

ANNEXURE- D

INTEGRATED EI BLOCK WORKING THROUGH ELECTRONIC INTERLOCKING SYSTEM FOR SINGLE LINE

1.0 Description and System of working:

This chapter describes the procedure for the operation of the Single Line Absolute Block System through Electronic Interlocking (EI) using a VDU terminal as the operator interface. The block working will be provided on the VDU and interlocking of UFSBI relay interlocking in logic circuit i.e. EI of block interface as well as relay interlocking of UFSBI. This system replicates existing Single line UFSBI operator panel layout & sequence of operations into VDU using EI.

The EI Block Panel will work on the Absolute Block System incorporating Block Proving Axle Counter to control the movement of trains on Single line block section from both directions. The system is of the Non-Cooperative type, in which Line Clear is taken by the train sending station after consent of line clear granting station under exchange of Private Number, and the EI Block Instrument itself certify the line clear granting conditions if all conditions are complied with. These working instructions should be read in conjunction with General (Amendment) and Subsidiary Rules.

1.1 KNOWLEDGE OF RULES

Every Railway Servant working on block Panel must be conversant with the rules relating to the block working whether supplied or not with a copy or translation of the rules relating to his duties.

1.2 ACCESS TO AND OPERATION OF EQUIPMENT

- a. No unauthorised person shall be permitted to have access to or operate signals, points, Block Panel and electrical communication instruments or any other appliance connected with the working of the Railway.
- b. No unauthorised person (whether Railway Servant or otherwise) shall enter any block/signal cabin except when requires to do so in connection with the regular duties. All concerned supervisory staff will monitor strict compliance of these instructions through frequent and surprise checks.

2.0 PRINCIPLES OF WORKING:

- i. The trains are worked on the Absolute Block system.
- ii. Axle counters are provided at the either ends of the block section to verify the occupation and clearance of the block section.
- iii. It is not possible to take 'OFF' the Last Stop Signal unless LINE CLEAR has been obtained from station in advance.
- iv. It is not possible to obtain LINE CLEAR unless block section and an adequate distance beyond first stop signal of station in advance is clear of trains.
- v. The Last Stop Signal assume 'ON' aspect automatically on entry of train into block section and when so replaced, is maintained in its 'ON' position, till a fresh LINE CLEAR is obtained on block panel.
- vi. Block section show automatically 'TRAIN ON LINE' on Block panel when train enters into the block section on Line Clear.
- vii. Train entry/exit buzzer, to/from block section are provided and to be acknowledged.
- viii. Block section automatically closes on complete arrival of train at the receiving station.
- ix. A control is provided to prevent the station in rear to take 'LINE CLEAR' on its Block Panel without taking consent of receiving station.
- x. A control is provided to cancel the 'LINE CLEAR', already taken by station in rear.
- xi. It is possible to close the block section only, if no train has entered the Block Section for atleast 120 seconds after application of cancellation, as per clause-x above, with a co-operation from Station in rear.

3.0 BLOCK PANEL IN-BUILT IN VDU:

Block Panels are displayed at corners of VDU in respective directions of pairing stations, in a rectangular box form. The Block Interface is horizontally split into two portions. The Upper portion contains indications pertaining to "Train Going To" and Lower portion contains indications pertaining "Train Coming From".

3.1 Initial Block Working Display:

Operator Interface for Block Working on VDU (all pictorial diagrams only for reference).

