gang that the traffic/power block as already programmed will be available so that the maintenance gang can take steps to leave the depot with necessary equipments and be available at the site at least half an hour before the commencement of the work. On arrival at site the official-in-charge of the working gang as well as the person(s) deputed to operate the isolator switch (s) shall report their arrival to the TPC.

(b) On receipt of the information about the readiness of the field staff at the site of work, the TPC shall send the Power Block message in part of the prescribed form ETR-1. The Section Controller shall in turn advise the concerned Station Master/officials incharge of concerned Cabins/Yard Masters to take action as laid down in SR 17.04.16 and in the Station Working Rules supported by a Private Number.

(c) The concerned Station Master/Official incharge of the Cabin/ Yard Master shall after complying with the relevant provisions of SR 17.04.16 and other provisions in this regard mention in the Station Working Rules for electric traction shall acknowledge the same. In case of Traffic Block in conjunction with Power block it must also be ensured that there is no train between two stations in which it is propose to impose Traffic Block. The concerned Station Master/ Official incharge of the Cabin/Yard Master shall then give an assurance to the Section Controller about the precautions taken in this regard supported by Private Number.

(d) The Section Controller shall then return Part B of form ETR- 1 duly filled in.

(e) On receipt of the assurance from the Section Controller the TPC shall open the concerned interruptors and advise the field staff for operation of the required isolator(s) has/have been opened and locked in open position. The TPC shall close the interruptors thereby restoring power supply to all portions except over the concerned elementary section where the work is to be carried out. (See SR 17.04.15 also). He shall then issue a Permit-to-work message in the prescribed form ETR-2 to the authorised person incharge of the maintenance work.

(f) The maintenance gang shall then commence work after earthing the dead OHE as stipulated in para 0535 of the AC Traction

Manual and observing the precautions laid down in GR 15.09 (1), 15.09 (2) and 15.09 (3) during the entire period of block.

(g) On completion of the work, the person who received the permit-to-work shall ensure that-

(i) all men and materials have been withdrawn from the electrical equipment and its vicinity,

(ii) the earths provided for the protection of all the working parties are removed, and

(iii) all staff, who have been deputed to work, are warned that the power supply is to be restored.

He shall then inform the TPC under exchange of Private-Number and filling up Part 'C' of ETR-2 and cancel the permit-to-work previously issued. In case the telephone communication with the TPC is interrupted, action shall be taken in accordance with SR 17.04.10.

(h) The TPC shall, after restoring the normal supply to the OHE, cancel the block and inform the Section Controller by sending Part 'C' of ETR-1 duly filled up.

(i) The Section Controller shall then advise the concerned Station Master/Officials incharge of the Cabins/Yard Master about the cancellation of the block under exchange of Private Number.

**SR 17.04.06.- Work by other than authorised person.-**

(a) If any work is to be carried out on or adjacent to any part of the electrical equipment by other than 'authorised' persons such work shall not commence unless the person incharge of the work is in possession of a written permit-to-work issued by an authorised person of the Electric Traction Branch not below the rank of a Junior Engineer.

(b) The permit-to-work shall first be taken from the TPC for which the TPC, the Section Controller, the authorised person of the Electric Traction Branch and the concerned Station Master shall follow the Procedure detailed in this regard under SR 17.04.05. After the "Permit-to-Work" has been obtained from the TPC, the authorised person of the Electric Traction Department shall earth the electrical equipment specified and then issue a Permit-to-Work card on the prescribed form ETR-3 to the person incharge of the work keeping a duplicate copy in his personal custody.

(c) On completion of the work and when all men and materials have been withdrawn from the electrical equipment and its vicinity, the person incharge of the working party shall cancel his 'Permit-to-

Work' card filling Part 'C' of form ETR-3 and return it to the authorised person who issued the same. The authorised person shall in turn issue a message to TPC to cancel the "Permit-to-Work" as detailed in SR 17.04.05. In case the telephone communication with the TPC is interrupted, action shall be taken in accordance with SR 17.04.10.