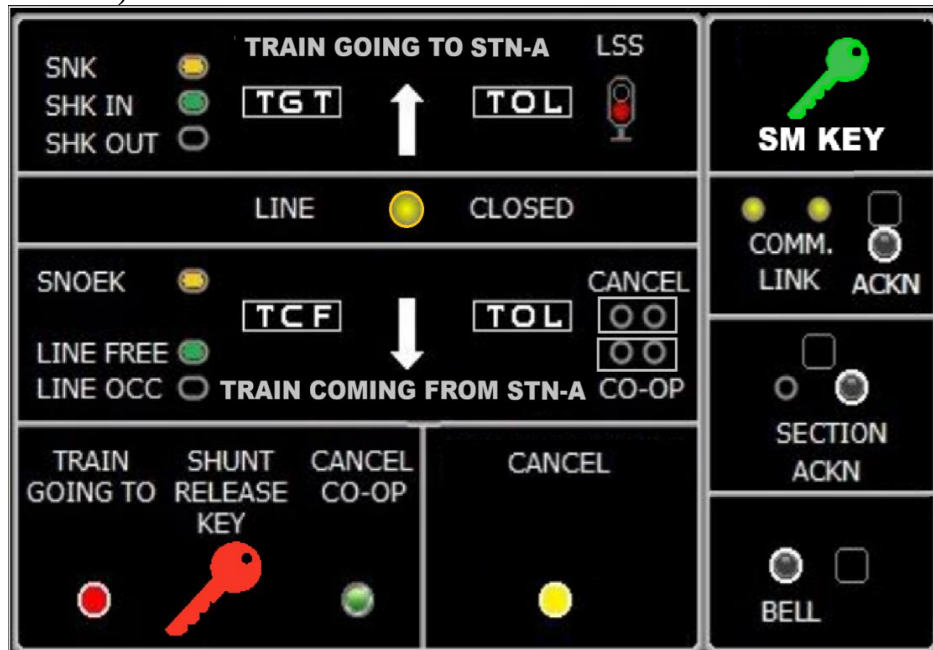


Fig-2: EI Block Panel of Station-B towards Station-A

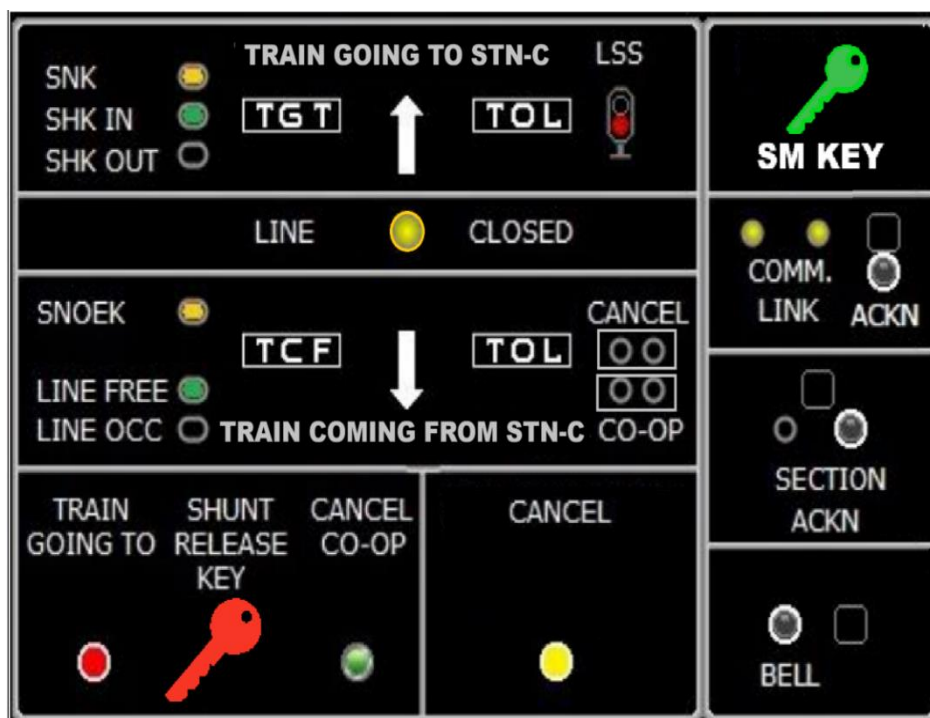
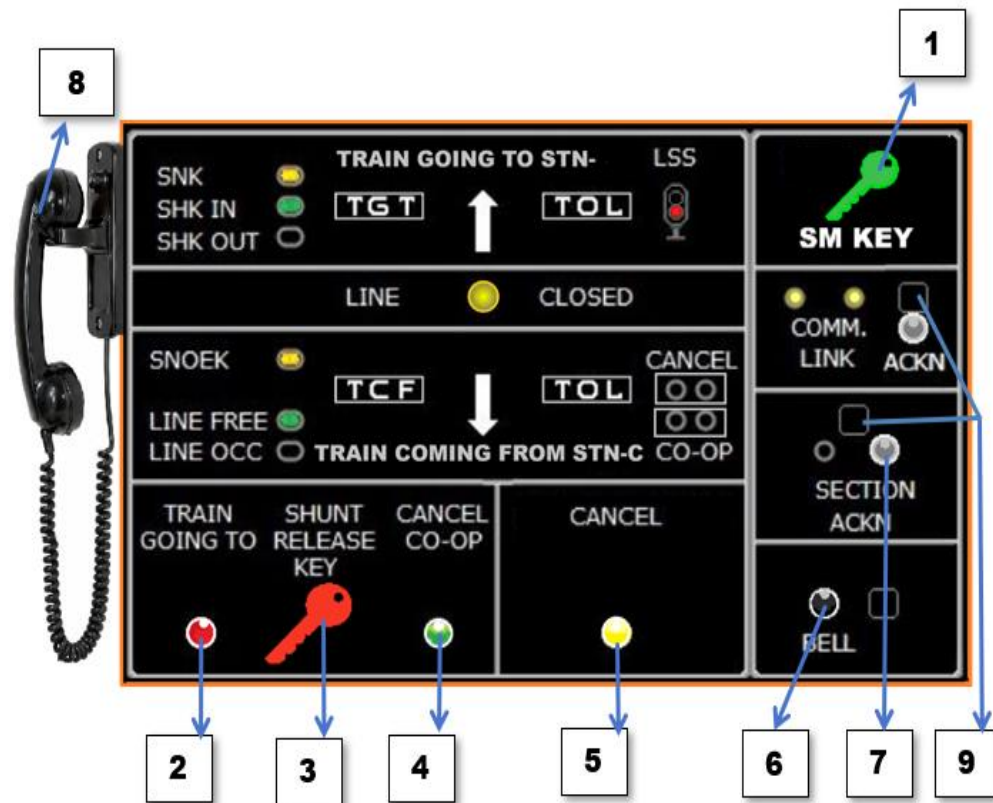


Fig-3: EI Block Panel of Station-B towards Station-C

3.2 BUTTONS AND KEYS OF EI BLOCK PANEL FOR SINGLE LINE AND THEIR FUNCTIONS:



Fn No	BUTTON/ KEY	DROP DOWN MENU	PURPOSE
1	SM KEY: (Virtual Key)	'IN' & 'OUT'	The curser of mouse to be right clicked, menu functions 'IN' & "OUT" will appear. When operated with 'IN' option, Green indication appears and when 'OUT', Red indication appears. Block SM Key when 'OUT' prevents the following operations: - a) Transmission of BELL code. b) Transmission of LINE CLEAR enquiry request. c) Cancellation of LINE CLEAR. NOTE: EI Block panel SM key operates in conjunction with PC SM key of VDU. During suspension of Block Instrument, EI Block panel SM Key feature alone shall be activated to 'OUT' mode.

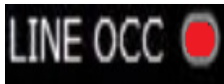
2	TRAIN GOING TO BUTTON (TGT): (Red indication)	'TGT'	The cursor of mouse to be right clicked, menu function 'TGT', will appear. When 'TGT' option clicked, the 'Red' colour button changed to 'White' and it will remain till TGT condition of block instrument appears, thereafter TGT button icon changed from 'white' to 'Red'. Train Going To is used - For applying LINE CLEAR. i.e., To transmit IS LINE CLEAR enquiry to station in advance for taking LINE CLEAR. It is used in conjunction with BELL button icon at train sending station to light up TRAIN COMING FROM (GREEN) indication on Block Panel of receiving station, which in turn automatically grants LINE CLEAR to light up TRAIN GOING TO (GREEN) indication on Block Panel of sending station.
3	SHUNT RELEASE KEY: (Virtual Key) (Line clear Blocking Key)	'IN' & 'OUT'	The cursor of mouse to be right clicked, menu functions 'IN' & "OUT" will appear. When operated with 'IN' option, Green indication appears and when 'OUT', Red indication appears. Shunt Release Key when 'IN' (Green) it prevents the following operations: - - Station in rear to take LINE CLEAR. - Closing of Block. - The LSS of sending station will be replaced to 'ON' automatically if already taken OFF for sending the train in the section.
4	CANCEL CO-OPERATION BUTTON: (Green)	'CANCEL CO-OP'	The cursor of mouse to be right clicked, menu function 'CANCEL CO-OP', will appear. When 'CANCEL CO-OP' option clicked the 'Green' colour button changed to 'White' and it will appear for 8 secs, thereafter CANCEL CO-OPERATION button icon changed from 'white' to 'Green'. To give co-operation from sending station to CANCEL the LINE CLEAR at receiving station.
5	CANCEL BUTTON: (Yellow)	'CANCEL'	The cursor of mouse to be right clicked, menu function 'CANCEL', will appear. When 'CANCEL' option clicked the 'Yellow' colour button changed to 'White' and it will appears for 8 secs, thereafter CANCEL button icon changed from 'white' to 'Yellow'. This is operated to enable cancellation of LINE CLEAR and it is used in conjunction with BELL button icon at train sending station under following conditions: The Train has NOT ENTERED in the Block section.

			b) The train has been pushed back at train sending station.
6	BELL BUTTON: (Black)	'BELL' or 'TGT' or 'LC- CANCEL'	The cursor of mouse to be right clicked, menu functions 'BELL' & 'TGT' will be appeared. If 'BELL' option clicked, it will transmit outgoing bell and 'TGT' option clicked, Black colour of button icon disappears and changed to white for 8 sec and again colour changed to Black. To cancel LINE CLEAR, 'LC-CANCEL' has to be clicked along with CANCEL button. a) To transmit BELL codes to station at another end of Block section. b) To take LINE CLEAR, when pressed along with TRAIN GOING TO button icon. c) To cancel LINE CLEAR, when pressed along with CANCEL button icon. d) Bell code as per GR 14.05 shall be followed during various situations.
7	SELECTION ACKN BUTTON: (Grey)	'SEC- ACKN'	The cursor of mouse to be right clicked, menu function 'SEC-ACKN', will appear. When 'SEC-ACKN' option clicked, the 'Black' colour button changed to 'White' and it will appear for 8 secs, thereafter SECTION ACKN button icon changed from 'white' to 'Black'. One button icon is provided for "Acknowledgment" to mute the section buzzer on 'OCCUPATION' or 'CLEARANCE' of Block section.
8	BLOCK TELEPHO NE:	--	Fixed Block Telephones are provided on the VDU Panel near EI Blocks: a) For speech communication with SM at another end of Block Section. b) Separate Block Telephone shall be provided for every Block Section.
9	BUZZERS:	--	Through VDU, Soft Buzzers are provided. This buzzer activates at both stations when "Train enters the Block section" and the "Train out of Block section" at the receiving station. This can be silenced by selecting "SECTION ACKN" by the train receiving and train sending stations.

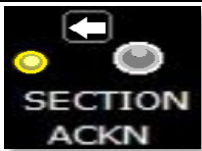
3.3 PHYSICAL HARD KEYS & COUNTERS:

1	SM KEY:	Only one SM hard key has been provided in the counter box for the operation of the entire Station layout, along with the in-built Integrated EI Block Panel. When the SM hard key is inserted in the counter box, the PC SM Key indication initially appears in 'Yellow' on the VDU. After the PC SM KEY 'IN' command is executed through user authentication (User Name & Password), the PC SM Key indication changes to 'Green'. Thereafter, the Soft SM Keys 'IN' command on the EI Block panel is executed through user authentication, following which these Soft SM Key indications also changes to 'Green'. Once Hard SM key in the counter box is extracted, both soft PC SM KEY and Soft EI Block SM keys are turned into RED indication in the VDU panel, then VDU/Block operations become inoperative.
2	SHUNT KEY:	'An Electrical lock Key' is provided near the EI Block panel in SM's Room for Shunting control. The key, when extracted, locks 'Last Stop Signal' in the Normal position. The station code and the line 'UP' or 'DOWN' to which it applies are inscribed on the respective keys. Normally the soft Shunt Release Key provided on the VDU shall remain in the "OUT" position (displayed in Red). The Station Master shall change the soft Shunt Release Key status from "OUT" to "IN" by using the User ID and Password. The soft Shunt Release Key indication on the VDU shall change to "Green", after which the physical 'SHUNT KEY' shall be taken out.
3	CANCEL COUNTER:	This is a non-resettable counter provided externally to EI Block panel. Counter registers the next higher number at receiving station whenever LINE CLEAR cancellation is initiated. NOTE: <i>At the time of change of duties the Station Masters handing over and taking over charge shall record the last number registered at the counter in the Train Signal Register duly signed by them.</i>
4	SM's BACK COVER LOCK KEY:	No provision.
5	MAINTAINERS' s BACK COVER LOCK KEY:	No provision.

3.4 EI BLOCK PANEL INDICATIONS:

Sl. No	INDICATIONS	DESCRIPTION	REF IMAGE
1	SM Key	Lits GREEN, when key is 'IN'.	
		Lits RED, when key is 'OUT'.	
2	SNK	Lits YELLOW, the indication is provided to indicate the concerned HOME & LSS signals and their controls are at On / Normal.	
3	SHK IN	Physical Shunt key is 'IN'.	
4	SHK OUT	Physical Shunt key is 'OUT'.	
5	SHUNT RELEASE KEY	This is a virtual key with menu functions 'IN' & 'OUT'. When operated with 'IN' option, Green indication appears and when 'OUT', Red indication appears. Normal position of the SHUNT RELEASE KEY provided on the VDU shall remain in the "OUT" position (displayed in Red).	 
6	SNOEK	Lits YELLOW, the indication is provided to indicate that at other end Advanced starter signal and its controls are at On / Normal, the soft Shunt Release Key is in 'OUT' position and physical Shunt key is in 'IN' position.	
7	LINE FREE	Lits GREEN, when section is 'CLEAR'.	
8	LINE OCCUPIED	Lits RED, when section is 'OCCUPIED'.	

9	LINE CLOSED	Lits YELLOW, when 'LINE IS CLOSED'/ Block section 'CLEAR'.	
10	TGT (Train Going To)	This is a directional indicator for outgoing trains away from station at train sending station. • 'NO LIGHT' in Normal condition • Lits 'GREEN' when Line Clear has been received. • 'Flashing GREEN' a. Block section is clear after arrival of train, but associated signals and their controls are not normalized at either station or Shunt key is in 'OUT' position. b. Cancellation of 'LINE CLEAR' before entry of train in Block section.	 
11	TGT - TOL	'NO LIGHT' in Normal condition. Lit 'RED' indicates that the train has entered the Block section, when block occupied on 'LINE CLEAR'. Extinguishes on complete arrival of train and releasing of Block.	 
12	LSS	Lits 'RED', when LSS is not taken off, Lits 'GREEN', when LSS is taken off with 'LINE CLEAR'.	 
13	TCF (Train Coming From)	This is a directional indicator for incoming trains towards station at train receiving station. • 'NO LIGHT' in Normal condition • Lits 'GREEN' when Line Clear established. • 'Flashing GREEN' a. Block section clear after arrival of train, but associated signals and their controls are not normalized at either station or Shunt key is in 'OUT' position. b. Cancellation of 'LINE CLEAR' before entry of train in Block section.	 

14	TCF – TOL	Lits 'RED', when block occupied after Line Clear is given.	
15	CANCEL (Button)	This is operated to enable cancellation of LINE CLEAR and it is used in conjunction with BELL button icon at train sending station under following conditions: a. The Train has NOT ENTERED in the Block section. b. The train has been pushed back at train sending station.	
16	CANCEL (Indication)	Lits two flashing 'YELLOW' indicates that 'LINE CLEAR' cancellation is applied.	
17	CANCEL-CO-OP	Lits two 'YELLOW' at receiving station when cancellation co-operation is extended by sending station SM.	
18	COMM. LINK / ACKN	Lits two flashing YELLOW when link is OK, steady YELLOW when link failed, Buzzer shall be acknowledged when link failure.	
19	SECTION ACKN	Lits YELLOW and Buzzer sounds when TOL and complete Train arrival conditions.	