**SR 17.04.07.- Multiple working parties.-**

(a) Whenever work has to be carried out by more than one working party, the 'Permit-to-Work" shall be issued by the Traction Power Controller only to one authorised person who alone shall be responsible under this rule, for work on the portion of electrical equipment, specified in the "Permit-To-Work". Any additional party or parties may work on the same portion of the Electrical Equipment only with the permission of this authorised person who shall inform all parties of the total number of parties working on the same portion of the electrical equipment. The authorised person shall cancel the 'Permit- To-Work" only when he is satisfied that all working parties have withdrawn all men and materials and removed the earths from the electrical equipment.

(b) Where the two parties are working far from each other the party who has to work for a longer periods shall take the "Permit-To- Work" from the TPC and permit the other party to start the work by a message supported by a Private Number. The second party shall inform this party of completion of work, removal of earths and withdrawal of men & materials similarly by a message supported by a Private Number.

**SR 17.04.08.- Work inside Loco Shed or Car Shed –** In case the work to be done inside the Loco Shed or Car Shed, the application for permit-to-work must be made to the Section Engineer/Junior Engineer (RS) who shall arrange for the issue of the 'Permit-to-Work" after getting the switch of the inspection bay or the feeders opened. No intimation to the TPC is necessary, and the "Permit-to-work" must be returned for cancellation by the person incharge of the work to the Section Engineer/Junior Engineer (RS) before the switches are closed.

**SR 17.04.09.- Operation of isolator in the sidings :-**

(a) Power supply for sidings which do not affect movement of train on the running lines is controlled by manually operated isolators. The keys for these isolators are generally kept under the custody of the Station Master concerned. For obtaining Power block on such sidings local arrangements may be made by the authorized person of the

Electrical Traction Branch with the Station Master, Cabin Asstt. Station Master, Yard Master and others responsible for the movement of traffic. For this purpose the form ETR-4 shall be brought into use. Before the concerned Station Master/Cabin Asstt. Station Master, Yard Master signs the acknowledgement on part 'B' of the form ETR-4 and hands over the key for the isolator, he shall take the precautionary measures detailed under SR 17.04.16 and also as specified in the Station Working Rules. The Traction Power Controller shall be informed immediately before and after the shut down is affected by the authorized person responsible for carrying out the work. He shall not open the isolator unless the precautions prescribed in paras 0800 and 0801 of the AC Traction manual are complied with and no work should commence unless proper earthing as required under the rules is made.

(b) The guard having competency certificate for isolators operation is authorized to open and close the isolators as and when rakes are to be handled in the sidings. The keys for these isolators are generally kept under the custody of the Station Master concerned. After the rake is placed for loading/unloading, guard will operate the isolators as prescribed in the Para No. 19.09 of the Operating Manual. Before such operation, Guard shall take the precautionary measures detailed under 17.05.01 and SR 17.04.15 (e) and also as specified in the Station Working Rules. He shall not open the isolator unless the precautions prescribed in paras 10440 and 20601 of the AC Traction Manual are complied with and no work should commence unless proper earthing as required under the rules is made.

(c) (i) Guard shall not operate isolators unless he/she is in possession of a competency cum authorized certificate jointly issued by SSE/SE (TrD) and TI. The competency certificate shall be valid for a period of three years from the date of issue and shall be renewed before the expiry of the period of validity

(ii) The competency certificate issued in favour of the guards shall be kept in the competency certificate register at his/her head quarter station concerned. The register shall also maintain the particulars of the date of issue of the competency certificate and the date on which the renewal of the competency certificate is due.

**SR 17.04.10.-** If telephones communication with the Traction Power Controller is interrupted, the person, to whom the permit-to-work was issued, shall arrange locally for restoring to normal (live) conditions the portion of the traction electrical or overhead equipment

specified in the permit-to-work and for canceling the power block, if possible. Before this is done the authorized person shall satisfy himself that no other party has been given a permit-to-work for the same sections.