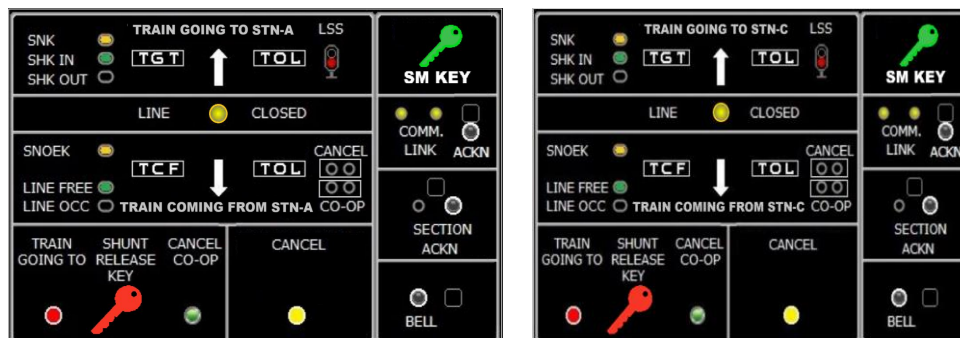
4.0 METHOD OF SIGNALLING TRAINS FROM BLOCK STATION TO BLOCK STATION:

- i. SM of the station intending to send a train from his station obtains verbal consent over block telephone from station in advance before taking 'LINE CLEAR' on its Block Panel.
- ii. Before a request for 'IS LINE CLEAR' is sent to station in advance, SM of sending station ensures the following near 'TRAIN GOING TO' arrowhead on its Block Panel: -
 - a) LINE CLOSED indication YELLOW
 - b) LINE FREE indication GREEN
 - c) SNK indication YELLOW
 - d) SHK (Shunt Key IN) indication GREEN
 - e) Communication Link flashing two YELLOW indication

- iii. The station in advance while granting his verbal consent ensures the following near 'TRAIN COMING FROM' arrowhead on its Block Panel.
 - a) LINE CLOSED indication YELLOW
 - b) LINE FREE indication GREEN
 - c) SNK indication YELLOW
 - d) SNOEK indication YELLOW
 - e) SHK (Shunt Key IN) indication GREEN
 - f) Communication Link flashing two YELLOW indication
- iv. Thereafter SM of sending station presses BELL & TRAIN GOING TO button icons through right click on the mouse within 8 sec. The Grey colour of bell button icon and red colour of TGT button icon changes to white for 8 sec as indication for pressing the button icon and the colour self-restores to original after TGT indication.
- v. The arrow-head, TRAIN GOING TO/TRAIN COMING FROM is lits up to green at sending/receiving station respectively
- vi. The Bell and TGT button icons are self-restoring after 8 secs.
- vii. The sending station SM after obtaining LINE CLEAR on its Block Panel sends the train into Block Section by taking the LSS to 'OFF'. On entry of train into section, TRAIN ONLINE lights up RED at both the stations in arrow-head indication. LINE FREE Green indication disappears and LINE OCCUPIED Red indication will be appeared on both the station. And also, SECTION buzzer sounds at both the stations along with ACKN indication near respective ACKN button. Pressing of ACKN button icon through mouse and curser on the menu will turn off the buzzer and the ACKN indication
- viii. After receipt of train at receiving station on proper reception signals and complete arrival of train, TRAIN GOING TO / TRAIN COMING FROM arrowhead indication turns to FLASHING GREEN & LINE FREE indication turns to GREEN at both the stations. TRAIN GOING TO / TRAIN COMING FROM indication continues FLASHING GREEN at sending / receiving station respectively until reception & departure signals and their controls are not normal. If reception & departure signals and their controls are at normal, TRAIN GOING TO / TRAIN COMING FROM arrowhead indications turns off and LINE CLOSED indication lights up to yellow.

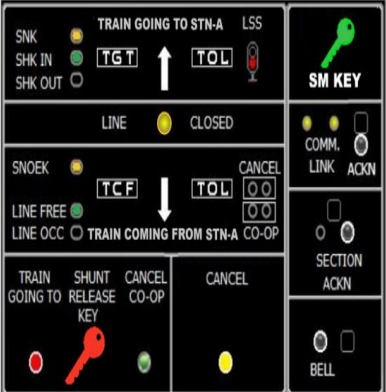
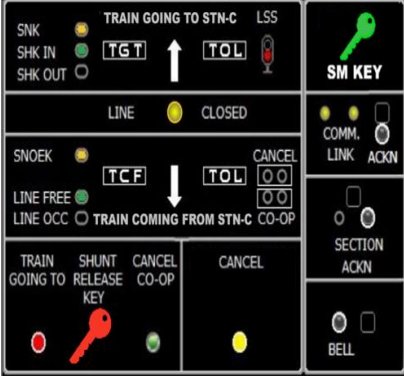
5.0 SEQUENCE OF VARIOUS BLOCK OPERATIONS FOR SIGNALLING A TRAIN BETWEEN TWO STATIONS:

5.1 Initial Block working Display:

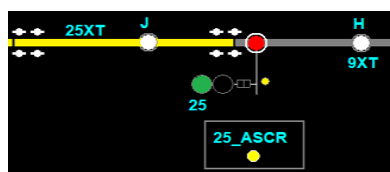
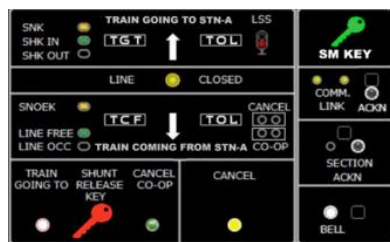


5.2 Normal Train Movement:

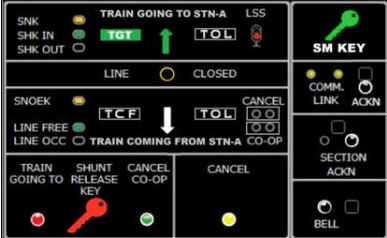
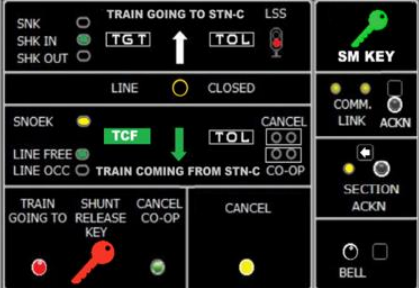
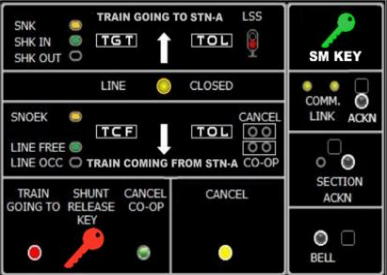
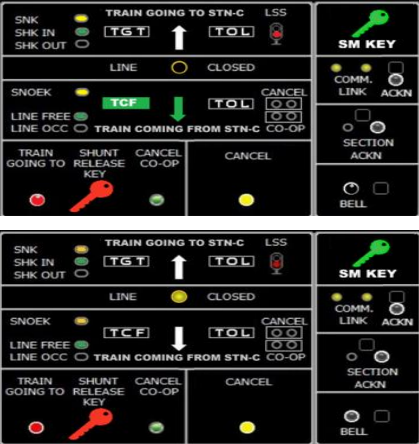
If the block section is clear and the “LINE CLOSED” indication is displayed on EI Block Panel at both the stations, the action is taken by the sending station SM as under;

Seq No	SENDING STATION	Seq No.	RECEIVING STATION
1.	The SM shall ensure that the following indications are available on the EI Block Panel: a) LINE CLOSED indication YELLOW b) SNK indication YELLOW. c) SHK (Shunt Key IN) indication GREEN d) LINE FREE indication GREEN e) Communication Link flashing two YELLOW indication f) Last Stop Signal-RED  SM has to click ‘BELL’ menu available on BELL button drop down icon in VDU.	2.	The SM shall ensure that the following indications are available on the EI Block Panel: a) LINE CLOSED indication YELLOW b) SNOEK indication YELLOW c) LINE FREE indication GREEN d) SNK indication YELLOW e) SHK (Shunt Key IN) indication GREEN f) Communication Link flashing two YELLOW indication  SM acknowledges the Bell by clicking ‘BELL’ menu available on BELL button drop down icon in VDU.
3.	SM attends telephone and advises station in advance about intended movement of the train on telephone.	4.	a) Exchanges information regarding Train movement and ensures LINE CLOSED indication Yellow, LINE FREE indication Green & Shunt key IN. SNK-Yellow & SNOEK - Yellow.

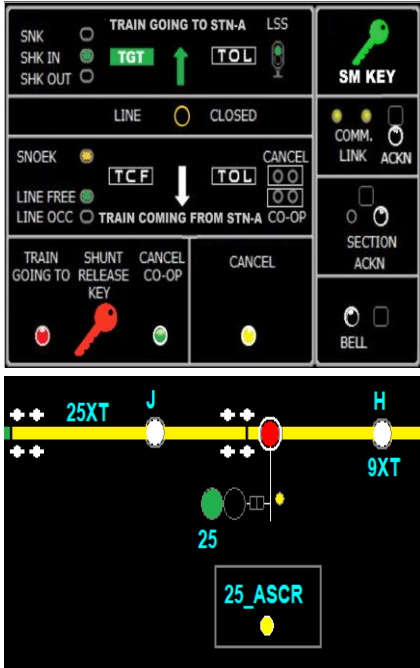
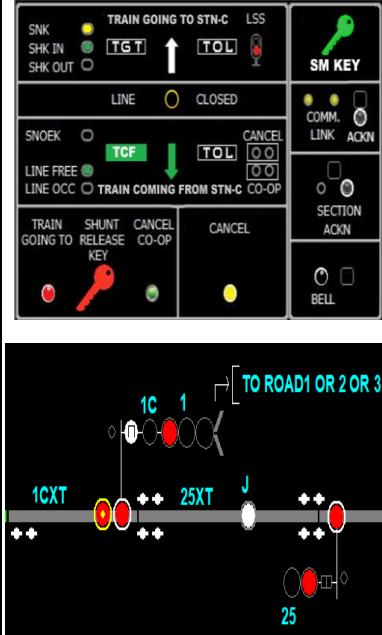
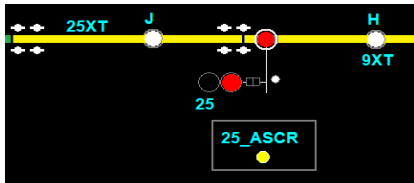
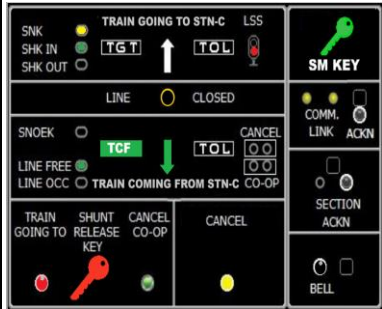
			b) Grants verbal LINE CLEAR supported by a Private Number.
5	a) SM shall click the 'TGT' menu available on BELL button drop down menu & click the 'TGT' menu available on TGT button drop down menu and waits for 'TGT' indication to light up Green. b) 'LINE CLOSED' indications turns 'OFF' c) TGT indication lights up Green d) Advance Starter signal can be taken 'OFF' by SM. e) Yellow 'SNK' indication turns off. f) Green indication of LSS appears.	6	a) 'LINE CLOSED' indication turns 'OFF'. b) TCF indication turns 'ON'-Green. c) Sending Station LSS is taken OFF, SNOEK indications turns 'OFF'

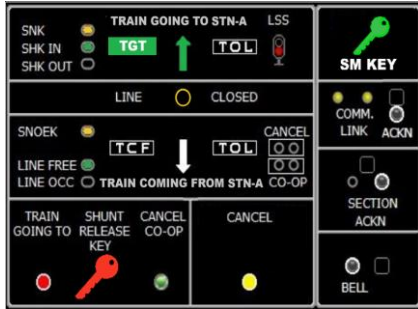
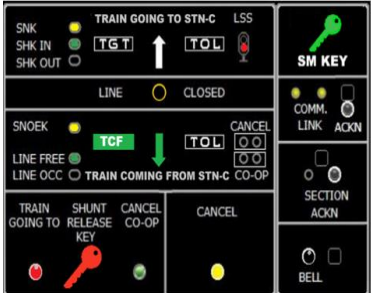
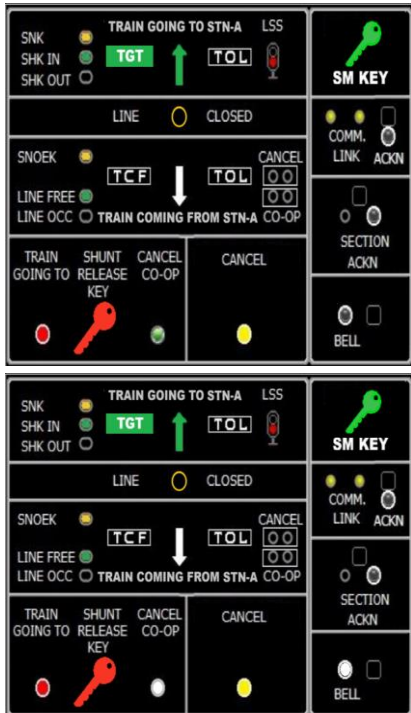
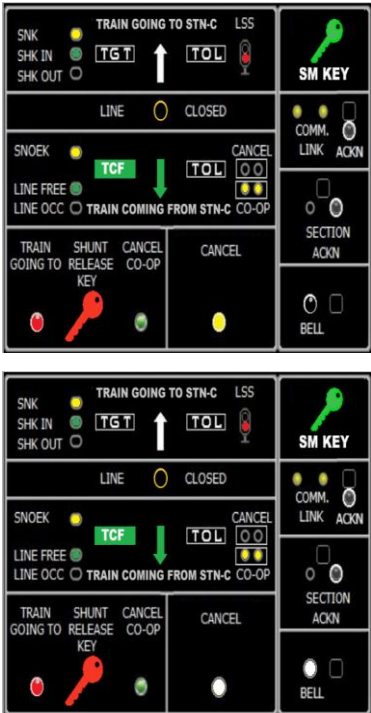