**SR 17.04.11.-** Each Traction Power Controller shall maintain a log book in which he must enter the number of each permit-to-work issued together with the particulars and time when the equipment is made dead for the work and re-energised after completion of the work as per information received on the telephone from the authorized person concerned.

**SR 17.04.12.-** All messages relating to shut down and restoration of power supply, permit-to-work, etc. issued over the telephone shall be made by exchange of Private Numbers. The procedure to be followed is as detailed below:-

(a) Every official who has to exchange such messages shall maintain a Private Number book. As each message is sent, the Private Number used should be scored out in the Private Number book, initialed and dated. The message number should also be recorded. The Private Number book and permit-to-work form shall be kept under the personal custody of the authorised official of the electrical traction branch. The used private number book as also all records for the issue of permit-to-work shall be carefully preserved for a period of one year unless these are required for a longer period in connection with enquiry or investigation.

(b) The message starts with the Private Number of the sender and ends with the Private Number of the person who has received it. All messages in connection with Power Blocks and permit-to-work shall be written out in full in the prescribed form ETR-1 or ETR-2 or ETR-3 or ETR-4 as the case may be before they are sent and the section on which power block is required should be and clearly indicated as detailed in para 0810 of the AC Traction Manual. The person who receives the message over telephone must record the name on an identical form and repeat the same again for confirmation. The persons exchanging Private Numbers should identify each other by names. Before power supply is restored the power block shall be cancelled by the same person who asked for and obtained the same.

(c) When the power block messages are exchanged between the TPC and the Section controller, the messages shall be made out in duplicate and sent to the Section Controller and his acknowledgement

obtained in the carbon copy. In the event of they are located far apart, the message shall be exchanged over telephone and recorded in the manner detailed above.

**SR 17.04.13.-** (a) The keys for all out door switches shall be kept in locked glass fronted boxes in the custody of Station Masters, Cabin Assistant Station Masters or other persons stationed conveniently nearby the switches. The keys shall be issued on demand only to the authorized person of the electrical traction branch and his signature as a token of receipt shall be obtained in the register maintained for the purpose.

(b) (i) All chambers of enclosures containing live equipment shall kept normally closed and locked with the keys in the custody of the authorized person of the electrical traction branch. A duplicate key shall be kept in a box with a fixed glass fronted cover in places as notified by the Divisional Electrical Engineer (Traction Distribution). In case of emergency, the key may be removed by breaking open the glass cover of the box by the authorised official of the electrical traction branch. A record shall be maintained of every such use of the key.

(ii) In the event of breaking the glass of the key box, the key or keys shall be kept in the safe custody of the Station Master or the Cabin Assistant Station Master until the glass is replaced. The Traction Power Controller shall keep a record where such keys are kept, so that in the emergency he will be able to direct the parties.

(iii) Whenever the glass cover is broken to obtain the duplicate key, the concerned Section Engineer (OHE) shall be immediately advised for its replacement. The person replacing the glass shall obtain the signature of the authorized person of the electrical traction branch indicating the date of its replacement.

(c) Any person while working in a chamber or enclosure containing electrical equipment, which under normal condition is alive, shall retain the keys of the chamber or enclosure. These keys shall be returned to the person in whose custody they are normally kept, immediately after the chamber or enclosure has been closed.

(d) Permit-to-work cards shall not be cancelled until the keys have been returned to the box or to the person in whose custody they are normally kept.

**SR 17.04.14.-** (a) In the event of a fault in the overhead equipment necessitating isolation of a section in addition to the faulty one, the authorized person of the electrical traction branch shall

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arrange with the Traction Power Controller, to isolate the healthy section. However, if necessary, he may himself open these switches which can be operated conveniently without endangering safety.

(b) Should the Traction Power Controller require to have any isolator switch opened or closed, he shall normally ask any authorized official of the electrical traction branch to carry out the required switching operation. In case of emergency, he may, however, ask the Station Master or Cabin Assistant Station Master to operate such isolator switches.