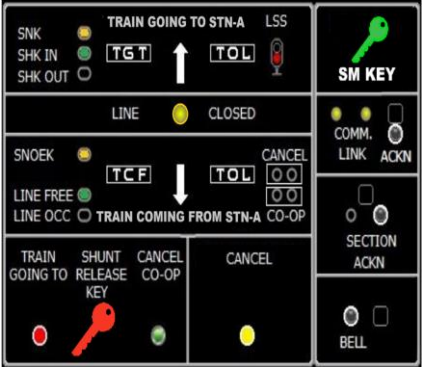
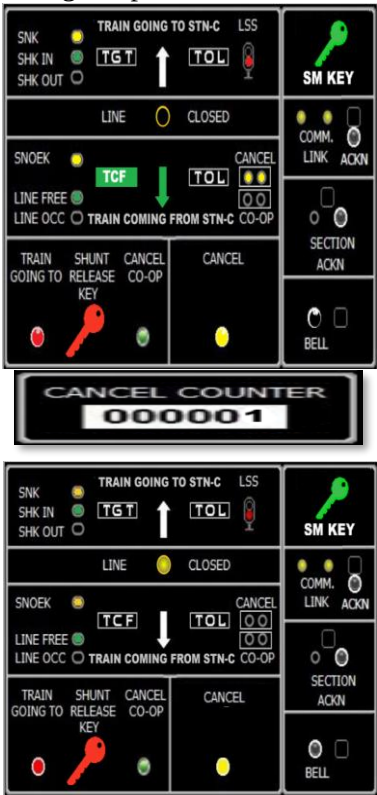
7	a) Train enters Block Section b) 'LINE OCCUPIED' indication turns 'RED'. c) TGT Green indication changes to TOL- RED and LSS indication turns to- RED. d) SECTION Buzzer Sounds up with indications near ACKN Button Icon. e) SM acknowledges the Buzzer by clicking 'SEC-ACKN' menu available on SECTION-ACKN button drop down menu to silence the buzzer and turn 'OFF' the indication. f) Restores all Signal Controls to Normal. g) 'SNK' indication turns- YELLOW. h) Train is in section.
8	a) Train enters Block Section. b) 'LINE OCCUPIED' indication turns to RED. c) SECTION Buzzer Sounds up with indications near ACKN Button Icon. d) SM acknowledges the Buzzer by clicking 'SEC-ACKN' menu available on SECTION-ACKN button drop down menu to silence the buzzer and turn 'OFF' indication. e) SNOEK- indication turns- Yellow. f) Train is in section. g) SM takes Reception Home Signal 'OFF' to receive the train. h) Train Clears the Block Section including Block Overlap.

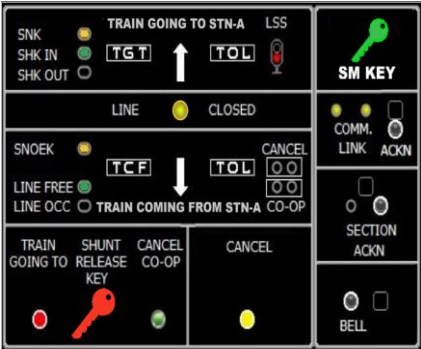
10	a) 'LINE FREE' indication turns to 'GREEN'. b) 'TOL- RED' indication changes to 'TGT'. (Flashing GREEN). 	9	a) 'TRAIN ARRIVAL BUZZER' Sounds up with indications near ACKN Button Icon. b) 'LINE FREE' indication turns to 'GREEN'. c) 'TCF' Indication turns Flashing 'GREEN'. d) SM acknowledges the Buzzer by clicking 'SEC-ACKN' menu available on SECTION-ACKN button drop down menu to silence the buzzer and turn 'OFF' indication. 
12	a) 'TGT- Flashing Green' indication turns 'OFF'. b) 'LINE CLOSED' indication light up 'YELLOW'. 	11	a) Replace all signal controls pertaining to reception of train to Normal. b) 'SNK' lights up 'YELLOW'. c) 'TCF' indication turns 'OFF'. 'LINE CLOSED' Indication light up 'YELLOW'. 

5.3 'LINE CLEAR' Cancellation: BEFORE ENTRY OF A TRAIN IN THE BLOCK SECTION.

Seq No.	SENDING STATION	Seq No.	RECEIVING STATION
1.	The SM started the process for sending a train and taken 'OFF' LSS. However, due to some reason, the SM wants to cancel the Line Clear, before the train starts its movement. 	2.	SM agrees to receive Train, waiting to receive Train. 
3.	a) SM puts back LSS to 'ON' if already taken OFF. b) Ensures 'SNK' at 'YELLOW'. c) Advice receiving end station SM about cancellation on telephone after clicking the prescribed BELL code duly communicating with a Private Number. 	4.	SM agrees to request for cancelling train movement. Ensures 'SNK' at 'YELLOW' and 'SNOEK' at 'YELLOW' and gives consent on telephone after prescribed BELL code supporting by a Private Number. 

		
5.	After verbal consent from other end, SM shall click the ‘CANCEL CO-OP’ menu available on ‘CANCEL CO-OPERATION’ button drop down menu & SM click the ‘LC-CANCEL’ menu available on BELL button drop down menu. 	6. SM waits for Co-Operation light up ‘YELLOW’ and click the ‘LC-CANCEL’ menu available on BELL button drop down menu & click the ‘CANCEL’ menu available on CANCEL button drop down menu. 

7.	TGT indication turns Flashing GREEN. 
8.	a) 'TCF' indication turns Flashing 'GREEN' and 'CANCEL' indication lights up flashing 'YELLOW' and continue to be flashing for 120 seconds. b) CANCEL counter will increments. c) On expiry of 120 seconds, TCF indication and CANCEL indication turns off. d) LINE CLOSED indication lights up YELLOW. 

9.	‘TGT’ (Flashing Green) indication turns off and ‘LINE CLOSED’ indications lights up ‘YELLOW’. 	-
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5.4 REFUSAL TO LINE CLEAR:

Normal position of the soft SHUNT RELEASE KEY provided on the VDU shall remain in the "OUT" position (displayed in Red).

When the block section is occupied due to the presence of a train, train parting, shunting movements, or any other reason, The Station Master shall change the soft SHUNT RELEASE KEY status from "OUT" to "IN" by using the User ID and Password. The soft Shunt Release Key indication on the VDU change to “Green”, after which the physical SHUNT KEY shall be taken out and kept in safe custody.

If the block section at other end refuses the IS LINE CLEAR enquiry signal, No train shall be allowed to leave until a fresh IS LINE CLEAR enquiry signal has been given to block section at other end and accepted.

On removal of obstruction, the physical SHUNT KEY shall be inserted and turned to ‘IN’ position and the soft SHUNT RELEASE KEY should be restored to ‘OUT’ (Red). SM shall immediately inform to SM on other end about the fact, so as to enable him to send a fresh ‘IS LINE CLEAR’ signal.

5.5 CLOSING OF BLOCK AFTER A “PUSH BACK” OPERATION:

After a train has been pushed back at the sending station, the train sending station Master shall advise the train receiving Station Master on telephone that the train has been pushed back and the Block Section is clear of the obstruction. Then The receiving station closes the section by clicking BELL icon and CANCEL icon after getting co-operation from the sending station.

Method of PUSH BACK operation:

Seq No.	SENDING STATION	Seq. No.	RECEIVING STATION
1.	After the train clears the Block Section and arrive: • LINE FREE indicator turns GREEN • SECTION buzzer starts ringing. • ACKN indicator lights up.	2.	After the train clears the Block Section: • LINE FREE indicator turns GREEN. • SECTION buzzer starts ringing. • ACKN indicator lights up.

3	'TRAIN GOING TO' arrow head indication turns to 'FLASHING GREEN'.	4	'TRAIN COMING FROM' arrowhead indication turns to 'FLASHING GREEN'.
5	- Acknowledges the Buzzer by clicking 'SEC-ACKN' menu available on SECTION-ACKN button drop down menu to silence the buzzer. 'ACKN' indicator turns off.	6	- Acknowledges the Buzzer by clicking 'SEC-ACKN' menu available on SECTION-ACKN button drop down menu to silence the buzzer. - ACKN indicator turns off.
7	Advises receiving end station SM about cancellation on telephone after prescribed BELL code duly communicating with a private number.	8	Agrees to request & ensures: - SNK indicator 'YELLOW', SNOEK indicator YELLOW, SHUNT KEY indicator GREEN, and - Gives consent on telephone after prescribed BELL code duly communicating with a private number.
9	After verbal consent from receiving end SM, Ensure: - SNK indication is YELLOW, - SNOEK indication is YELLOW, - SHUNT KEY indication is GREEN. Then click the 'CANCEL CO-OP' menu available on 'CANCEL CO-OPERATION' button drop down menu.	10	- CO-OP to light up YELLOW. - Click the 'LC-CANCEL' menu available on BELL button drop down menu & click the 'CANCEL' menu available on CANCEL button drop down menu. - CANCEL COUNTER increments. - CANCEL indication lights up FLASHING YELLOW & continues flashing for 120 seconds.
11	- TRAIN GOING TO arrow head indication turns off. "LINE CLOSED" indication lights up.	12	- On expiry of 120 seconds, TRAIN COMING FROM arrow head indication and CANCEL indication turns off. 'LINE CLOSED' indication lights up.

5.6 BLOCK BACK OPERATION:

The SM, who intends to Block Back the line, shall inform the SM of station at other end on telephone for permission to Block Back, who will acknowledge the message and grant permission supported by a private number.

The Station Master shall change the soft SHUNT RELEASE KEY status from 'OUT' to 'IN' by using the User ID and Password. The soft Shunt Release Key indication on the VDU change to 'Green', after which the physical SHUNT KEY shall be taken out from the EKT. The SM will then issue necessary authority to the Loco Pilot of train to perform shunting in Block Section. On completion of shunting, section clear message will be sent to SM of station at other end on telephone supported by a private number, who in turn will acknowledge the same supported by a private number. Thereafter, SM will insert SHUNT KEY in EKT and turn to 'IN' position. Turn the soft 'SHUNT RELEASE KEY' to 'OUT' (Red) in VDU EI Block panel. All the entries in Train Signal Register (TSR) for this operation should be made in RED ink. The reasons for Block Back shall be recorded in remarks column against each entry.

Seq No.	STATION IN REAR	Seq No.	STATION INTENDING BLOCK BACK
2	Block Panel displays. • LINE CLOSED indication YELLOW. • SNOEK indication YELLOW • LINE FREE indication GREEN, • SNK indication YELLOW, • SHK (Shunt Key IN) indication GREEN. • Communication Link flashing two YELLOW indication.	1	Block Panel displays. • LINE CLOSED indication YELLOW. • SNK indication YELLOW. • SHK (Shunt Key IN) indication GREEN. • LINE FREE indication GREEN, • Communication Link flashing two YELLOW indication. • Last Stop Signal-RED.
4.	SM acknowledges the Bell by clicking 'BELL' menu available on Bell button drop down icon in VDU and gives call attention / attend telephone signal.	3.	SM key shall be turns to 'IN'. SM has to click 'BELL' menu available on Bell button drop down icon in VDU and gives call attention / attend telephone signal.
6.	Attends telephone.	5.	Attends telephone.
8.	Acknowledges & gives consent supported by a Private Number.	7.	Inform intention to perform shunting in Block Section.

	--	9.	The Station Master shall change the soft SHUNT RELEASE KEY status from 'OUT' to 'IN' by using the User ID and Password. The soft Shunt Release Key indication on the VDU change to 'Green', after which the physical SHUNT KEY shall be taken out from the EKT. The SM will then issue necessary authority to the Loco Pilot of train to perform shunting in Block Section.
11	On entry of train in Block Section, a) SECTION buzzer sounds & ACKN indication glows. b) LINE OCCUPIED indication turns to RED. LINE CLOSED indication turns off. c) SM acknowledges the Buzzer by clicking 'SEC-ACKN' menu available on SECTION-ACKN button drop down menu to silence the buzzer. d) ACKN indication turns off.	10	On entry of train in Block Section: a) SECTION buzzer sounds & ACKN indication glows. b) LINE OCCUPIED indication turns to RED. LINE CLOSED indication turns off. c) SM acknowledges the Buzzer by clicking 'SEC-ACKN' menu available on SECTION-ACKN button drop down menu to silence the buzzer. d) ACKN indication turns off.
13	On clearing of Block Section: a) SECTION buzzer sounds & LINE CLOSED indication lights up. ACKN indication lights up. b) LINE FREE indication turns to GREEN. LINE CLOSED indication turns YELLOW. c) SM acknowledges the Buzzer by clicking 'SEC-ACKN' menu available on SECTION-ACKN button drop down menu to silence the buzzer. d) ACKN indication turns off.	12	On clearing of Block Section: a) SECTION buzzer sounds & LINE CLOSED indication glows. ACKN indication lights up. b) LINE FREE indication turns to GREEN. LINE CLOSED indication turns YELLOW. c) SM acknowledges the Buzzer by clicking 'SEC-ACKN' menu available on SECTION-ACKN button drop down menu to silence the buzzer. d) ACKN indication turns off.
15	Acknowledges call attention /attend telephone signal.	14	On completion of shunting, SM verifies the line between opposite STARTER (if any)/ Shunt signal or Block Section Limit Board, Stop

			Board/ Fouling mark and First Stop Signal free from any vehicle. Gives call attention / attend telephone signal.
17	Attends telephone.	16	Attends telephone.
19	Acknowledges supported by a Private Number.	18	Inform shunting is completed supported by a Private Number.
	--	20	Inserts physical Shunt KEY in EKT & turns to 'IN' position and turns soft Shunt Release Key 'OUT' in VDU EI Block Panel.

5.7 SHUNTING OF TRAIN:

While performing shunting, stipulation made under G&SR 8.09 & 8.10 and as permitted by Station Working Rules (SWR) to be followed.