### **SR 17.04.15.- Operation of Isolator switches.-**

(a) Manually operated isolator switches are provided at different points on the main line to sectionalise the overhead equipment into elementary sections and at large yards to isolate different elementary sections.

(b) The operating handle of every isolator switch shall always be kept locked either in fully 'open' / 'closed' position. One key of such isolators is kept with the Junior Engineer (OHE) in charge of the section and the other key with the Station Master or the Cabin Assistant Station Master of the nearest station. Any loss or damage of a lock or key shall be reported to the SE/JE (OHE) and the Traction Power Controller.

(c) ISOLATOR SWITCHES SHALL NOT BE OPENED WHEN CARRYING ANY LOAD. The Traction Power Controller while initiating action as per SR 17.04.14 (b) shall ensure that the corresponding sub-sector is made dead before he orders opening of an isolator switch. The person operating the isolator switch shall not open it unless specifically ordered by the TPC by a clear message supported by Private Number he has received a separate permit-to-work from the TPC for the section which fully includes the elementary section controlled by the isolator switch.

(d) Isolator switches, however, can be closed even if the adjacent interruptors are closed i.e. on load, provided the closure is made swiftly in one motion.

(e) Isolator switches provided for isolating sidings and yards and also to feed OHE inside running sheds may be opened provided the official concerned makes it absolutely certain that-

(i) The entire section is visible, and

(ii) There is no locomotive with raised pantograph in the section.



Where, however, it is not possible to get positively assurance on these points, action shall be taken under sub-rule (c) above before opening the same.

**SR 17.04.16.- Protection during Power Block.-** (a) All sections over which power block has been granted, shall be protected against entry of electric locomotives/electrical multiple unit train with pantograph raised from other end of the section under power block or through any cross-over leading to the section under power block during the period of block. Suitable lever collars painted 'RED' shall be placed on the levers operating signal (s) and/or points controlling movements for the sections under power block. In addition, slide collars shall also be placed on the concerned slot slide of the SM's slide box. At stations where panel/Route Relay Interlocking is provided 'Red' Button Collars' shall be placed on the concerned switches operating points and/or signals. These shall be placed on the concerned levers/slot/slides/switches prior to imposition of power block by the official responsible for its/their operation. If the points and signals are locally operated, the same should be locked and the keys kept in the personal custody of the Station Master on duty.

(b) (i) If there is any electric locomotive/electric multiple unit train on the section over which the power block is to be given, the Loco Pilot/Motorman of such locomotive/EMU train shall be given a memo by the Station Master on duty to lower the pantograph and not to raise it until further instructions and the Loco Pilot's/Motorman's acknowledgement obtained on the duplicate copy.

(ii) The Loco Pilot/Motorman shall be given a memo by the Station Master on duty again to raise pantograph after the power block is cancelled.

(c) The Section Controller on receipt of power block message from the Traction Power Controller shall repeat to all Station Masters, Cabin Assistant Station Masters concerned the said message indicating the time from which the block is to commence. Each Station Master or Cabin Assistant Station Master shall record the same in the register specially maintained for the purpose. Before the acknowledgement is given, he shall take action as mentioned in sub-rule (a) and (b) (i) above in addition, he shall also make such other precautions as may be stipulated in the Station Working Rules for electric traction. In case of stations having Cabins, the Station Master shall also obtain assurances under exchange of Private Numbers from the official in charge of such cabins that they are fully aware of

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the section on which power block is being given and that necessary lever collars have been placed on the concerned levers in the cabin. The Station Master shall then give the acknowledgement of the Power Block message supported by a Private Number.

(d) Once power block is given and till such time it is cancelled, no electric locomotive or any EMU trains with raised pantograph shall be allowed to enter the dead section. In case a train hauled by Diesel locomotive is allowed to enter the dead section on which an electric locomotive with pantograph lowered is attached, the person manning the electric locomotive shall be specifically advised by issuing a caution order for not raising the pantograph.

(e) Station Masters and others responsible for conducting shunting with electric locomotives shall ensure that under no circumstances should any electric locomotive approach near the traction structures limiting the electrical section over which the power block have been granted. Limits of each electrical section at a station are shown in the station sectioning diagram. Whenever it becomes necessary for an electric locomotive to carry on shunting movement towards the dead section, a stop hand signal shall be exhibited at the point upto which the electric locomotive is allowed to proceed and the Loco Pilot is specifically advised by the issue of a memo not to move the loco beyond the points.

(f) Goods or Passenger trains hauled by other than electric locomotive (s) may be allowed to pass through the dead section provided-

(i) This is not prohibited specifically in the power block message.

(ii) Diesel engine or trains hauled by such engine shall be brought to a stand at the station proceeding the station/ section at which power block is granted and the Station Master of this station is satisfied by personal inspection that there is no electric locomotive on the train in question ;

(iii) A caution order is issued to the Loco Pilot of such engine/ train, warning him of the power block ahead and to lookout for hand signals, and

(iv) The Station Master granting line clear or taking 'off' signal for a train has received an assurance supported by Private Number from the Station Master of the preceding station that there is no electric locomotive or pantograph wagon with its pantograph raised on the train.

For, permitting the movement of such Goods or Passenger trains or for allowing the shunting movement under sub-rule (e) above or for permitting shunt movement by any other locomotive other than electric locomotive, the lever collars/slot slide collars/Red button collars placed on the concerned levers/slot slides/switches may be removed but the same shall be replaced back immediately after the movement is completed.

**SR 17.04.17.-** (a) No Hand Crane shall be worked adjacent to traction overhead equipment unless such overhead equipment is first made dead and earthed and electrical traction staff is present. All movement of the crane jib shall be carefully controlled so as not to foul the traction overhead equipment. Whenever possible, the direct blast from the crane funnel to the overhead equipment and particularly to the section insulators shall be avoided.

(b) Except in an emergency, 24 hours notice of intention to work a crane adjacent to overhead equipment shall be given to the Divisional Electrical Engineer (Traction Distribution) so as to enable the latter to keep his staff standby. When possible, intention to work cranes shall be included in the weekly programme detailed under SR 17.04.04. In an emergency, the TPC shall be advised who shall make necessary arrangements for Electrical Traction staff to standby.

### **17.05. Warning to staff and public,-**

(1) All electrical equipment shall be regarded as being live at all times and consequently dangerous to human life, save and except in cases, where the electrical equipment has been specially made dead in accordance with special instructions. Caution notices shall be prominently fixed near all vulnerable places to warn staff and public to exercise due caution.

(2) No person shall climb on the top of engines or tenders or on the roofs of carriages or wagons when those vehicles are located beneath overhead equipment except when the overhead equipment is dead and earthed in accordance with special instructions.

**SR 17.05.01.-** (a) Work on pantographs and roof rolling stock shall be carried on such sidings where switches are provided, for making the overhead equipment dead and earthed.

(b) Traction Engine Examiner or other authorised person in charge shall be responsible for making dead the overhead equipment

over the tracks of inspection lines in the Loco Sheds and stabling sidings before permitting work to be done on the roof of electric rolling stock. The overhead equipment over these tracks shall not be energised except by the authorised person in charge, who shall be responsible for every precaution being taken to ensure that everything is in order and that all staff and/or material are clear before energising the equipment.

(c) In stations and yards, an authorised person shall arrange to make dead and earth the overhead equipment and a permit-to-work card shall be obtained by the staff concerned before work on the roof of rolling-stock or engine is commenced. On completion of work, the card shall be returned to the authorised person for cancellation. The authorised person shall then satisfy himself that everything is in order and that all staff and/or material are clear before energising the overhead equipment.