Where shunt signals are not provided for shunting on line leading towards Block section, the Loco Pilot of shunting train shall be given shunting order at the foot of STARTER SIGNAL/ STOP BOARD/FOULING MARK before allowing any shunting. While shunting, the LAST STOP SIGNAL should be kept at ON.

i. Shunting of Train up to Last Stop Signal:

Shunt Key of EKT shall be taken OUT and kept in safe custody. The Loco Pilot of shunting train shall be given shunting order to shunt up to LSS. On completion of shunting, the line between Starter/Shunt Signal/Stop Board/ Fouling mark and LSS should be checked free from any vehicle. Shunt Key of EKT shall be inserted and turned to IN position. When an "IS LINE CLEAR" enquiry is received from Block Station at other end of block section, permission for shunting up to LSS shall be granted only after compliance of GR 8.09 & 8.10 and as permitted by Station Working Rules (SWR).

ii. Shunting Behind A Train:

Shunting behind a train should be performed with message to station at other end. SM shall take out Shunt Key of EKT after entry of train in block section passing LSS. Hand over the key to Loco Pilot of shunting train along with shunting order. On completion of shunting, Loco Pilot of shunting train hands over the Shunt Key of EKT back to SM. SM ensures clearance of line between Starter/Shunt Signal/Stop Board/Fouling mark and LSS from any vehicle. The message regarding completion of shunting shall be conveyed to station at other end. SM inserts Shunt Key of EKT and turns to IN position. In case train arrives at station at other end before completion of shunting, TRAIN GOING TO/TRAIN COMING FROM arrow head indication will remain at RED, till shunting train clears the section. During such period line shall be Blocked Back.

iii. Shunting Of Train Beyond Last Stop Signal:

The shunting in advance of LSS is done under block back operation.

iv. Shunting of Train in face of an approaching Train:

Shunting in face of an approaching train, towards LSS, where permitted in SWR by special instructions, can be performed. The Loco Pilot of shunting train shall be given shunting order to shunt up to LSS. On completion of shunting, the line between Starter/Shunt Signal/Stop Board/Fouling Mark and First Stop Signal should be checked free from any vehicle. Shunting in face of an approaching train, beyond LSS and up to FSS can be performed only, when approaching train has been brought to a stop at FSS of the station. Whenever, such shunting is to be performed, EI Block panel SM key shall be turned to 'OUT'. The Loco Pilot of shunting train shall be given shunting order to shunt up to FSS.

On completion of shunting, the line between Starter/Shunt Signal/ Stop Board/Fouling Mark and FSS Signal should be checked free from any vehicle and only then, EI Block panel SM key shall be turned to 'IN' position.

v. Shunting of Train beyond LSS in cases other than shunting behind a train or shunting in face of approaching train

The shunting should be done under Block Back operation only.

6.0 FAILURE OF EI BLOCK PANEL:

EI Block on VDU should be considered as defective and should not be restored for normal working until tested by competent signal staff & certified fit by them for use after the under-mentioned cases except for the case of Communication Link Failure (steady yellow indication). After the Communication Link Failure indication becomes flickering again block panel operation can be restored. Block Panel should be treated as defective for the reasons as mentioned below and block working suspended & trains are to be dealt with by taking LINE CLEAR on the electrical communication equipment provided and by provisions of GR 14.13 & SR there under, if any.

- i. When no indication of any sort, at all appears on the block panel or;
- ii. When the Call attention buzzer signals are received indistinctly or are not received.
- iii. When none of the indications viz. 'TRAIN COMING FROM' and 'TRAIN GOING TO' appears on the block panel except 'LINE FREE'.
- iv. When no train has entered into the block section but the 'LINE OCCUPIED' indication lights on RED on both lines and this indication persists even after resetting of the Axle Counters have been tried. or;
- v. When a train has arrived at the receiving station, but the Block Panel still shows 'TRAIN ON LINE' RED indication and persist on both lines or;
- vi. When Link Fail indication becomes steady yellow. or;
- vii. When 'TRAIN GOING TO' or 'TRAIN COMING FROM' Arrowhead Indications do not appear by appropriate action though condition for asking 'LINE CLEAR' and granting permission to approach are available. or;
- viii. 'TRAIN GOING TO' or 'TRAIN COMING FROM' Arrowhead Indications does not turn to RED to give 'TRAIN ON LINE' on the entry of train into Block Section at either of the stations.

- ix. When a train has arrived at the receiving station, but the EI Block Panel shows FLASHING GREEN / GREEN indication even after ensuring SNK indication and SHUNT KEY IN.
- x. When, after a cancellation, CANCEL indication does not light up FLASHING YELLOW or STEADY YELLOW after appropriate actions.
- xi. When Last Stop Signal cannot be kept at 'ON' during its suspension / disconnection.
- xii. When Last Stop Signal of the station does not go back to 'ON' position on the entry of a train into the Block Section.
- xiii. Total failure of communication during which train shall be worked as per extant rules in force on the Railway.

6.1 FAILURE OF LAST STOP SIGNAL AND ACTION TO BE TAKEN:

Sl. No	Cause of failure of the LSS	Action to be taken
1	When it cannot be taken OFF even though LINE CLEAR has been obtained.	The LAST STOP SIGNAL should be considered to have failed and failure shall be informed to Signal staff immediately. The LINE CLEAR shall be obtained on the BLOCK telephone and T/369-(3b) shall be issued to Loco Pilot quoting the Line Clear Private Number.
2	When it can be cleared without obtaining LINE CLEAR.	The Block working to be treated as suspended and The LAST STOP SIGNAL should be considered to have failed. The failure shall be informed to Signal staff immediately.
3	It does not restore to ON position on entry of train into Block Section.	The LAST STOP SIGNAL should be considered to have failed and failure shall be informed to Signal staff immediately.

6.2 SUSPENSION OF BLOCK WORKING / LAST STOP SIGNAL AND ACTION TO BE TAKEN:

(a) SUSPENSION OF BLOCK WORKING:

Block Working must be suspended and trains dealt with in accordance with the extant instructions in the following cases:

Sl. No	Cause of Suspension	Action to be taken
1	When light vehicles such as material lorries, Motor trolley, Tie-tamping machines, Rail Motorcars, Tower wagon (4-wheeler), etc has to run in the section, these shall be worked on Paper Line Clear Ticket (PLCT).	EI BLOCK PANEL shall be suspended for respective line and these vehicles shall be worked on the manuscript authority or permit or form as applicable.

2	An accident takes place in the mid-section.	EI BLOCK PANEL shall be suspended, for both lines if line adjacent to affected line is reported to be infringed, till the infringement exists for dispatch line.
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(b) SUSPENSION OF LAST STOP SIGNAL:

The last stop signal shall be considered and deemed to have been suspended in the following cases:

Sl. No	Cause of Suspension	Action to be taken
1	When Last Stop Signal of the station has been undertaken for repairs / disconnected by Signal staff.	LSS shall be treated as INOPERATIVE.
2	During Block Back.	-do-
3	Mid-section Accident	-do-
4	When the material lorries/trolleys, tie-tamping machines or tower wagon has to run in the section.	-do-

Note: As soon as the cause of suspension of EI BLOCK PANEL and/or LSS is removed, the normal working can be restored by SM.