**SR 17.05.02.-** The procedure for isolating and making dead sections of overhead equipment at stations where watering of carriages is done through top fillings shall be strictly in accordance with the provisions as contained in paras 0909 to 0919 of A C Traction Manual together with such other relevant provisions that may be incorporated in the Station Working Rules of the station concerned in this behalf.

**17.06. Alteration to track.-** Before any alteration to alignment or level of electrified tracks is commenced, due notice shall be given to those responsible for the overhead equipment so that the overhead equipment may be adjusted to confirm to the new conditions.

**SR 17.06.01.-** No JE/SE/SSE(P way) shall commence any work which may alter the alignment or level of electrified tracks unless intimation has been given to the concerned SSE (OHE) and/or JE (OHE) at least 3 days in advance of the commencement of work. The SSE (OHE) and/or JE (OHE) shall be responsible for proper adjustment of the overhead equipment so as to confirm to the new conditions.

**17.07. Tripping of circuit breakers of locomotives and electrical multiple units at neutral sections.-** Unless otherwise allowed by special instructions, the Loco Pilot of the locomotive or electrical multiple unit shall coast through the

neutral section, duly switching off power. Necessary indication boards to this effect shall be provided to guide the Loco Pilot to switch off and switch on power.

**SR 17.07.01.-** (a) One first "Warning Board" as per Fig. 1 facing to the direction of movement of train is fixed on the OHE mast located at a distance of not less than 500 metres from the place from where neutral section commences. The Loco Pilot on reaching this board shall put the Master Controller to 'O' position,

Provided that if the speed of the train while approaching a neutral section is low, the Master Controller need not be switched off at this board and power may be kept on till the circuit breaker is tripped at the "cut off power" board as per Fig.3.

(b) A second "Warning Board" as per Fig. 2 facing to the direction of movement of trains is fixed on the OHE mast located at a distance of not less than 250 metres from the place from where neutral section commences. On reaching this board the Loco Pilot shall get ready to open the circuit breaker at the "cut off power board".

(c) A third indicator e.g. 'cut off power board' as per Fig. 3 facing to the direction of movement of trains is fixed on the OHE mast located immediately in rear of the place from where the neutral section commences. On reaching this board the circuit breaker must be tripped. In the event of the red pilot lamp does not glow on tripping the circuit breaker, immediate action must be taken to lower the pantograph.

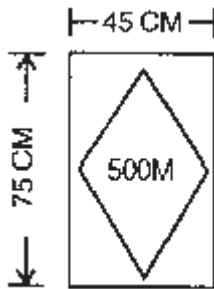


FIG 1

Rule No. 17.07.01(a)

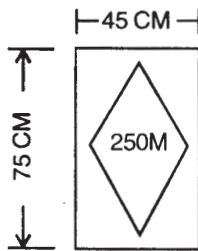


FIG 2

Rule No. 17.07.01(b)

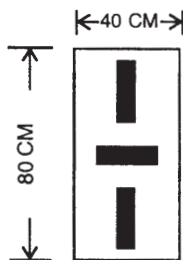


FIG 3

Rule No. 17.07.01(c)

(d) A fourth indicator e.g. 'Close circuit breaker board' as per Fig. 4 facing to the direction of movement of trains is fixed on the OHE mast located in advance of the place at which the neutral section terminates. On reaching this board the Loco Pilot shall reclose the circuit breaker and resume normal working.

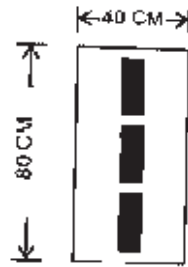


FIG 4

**Rule No. 17.07.01(d)**

**SR 17.07.02.- Lowering pantographs in emergency** –(a) There may be occasions when power supply from one sub-station is interrupted and feed is extended from the adjacent sub-stations or due to minor damage to the OHE, the Loco Pilot is required to coast through the affected section with pantograph lowered. Under such circumstances it shall be the responsibility of the OHE official-in-charge to take action under SR 4.09.06 as it may relate to him. The concerned Station Master on receipt of such advice, shall take steps to issue caution order with suitable endorsements in terms of SR 4.09.03. The Loco Pilot on receiving such advice shall coast through the specified zone by lowering and raising the pantograph at the Kilometreages mentioned in the caution order.

(b) When this restriction is to be observed for more than a day, necessary indication boards as per Fig. 5 & 6 facing to the direction of movement of trains shall be fixed on the OHE masts at the appropriate kilometreages indicating to the Loco Pilot where the pantograph is to be lowered and raised.

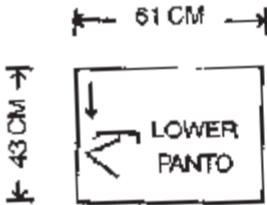


FIG 5

**Rule No. 17.07.02(b)**



FIG 6

**Rule No. 17.07.02(b)**

**SR 17.07.03.-** Whenever it is necessary for the Loco Pilot to take action in terms of SR 17.07.01 or 17.07.02, the Asstt. Loco Pilot,

in case of electric locomotives, shall assist the Loco Pilot in sighting the boards as per Fig. 1, 2, 3, 4, 5 and 6 above and call out their indication to the Loco Pilot who shall repeat the same after checking personally. This, however, does not absolve the Loco Pilot from personally sighting the indication boards and acting thereon.

**17.08. Tower Wagon.-**The rules for the movement and working of tower wagons shall be laid down by special instructions.

**SR 17.08.01.-** (a) The movement of tower wagon on tracks shall be governed by rules and regulations governing movement of trains.

(b) On double lines where double line electric block instruments are provided, the special rules applying to such sections are given in paras 6.11,6.13 and 6.14 (i) of the Block Working Manual.

(c) On Single line where tokenless electrical block instruments are provided, the special rules applying to such sections are given in para 5.39 of the Block Working Manual.

**SR 17.08.02.-** If a tower wagon after leaving a block station and on completion of its work returns to the starting station, the Loco Pilot shall bring the Tower wagon to a stop at the first stop signal in the case of single line section and on double lines at the point opposite to the first stop signal pertaining to the proper line/last stop signal pertaining to the line upon which it is moving whichever is earlier. The Loco Pilot shall then send one of his staff to the Station Master informing him about the arrival of the Tower wagon. The Station Master shall arrange for its admission by taking off the reception signal (s) in the case of single line and by piloting in the case of double line.

**SR 17.08.03.-** Normally a Tower Wagon should not be attached to any train. In case of absolute a necessity it may be attached to a Goods train only, if permitted by an official of the Operating Department not below the rank of Chief Controller. Whenever a tower wagon is attached to any Goods train, it shall be marshalled as a rearmost vehicle duly escorted by a competent traction staff and the speed of the train to which it is attached must not exceed 40 KMPH.

**17.09. Additional rules for electrified sections.-** Special instructions for working of trains on electrified section shall be notified by the authorised officer.

**SR 17.09.01.-** Special precautions by Controllers, Traction Power Controllers, Station Masters and Train Crew when a section of OHE is found faulty :-

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(1) In the event of OHE failure, the Traction Power Controller shall immediately locate the faulty section and isolate the same. In case of Double & Multiple line section he shall also isolate the healthy section on adjacent tracks on the same route length as the faulty section. He shall then advise the Section Controller of the section found faulty and the healthy section temporarily kept isolated.

**NOTE :** The placement, movement and working of ladder trolley of RE department independently altogether in sections already open to traffic is prohibited.

(2) On receipt of the information under sub-rule (1), above from the traction power controller, the section controller shall take the following precautions :-

(i) Faulty section.-He shall under exchange of Private Numbers, advise the Station Masters of all stations who are connected with the working of trains in the affected section to treat the faulty section as if the same is under emergency power block and to take action under SR 17.04.16.

(ii) For healthy section- The Section Controller shall immediately inform the Station Masters of all the stations who are concerned with the working of trains in the section in which healthy OHE is temporarily isolated, under exchange of private numbers, that they shall not allow any train to leave their stations unless both the Loco Pilot and guard of the first train have been issued with a caution order to the following effect.

(a) proceed at a speed of 35 KMPH by day and 20 KMPH by night subject to the observance of other speed restrictions exercising great caution.

(b) Keep a sharp look out and be prepared to stop short of any obstruction which may be due to any infringement from the adjacent lines and also keep a sharp look out on the adjacent line/lines to see if there are any OHE abnormalities ; and

(c) Immediately on reaching the next station in advance report whether or not the section over which they moved is safe for the movement of trains.

(3) After this, the section controller will advice the Traction Power Controller to re-energise the temporarily isolated healthy section under exchange of private numbers, unless based on informations



received meanwhile from the site/station, it would be necessary to continue to keep power 'OFF' from the healthy sections.

(4) After despatching the first train by the issue of caution order under sub-rule (2) above, no subsequent train shall be allowed to enter the section without permission from the section controller. Action to remove speed restrictions shall be taken by the section controller in consultation with the Station Masters on receipt of report from the Loco Pilot and Guard of the first train. The Section Controller shall also advise the TPC of the report of the Loco Pilot/Guard of the train indicating whether or not there are any infringements and/or abnormalities in OHE. Till such time it is decided to remove speed restrictions, the section controller may, however, permit the Station Masters concerned to allow subsequent train(s) to enter the affected section after issue of caution order under sub-rule 2 (ii) above.

After removal of the caution orders to the subsequent trains passing the healthy sections, Section Controller shall also keep Traction Power Controller advised regarding resumption of normal traffic to the healthy sections.

(5) (i) Whenever station staff notice a train worked by an electric engine passing with a hot axle any wagon/coach running in dangerous condition or smoke/fire emanating from a wagon/coach or with any other abnormality in the running train which is likely to endanger safety of the train/passengers, the Cabin Master/Station Master shall immediately take steps to stop the train. In case they fail to stop such train by normal means as laid in SR 4.29.01 they shall immediately inform the Traction Power Controller either directly or through the section controller to switch off the power supply of the OHE of the affected section under exchange of Private number. In case TPC has been directly informed, section controller has also to be informed subsequently.

(ii) Whenever any train gets held up for more than 3 minutes in the block section on account of no tension, the Loco Pilot of the train shall depute his Assistant Loco Pilot to check the train in order to look for any abnormality and to advise the Guard of no tension in OHE. Together with the Assistant Loco Pilot, the Guard shall then check the entire train.

If, in the meantime, power supply is restored, the Loco Pilot shall call back his Assistant Loco Pilot to the Locomotive and resume journey.

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Otherwise after the train is checked, the Loco Pilot/Guard shall inform the Section Controller/Traction Power Controller of the details of abnormality, if any, or otherwise, and assistance required, through the nearest emergency telephone circuit/by other available means.

Further, the Loco Pilot and Guard shall arrange protection of the line affected in accordance with GR 6.03 which deals with the protection of trains stopped between stations. In case. of Automatic territory, the lines must be protected in accordance with GR 9.10.

After ascertaining from the affected train of the nature of abnormality decision regarding recharging of the OHE shall be taken by the section controller in consultation with Dy. CHC. Guard, Assistant Loco Pilot and concerned Station Masters shall be advised accordingly Necessary steps shall be taken by Dy. CHC, thereafter, for clearance of the abnormality.

(iii) Restoration of OHE supply will be undertaken by Traction Power Controller only on the advice of the Section controller under exchange of private numbers.

(iv) In case the electric Loco Pilot is unable to establish communication with Section Controller/Traction Power Controller through emergency sockets, he shall arrange to take the train cautiously to the next station, ready to stop in case of any obstruction. A speed restriction of 35 KMPH by day and 20 KMPH by night shall be observed for this movement to the next station. On reaching the next station, the Loco Pilot shall contact Station Master /Section Controller.

